

**SHOOLINI
UNIVERSITY
SOLAN, HP**

SELF ASSESSMENT REPORT OF B. PHARMACY PROGRAM



**Submitted to:
National Board of Accreditation (NBA) - April 2019**

PREFACE

It is my privilege to present the Self-Assessment Report (SAR) to the National Board of Accreditation (NBA) for Assessment and Accreditation of B. Pharmacy program. At the outset, I would like to highlight that Shoolini University aspires to be in the Elite Club of the **‘Top 200 Global Universities’**. I understand that being a ‘young’ institution, this is an ‘Audacious’ goal, especially considering the fact that there is no Indian University, Public or Private in this Premier list. Despite the magnitude of this task, I am confident of my team’s ability to deliver.

The genesis of the Shoolini Dream has its roots in my visits to South India in 2003 as the Chairman of the All India Coordinated Research Project on Agroforestry. I was deeply anguished by the approach adopted by private professional colleges of relegating the crucial aspect of research. I firmly believe that No Institute of Higher Learning can become great without Research. It was this concern that sowed the seeds for setting up a Specialized Research Based Private University, and in so doing, provide a role model for Higher Education in India.

Having experienced bureaucratic limitations as a Vice Chancellor of a Public University, and extrapolating this with the overwhelming Pre-eminence Private Universities enjoy over Public institutions world-wide, reinforced my conviction that the ability to effect quick decisions was the key differentiator. To illustrate, I am told that Harvard College, a non-discreet institute in Massachusetts which was at the verge of closing down, re-invented itself 150 years ago by adopting the Choice Based Credit System, injecting Academic Freedom with other Innovations. It was the ability to do so without bureaucratic encumbrances that was the game changer. The result is visible - the Harvard University as we know it today.

With this thought playing at the back of my mind, I decided to resign from my position of Senior Scientific Advisor to the Government of Himachal Pradesh, with the single-minded mission to build a research focused Private University. I need to underline that this was the vision of an idealistic academician-researcher, who neither had the backing of a business house or a philanthropist with deep pockets. Nevertheless, there were friends and well-wishers who not only helped kick-start the project but continue to support the journey.

In order to develop an institute of global standards, we drew a time bound developmental plan, which stretched over twelve years. The edifice was built on five fundamental pillars – Transparent Governance, Distinguished Faculty, Good Infrastructure, Strong alliances with Industry and the Corporate Sector and Deep Academic linkages. As part of our plan, we decided to focus on Research and concentrate on developing scientific solutions for Himalayan sustainability.

Over the years, our reputation as a premier institution of learning and becoming a frontrunner in crucial fields of research and academics has witnessed an upward surge. The University was ranked 66th in NIRF rankings 2016 and have subsequently retained its position in the rank band of 100-150 in NIRF rankings 2017 and 2018. School of Pharmaceutical Sciences was ranked 35th among the top Pharmaceutical Schools in 2019 by NIRF. Shoolini was awarded grade B++ by National Assessment and Accreditation Council of India (NAAC) in Dec, 2016. Shoolini has been included in the category of India's Most Admired Science and Technology Universities, among a total of 62 listed out of 693 universities considered for ranking by C-fore, a Delhi based market research and opinion polls Company. In addition, we have been acknowledged „Best Emerging Private Business Schools“ in India by ASSOCHAM along with a host of other accolades. To be figured among top 25 campuses in India under Swachh Bharat rankings is yet another feather in the cap.

While reaching the half-way stage in our quest, the encouragement of Dr. APJ Abdul Kalam, former President of India, provided great fillip to our dream. On the occasion of Shoolini University's First Convocation, he remarked: **‘Why 200, why not the Top 100? It may be difficult but not impossible; go ahead with passion and persuasion.’**

In order to compete globally, we have carried out an in-depth analysis of the ranking systems. The Times Higher Education (THE) emphasizes on research achievements and calls for two hundred research papers „consecutively“ for five years published in Scopus and Thomson & Reuter indexed journals to become eligible to apply. I am happy to say that University's quality of research is higher than some of India's best-known universities and institutes. Refer (Annexure I) research comparison of Shoolini University with NIRF top ranked Indian institutes and Times top ranked higher education institutes. The University's **‘h’ index is 45**. The other two ranking systems, namely QS (Quacquarelli Simonds) and the

Shanghai; Jai Tong University, emphasize on societal benefits along with teaching, research and transfer of technology—areas where we are already contributing, albeit, in a limited manner.

In essence, the six faculties of the university: Biotechnology and Applied Sciences, Pharmaceutical Sciences, Agriculture, Basic Sciences, Management Sciences and Liberal Arts, Engineering and Technology are unified by a ‘research-driven’ model focusing on the sustainable development of the Himalayas and at the same time, to develop high quality human capital with competencies to fulfil the requirements of the industry and society globally. The university offers programs and courses in a variety of subjects and disciplines, and this promotes cross-pollination of ideas and generates the potential for cross-disciplinary collaborations.

The Doctoral program of any university is the litmus test of quality of research. In order to come at par with the rest of the world, Shoolini employs the services of one external examiner from outside the country – ideally from the USA, Europe or technologically advanced countries of Asia. It is also mandatory for scholars to publish two papers in the Scopus indexed journals and one review article again in the Scopus category of journals.

In consonance with the NAAC, NBA & NIRF and in keeping with International trends, the University gives weightage to extension activities, innovations in teaching pedagogy, competence of faculty, knowledge generating tools, development and application of in-house software solutions, student facilities and skill development. Under the INSPIRE program sponsored by the DST, the University has given exposure to over five thousand budding scientists.

In keeping with global trends in Higher Learning, The Yogananda Library of the University has been transformed as a ‘**Knowledge Centre**’, aimed at making it a pro-active knowledge partner of our students. The Learning Management System (**LMS**) developed for the eUniv platform has provided an ever-available tutor for students to revise class room teaching, while the Knowledge Management System (**KMS**) has provided a vast repository of resources for higher learning and research. I am proud to say that both the LMS and the KMS have been developed ‘in-house’, adapting freely available software.

The SPRINT Program was started as a pilot project to develop Soft and Technical Skills in Shoolini's students who essentially hail from rural and semi-urban parts of the state to make them employable, has been a major success. In view of its spectacular results, the course has been spread across the campus.

This SAR would underscore the fact that the institution shares the core values defined by NAAC, NBA and this would emerge throughout as we endorse them- both in letter and spirit. My team remains passionate to make Shoolini University a coveted destination for higher learning within the South Asian Region and a globally admired Centre of Research, specializing in the various facets of the Himalayas. As a team, we remain committed to fructify the vision and I am confident that we would do it - however, difficult it may be.

Before moving to the report, I would like to thank the NBA and the Appraisal Team. I am sanguine that with the advice and recommendations from NBA, we would be able to bridge the gap(s) and our B. Pharmacy will be distinguished and best among its peers.



Prof. P.K. Khosla

Founding Vice Chancellor

Date: 26 April, 2019

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PREAMBLE

The Foundation for Life Sciences and Business Management was established in 2003-04 with the aim of working in areas of higher education and research, and helping set up entrepreneurial ventures in biotechnology and related fields. Prof PK Khosla, an internationally renowned academician & scientist, conceived the idea of integrating higher education and research during a visit to United Kingdom in 2003. He joined hands with renowned NRI, Mr. Ramesh Mehan and Mr. Satish Anand, a local entrepreneur with vast experience in local infrastructure development, for this venture.

The executive members of the Foundation are academicians and professionals with distinguished backgrounds. Prof PK Khosla, former Vice Chancellor, HPAU, Palampur and former Senior Scientific Advisor, Biotechnology, HP Government is at the helm of the management & functioning of the Foundation. The Shoolini University of Biotechnology and Management Sciences came into existence in September, 2009 under the auspices of the Foundation for Life Sciences and Business Management.

The University is committed to UGC regulations (2003) for Private Universities and also follows the guidelines of different regulatory bodies (AICTE, PCI, ICMR, ICAR, CSIR, etc.). The university has been accredited with B++ grade by National Assessment and Accreditation Council (NAAC). Partnerships with industry, academia and the Government is the special focus of the University. These linkages help in customizing education to the needs of the industry, leveraging the best available teaching resources, and participating in the quest for a better quality of life for the people in the region.

We believe that the prime objectives of the university is towards sustainable development of the Himalayan region in general and Himachal Pradesh in particular. It is intended to document, gratify its bio, physical and social reasons for developing strategic plan for the development of the Himalayan region.

UNIVERSITY PROFILE

Shoolini University is a leader in the field of academics & has made giant strides towards delivering quality education and research, & figures among Top 150 universities in the country as per MHRD National Rankings.

We are a non-profit multi-disciplinary private university with a vision to be a top 200 global university by 2022. In addition, we aspire to provide quality and relevant education to our students at an affordable and subsidized fee structure. To achieve this aspiration, we have designed our business model around five areas of focus: attracting and retaining top national & international faculty; forging alliances with industry & academia of repute; governing through values & transparency; building world class & environment friendly infrastructure; and attracting brilliant & needy students.



Prof. PK Khosla, honored with Himachal Dastak Award by Hon'ble Governor Acharya Dev Vrat

Nationally and internationally renowned academicians form the faculty at Shoolini University; two dozen are post-docs and 93 Ph.Ds. who are involved in guiding innovative research to over 200 PhD scholars in a vibrant research environment. University has attracted more than 250 million rupees as research grants on biotech and other disciplines, which are funded by various national organizations. Shoolini has strategic academic alliances with leaders such as Genpact; Anand Automotive Group; several universities across the globe.

Best in Class Faculty

Always at the forefront of teaching and learning of high quality, Shoolini University is setting new benchmarks for higher education in the region. This has been possible by engaging highly qualified & well-informed faculty, fully knowing that excellence of its academic staff shapes an enriched learning experience for the students.

The university has superb teaching facilities, which include modern lecture theatre technology, state-of the art laboratories and online teaching tools. The programs are supported by a range of innovative teaching and learning methods that stimulate students to develop their full potential.

We have adopted a four-tier faculty policy to attract outstanding and experienced teachers. The top tier includes learned and established scholars ‘Professors of Eminence’. The mid-tier includes Post Doc teachers from internationally acknowledged centres of excellence or holding mid-career positions in corporate sectors.



Prof. P.K. Khosla, Vice Chancellor of Shoolini University, receiving Shiksha Ratan Award

High Impact Research

Shoolini University has adopted a research-driven model making it one of India's most research-intensive universities. Shoolini's focus of research is centered on the economics, biodiversity and sustainability of the Himalayas.

Our researches relate to interdisciplinary challenges that cross traditional boundaries – from linking biotechnology to biodiversity conservation, sustainability and human health, nanotechnology, low cost food processing technologies, non-conventional energy resources, to address the complexity of climate change not only through basic and environmental sciences but also through management sciences.

We have many state-of-the-art regularly refurbished research laboratories. Various national research-funding agencies like DST, DBT, ICMR, DRDO, MNRE, DAE etc. have taken cognizance of the university's research potential and have extended Rs. 250 million as research grants. This is also substantiated by a growing list of patents (300+ patents filed including three international) and over 847 SCOPUS listed research papers with total citation of 8109. The university is privileged to have the highest '**h**' index of **45** as compared to its contemporaries in North India.

In a big boost to the novel research efforts of Shoolini University, the Government of Himachal Pradesh has also sanctioned an Intellectual Property Rights (IPR) cell to the institution. The DST sponsored cell will work in close collaboration with HP Patent Information Centre (HPPIC) housed in the State Council for Science, Technology, and Environment, H.P.



Great mind set work at Shoolini University laboratory

Great Learning Begins Here

Infrastructure is a step ahead of the rest in terms of quality & innovation. With constant improvements, we strive to make students stay with us enjoyable with state-of-the-art infrastructure built aesthetically and thoughtfully to enhance their learning experience.

The beauty of Shoolini's natural surroundings of the Himalayas and its built-up environment amidst the pines are its key assets. 20.1-acre sylvan campus has world-class infrastructure that facilitates excellence in academics and research and provides a fun filled and friendly atmosphere supported by extracurricular activities. In addition, the university embody more than 30 acres of farm land where it is maintained by supporting B.Sc. (Hons.) degree program in agriculture. The establishment of Yogananda Ville over 10 acres of land as a venue for yogic retreats is another landmark of the Shoolini University. We have also been sanctioned a hospital on Naturopathy & Yoga by CCRYN, Ministry of Ayush. Through another partial philanthropist/ partial support of Rs. one crore, we are also setting up a world class Cancer Research Centre.

The campus is fully Wi-Fi and has central as well as departmental IT facilities. A number of research and central instrumentation labs are in place for the benefit of the students. Shoolini has laid special emphasis on providing all information to the students online. Under this initiative, lectures taught at the university are accessible to the students through our learning management system 'eUniv'. Even the facilities at Yogananda library can be accessed online.

The university houses an indoor sports complex, which has a modern gymnasium and badminton, table tennis, and boxing facilities and student's activity center with a 200-seated mini Cineplex. Outdoor sports facilities include a multipurpose playground, basketball/ volleyball and tennis court, obstacle course and cricket ground pitch. In addition, the students also have the facility for a yoga cum meditation center in the campus.

Our Knowledge Initiatives

With the „Guru“ Series of Lectures, we bring eminent personalities to Shoolini to speak on topics of broad interest, providing a platform for intellectual discourse.

More than 110 distinguished personalities have so far delivered lectures on various topics of importance and relevance to the society. Some notable among them are:



Prof. Peter Raven
President Emeritus Missouri
Botanical Garden



Anandmurti Gurumaa
Spiritual Leader



Dr. RS Paroda,
Former DG ICAR



Lt. Gen Kamal Davar
Former DG, DIA
(Indian Army)



Yuji Nishikawa
India Liaison Representative
JST



Major Priya Jhingan
Indian Army's first
woman officer

Unique Skill Enhancement

We encourage our students to develop key employability attributes through various skill enhancement modules and constantly seek ways of adding value to them.

A specially developed program Skills Progression through Rapid Intensive and Innovative Training" (SPRINT) has been incorporated as an integral component of the curriculum.

The 'SPRINT' module is inspired by Stanford's mini-MBA program – designed significantly to upgrade soft skills and capabilities of students, and enhance their employability. Led by top corporate and industry leaders, the module involves exhaustive subject matter sessions combined with technical & soft skills based on highly interactive approach.

Skill enhancement SPRINT program

High Engagement Delivery Model	Team Based Program	Focused Content and Delivery	Business Plan Wrapper
<ul style="list-style-type: none"> • Focus on replacing lecture-based approach with case study methodology to drive participation • Mentors assigned to teams for granular and continuous support • and monitoring of individual's performance • Focus on making all discourses interactive and highly participative. 	<ul style="list-style-type: none"> • Division into 6-8 member teams for the entire period to ensure learning from group dynamics • Assignment of team captains and mentors • Frequent team building exercises /activities to help understand the importance of teams and maintain team excitement • Team-wise performance measurement 	<ul style="list-style-type: none"> • Targeted Sessions 1. Intensive coaching of relevant course related concepts 2. Communication & personal skills 3. MS office suite & other necessary technical skills 4. Internal and external faculty with vast relevant experience • High focus on practical business needs • Use of innovative teaching tools – case studies, video, recordings, role plays & workshops 	<ul style="list-style-type: none"> • Frequent interaction with Industry experts for: <ol style="list-style-type: none"> i. Exposure ii. Awareness iii. Understanding requirements of the corporate world • Industry visits

The outcome enhances the confidence, attitude and effectiveness of the students. Another skill development initiative, SPRINT- the Persona Enhancement Program, is designed to develop and hone essential career enhancing competencies such as verbal and written communication, confidence building and a wide range of topics related to soft skills. It is a credit course all across the university and carries the same weightage as other core subjects.

We also encourage our students to engage in extra-curricular activities, which help them to recognize personal attributes and transferable skills they are developing.



Prof. JM Julka, Shoolini University, discussing ‘Career Options’ in Darwin treehouse e-Univ Initiative

In today’s world of web dominated networks, online education can have a profound impact – better education and broadly disseminating knowledge to students worldwide.

We are leveraging technology in a big way to connect and bring knowledge resources available across the world to facilitate learning and research at Shoolini. Today’s digital savvy students expect their learning environment to include technology because it is an intrinsic part of their lives. Through our online eUniv initiative, we supplement classroom learning by providing students free access to all teaching material (including PPTs, video lectures) on 24x7 basis so that they can clarify their doubts at any point of time.

My Shoolini app

myShoolini app is a student & faculty developed app (Android & iOS) for end-to-end digitization & knowledge management of Shoolini University’s activities. myShoolini uses high end technology tools such as AI & predictive learning. myShoolini includes:

1. eUniv – Shoolini’s moodle based (predictive learning) 24x7 flip classroom platform & LMS.

2. eUniv has 6,000+ users with access to 5,00,000 unique content. eUniv also hosts Shoolini's secure online examinations module.
3. Sikander – Shoolini's AI & ML based (speech & face recognition) interview & skill learning module. Over 2,000 students are actively using Sikander.
4. myYKC – Shoolini's knowledge management system - digitizes & provides access to over 1 million books & journals to Shoolini faculty & students along with digitizing the library process.
5. Others – a) GPS based transport module b) Face recognition-based attendance module c) AI Based central time tabling module d) Hostel module e) Social networking module f) Payments module g) Grievance Redressal module.

Social Responsibility Initiatives

Social responsibility is as much a part of Shoolini University's philosophy & culture as excellence. Various activities are undertaken on a regular basis e.g. blood donation camps, tree plantation and cleanliness drives, women empowerment, practical training to local villagers in food processing, cancer awareness camps, providing guidance to farmers on new technologies, adoption of a village with targeted social programs, improving economic conditions of the poor & a Government Primary School with students mostly from weaker section of the society.

We take great pride in spurring scientific creativity and innovation in school children, being pro-active in extending the Department of Science and Development INSPIRE program, for which Shoolini has been nominated the nodal institution. Till date, we have enthused over 7000 budding scientists from various schools of Himachal Pradesh.

For these students, we have introduced a unique five-year integrated B.Sc. (Hons.) and M.Sc. course which is a fully free education program (including free lodging and boarding) and supported thorough INSPIRE scholarships & from the varsity's own coffers. We have also instituted significant number scholarships for removing the barriers to higher education for low income group students/ single parent child (mother surviving) / single girl child.



Prof. H.C. Sharma, Vice Chancellor of University of Horticulture and Forestry, Nauni addressing in 28th INSPIRE Science Camp

Himalayan Development & Sustainability - where Excellence strives

Shoolini University is addressing the challenges of development & sustainability of the Himalayan region, a fragile eco-system witnessing industrialization exploitation & undergoing tremendous strain; cloud bursts in Ladakh, Uttarakhand & the recent devastation due to the earthquake in Nepal stand testimony.

The Centre of Research on Himalayan Development and Sustainability (CRHDS) was inaugurated by Nobel Laureate Robert Huber to encourage and coordinate university-wide and external collaborative research focusing on the following five thrust areas:

- Biodiversity conservation
- Sustainable utilization of resources
- Health and well being
- Socio-economic development
- Disaster mitigation



Noble Laureate ‘Robert Huber’ interacting with Prof. Adesh Saini, Director Centre of Research on Himalayan Sustainability and Development

CRHDS hosted the first international dialogue on Himalayan Ecology, which saw the participation of leading environment activists and experts, policy makers and members of the judiciary.

CRHSD has also undertaken three years study on the restoration of productivity of fire affected forests using microbes. The Ministry of Environment, Forest and Climate Change, GOI has provided Rs. 42 lakhs as research grant for this project. Awareness workshops were also conducted in the nearby villages on ‘Understanding the breast and oral cancer awareness’ and ‘Losses during forest-fire’.

Centres of Excellence

Centres of Excellence at Shoolini University connect industry and academia to advance education, research and outreach in key areas.

Our centres of excellence provide a stimulating and supportive environment that nurtures the highest quality of research. Each centre acts as a hub for researchers, from students to professors, ensuring a dynamic, sustainable research base and active knowledge sharing.

A. Centre for Excellence in Automotive Education and Research

Centre for Excellence in Automotive Engineering has been established by joining hands with Anand Automotive, leaders in automotive engineering. It is the first such centre in the region providing academic excellence in automotive engineering at graduation, post-graduation and doctoral levels, along with imparting training to upgrade skills required for the automotive industry.

B. Centre of Excellence for Nanotechnology

Centre of Excellence in Nanotechnology provides common facilities for undertaking multidisciplinary research in nano-science and nanotechnology. The main objectives of the centre include joint research with national and international institutions, technology transfer and commercialization of research outcomes.

C. Centre for OMICS and Biodiversity Research

The Centre for OMICS at the Faculty of Applied Sciences and Biotechnology, aims to explore Himalayan biodiversity through OMICS approach including genome, transcriptomics and proteomics for bioprospecting of industrially imparted biomolecules and societal development and conservation.

D. Yogananda Centre for Yogic Studies

The centre aims to promote research and study of the ancient Indian Knowledge of Yoga and meditation.

E. Social Exchange

The University Campus is full of life with organized events and parties taking place throughout the year. The campus provides opportunities to get involved in inter-faculty cultural program, annual fest „MOKSH“, photography and painting contests, farewell and fresher’s parties, and educational trips. It is home to multiple student clubs and societies, which connect students with a stronger sense of community, while providing opportunities for interpersonal and leadership development:

- Art & Photographic Club
- Bawale Bawarchi
- Blood Bank Society
- Dramatics Club
- Entrepreneurship Society
- Institute of Engineers Chapter
- Raagrang
- National Service Scheme (NSS)
- Satrangi Strokes
- Shoolini Mountaineering Society
- Speakers' Forum
- Saksham

F. Center for Excellence in Renewable Energy

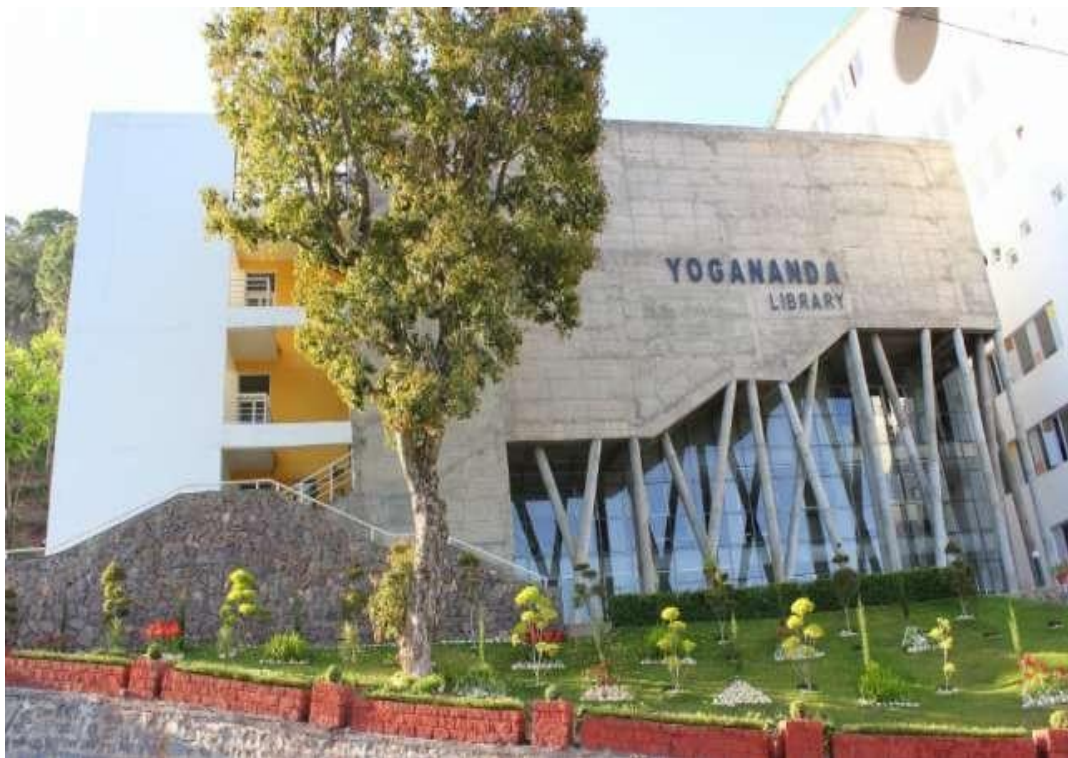
The main aim of the center is to stimulate research in the non-conventional yet clean forms of energy like solar, hydel, geothermal, tidal etc.

Our Innovative Initiatives

We have always valued excellence in teaching, allied to a strong research base, innovative cooperation with industry and skills development program.

a) Digitized Library

The State-of-the-Art Yogananda Library, inaugurated by Dr. APJ Abdul Kalam, is a blend of modernity, tranquility & green technology. It is digitized for searching the books and journals through computer linked to the university's network and is synched with the library of SILB, a sister organization in Solan town. All library facilities can now be accessed from anywhere through any computer with internet access. Students just need one „universal e-card“ for entrance to the library and checking out, issuing and returning of books and book hold alerts. Students may get books re-issued by using the same as long as these are not reserved by anyone.



Yogananda Library, Shoolini University

b) Defence Research & Development Centre (DRDC)

Shoolini University is proud to be one of the few engineering institutions that has been selected as a Defence Research and Development Cell (DRDC) at the ‘Defence Research Forum – 2014’ for invoking the engineering might of India for global leadership in the area of defence research. The goal of the DRDC is to give a major boost to defence research across the country by educating and engaging a

sizable section of engineering faculty and students about the needs of the specialized requirements of the defense sector. It would also take up defence research as a dominant focus of its academic research.

c) Foreign Languages, Fine Arts & Social Sciences Ad-on Program

To give an edge in employment to our students, the University has introduced the teaching of credit-based Foreign Language program like French, German, Chinese and more in near future.

d) INSPIRE Science Camps

Under Innovation in Science Pursuits for Inspired Research (INSPIRE) program of Government of India (GOI), we are organizing regular training camps in science for toppers in Class XII in Himachal Pradesh and more than 7,000 students have participated in 31 camps. The basic objective is to attract talent to the study of science at an early age.

e) Special NET/GATE & GPAT Coaching Classes

As a part of career development program for our students, we have introduced special coaching classes for the aspirants of National Eligibility Test (NET) determining their eligibility for lectureship & for award of Junior Research Fellowship (JRF). Coaching classes are also conducted for aspirants of Graduate Aptitude Test in Engineering (GATE) for admission in Postgraduate Programs in Engineering & GPAT for admission in Post Graduate Programs in Pharmacy at the national level. The coaching fee is modest and subsidized.

f) Free Education for Board Toppers in Science Stream

For the 1% toppers in Class XII School Board examination in science stream, Shoolini has introduced a unique B.Sc. (Hons) course which is a free education program supported through INSPIRE scholarships and the University's coffers.

g) Open Elective Courses

It is crucial to provide students a broad-based education that prepares them for successful careers in today's ever-changing workplace. To gain a wider view of the

world, we offer our students a wide range of open electives that are outside their chosen program. Currently, we are offering 35-40 open electives (list available at www.shooliniuniversity.com)

h) Our English Language Program

The medium of teaching at Shoolini University is English and the students are required to have minimum proficiency in English language for them to be more intuitive and effective in class. Keeping in view the poor standard of English of students, especially with rural/ semi urban background, Shoolini University has initiated a range of English language programs that will build upon their current skills and help them to meet their personal and professional goals. The English language programs offer an inspiring learning environment for the students to explore and take part in activities that complement the development of their English skills.

i) Academic English

Academic English courses provide intensive language teaching from beginner to advanced levels along with the development of academic skills for grasping the subject matter at the undergraduate or graduate level courses.

j) General English

General English is a flexible, intensive language program for beginner through advanced levels that is augmented with a wide range of optional modules, as well as social and cultural activities. This program is designed for students who want to improve their ability to use English in everyday life or for professional purposes.

k) Language Lab

The lab is equipped with different audio - visual facilities to foster language learning in a fun, creative environment. The highlights of lab include an exciting language software called 'Duolingo', which is a language learning application that can be downloaded from Play store. The software provides users access to about 30 languages, which include online classroom discussions, tests, worksheets and assignments.

PART A

Institutional Information

PART A: Institutional Information

1. Name and Address of the Institution:

Name of the Institution	Shoolini University of Biotechnology and Management Sciences
Address of the Institution	Village Bajhol, Post Office Sultanpur, District Solan, Himachal Pradesh. PIN – 173229

2. Name and Address of the Affiliating University: Not Applicable

3. Year of Establishment of the Institution:

2009

4. Type of the Institution:

University

Deemed University

Autonomous

Affiliated

Any Other (Please specify)

5. Ownership Status:

Central

Government State

Government

Grant-in-Aid

Self-financing

Trust

Society

Section 25 Company

Any Other (Please specify)

Provide Details:

6. Other Academic Institutions of the Trust/Society/etc., if any:

Name of the Institution(s)	Year of Establishment	Programs of Study	Location
SILB	2004	BSc. Honors (Biotechnology) BSc. Honors (Microbiology), BBA, MSc Biotechnology, MSc. Microbiology, MSc. Chemistry, MSc. Botany	The Mall, Solan, Himachal Pradesh, 173212

7. Details of all the programs being offered by the Institution under consideration:

S. No.	Program Name	Year of Start	Intake at the start of the program	Increase in intake, if any (from the start)	Year of increase	AICTE Approval	Accreditation Status*
1	B. Com (Hons)	2010	30	90	2014	NA	Eligible but not applied
2	BBA	2014	40	60	2016		Not eligible for accreditation
3	BA (Hons) Economics	2015	60	0	----		
4	BA (Hons) English	2016	30	0	----		
5	BA Journalism and Mass Communication	2016	30	0	----		
6	B.Sc. Hospitality and Hotel Administration	2017	60	0	----		
7	B.Sc. Yoga	2017	40	0	----		
8	M.Sc. Yoga	2018	30	0	----		

9	MBA	2009	60	180	2013	Yes	Applying first time
10	PGDBM	2017	60	0	----	NA	Not eligible for accreditation
11	Ph.D. Management Sciences	2009	3	25	2010		Eligible but not applied
12	B.Tech Mechanical Engineering	2010	80	120	2011		Eligible but not applied
13	B.Tech Civil Engineering	2011	80	120	2013		Eligible but not applied
14	M.Tech. Mechanical Engineering	2013	18	0	----		Eligible but not applied
15	M.Tech. Civil Engineering	2014	18	0	----		Eligible but not applied
16	Ph.D. Mechanical Engineering	2013	3	6	2017		Not eligible for accreditation
17	Ph.D. Civil Engineering	2015	2	4	2017		Not eligible for accreditation
18	B.Tech ECE	2010	80	0	----		Eligible but not applied
19	B.Tech EE	2012	60	0	----		Not eligible for accreditation
20	B.Tech CSE	2009	60	120	2016		Eligible but not applied
21	B.Tech IT	2017	60	0	----		Not eligible for accreditation
22	B.Sc. (Hons) Mathematics	2016	30	15	2018		
23	M.Sc. Mathematics	2016	30	40	2017		
24	M. Tech CSE	2012	20	0	----	NA	Eligible but not applied
25	M. Tech ECE	2013	18	0	----		Eligible but not applied
26	Ph.D. Mathematics	2018	2	0	----		Not eligible for accreditation
27	B. Pharmacy	2009	30	100	2016	Yes	Applying first time

28	M. Pharmacy	2009	40	99	2010	NA	Eligible but not applied	
29	Ph.D. Pharmaceutical Sciences	2009	8	15	2012		Eligible but not applied	
30	B.Sc. (Hons) Biotechnology	2014	40	60	2015		Not eligible for accreditation	
31	B.Sc. (Hons) Microbiology	2014	40	60	2015			
32	B.Sc. (Hons) Food Technology	2016	30	20	2017			
33	M. Tech. Biotechnology	2010	12	20	2011			
34	M.Sc. Biotechnology	2009	40	80	2010			
35	M.Sc. Microbiology	2009	40	80	2011			
36	M. Phil Microbiology	2009	6	20	2010			
37	Ph.D. Biotechnology	2009	10	25	2012			Eligible but not applied
38	Ph.D. Microbiology	2009	10	15	2011			
39	B. Tech Biotechnology	2009	60	120	2010			
40	B. Tech Food Technology	2010	20	120	2017			
41	M.Sc. Food Technology	2014	20	30	2017			
42	M. Tech. Food Technology	2013	18	0	----			
43	Ph.D. Food Technology	2013	2	5	2017		Not eligible for accreditation	
44	B.Sc. (Hons) Agriculture	2018	60	0	----		Not eligible for accreditation	
45	B.Sc. (Hons) Botany	2015	15	30	2017			
46	B.Sc. (Hons) Zoology	2015	15	30	2017			

47	M.Sc. Botany	2011	30	75	2017		Eligible but not applied
48	M.Sc. Zoology	2015	30	75	2017		Not eligible for accreditation
49	M.Sc. Environmental Sciences	2016	10	15	2017	NA	Eligible but not applied
50	M. Phil Botany	2009	6	10	2017		
51	M. Phil Zoology	2011	5	0	----		
52	M. Phil Environmental Sciences	2011	5	0	----		
53	Ph.D. Botany	2009	6	10	2017		
54	Ph.D. Zoology	2009	2	5	2017		
55	B.Sc. (Hons) Chemistry	2015	15	40	2017		Not eligible for accreditation
56	M.Sc. Chemistry / Pharmaceutical Chemistry	2010	80	95	2017		Eligible but not applied
57	M. Phil Chemistry	2009	4	20	2010		
58	Ph.D. Chemistry	2010	5	15	2011		
59	B.Sc. (Hons) Physics	2015	15	30	2017		Not eligible for accreditation
60	M.Sc. Physics	2010	20	40	2015		Eligible but not applied
61	M.Sc. Statistics	2016	30	0	----		Not eligible for accreditation
62	Ph.D. Physics	2010	2	10	2012		Eligible but not applied
63	BALLB	2017	60	0	----		Not eligible for accreditation
64	LLB	2017	60	0	----		
65	MA English Literature	2016	15	0	----		

66	M.Phil Physics	2012	10	0	----		Eligible but not applied
67	Ph.D. CSE	2015	2	0	----		Not eligible for accreditation
68	Ph.D. ECE	2013	3	0	----		Eligible but not applied
69	Ph.D. Economics	2012	2	0	----		Eligible but not applied
70	Ph.D. Environmental Sciences	2011	5	0	----		Eligible but not applied
71	B. Pharmacy (Practice)	2017	40	0	----		
72	M. Phil Biotechnology	2010	10	15	2012		

Programs offered by the School of Pharmaceutical Sciences

S. No.	Program Name	Year of Start	Intake	Increase in intake, if any	Year of increase	AICTE Approval	Accreditation Status*
1.	B-Pharmacy	2009	60	100	2016	2009	Applying first time
2.	M-Pharmacy	2009	40	99	2010	2009	Eligible but not applied
3.	PhD	2009	08	15	2012	2009	Eligible but not applied

***Write applicable one**

- Applying first time
- Granted provisional accreditation for two/three years for the period (specify period)
- Granted accreditation for 5/6 years for the period (specify period)
- Not accredited (specify visit dates, year)
- Withdrawn (specify visit dates, year)
- Not eligible for accreditation
- Eligible but not applied
- **Note:** Add rows as needed

8. Programs to be considered for Accreditation vide this application:

S. No.	Program Name
1.	B-Pharmacy

9. Total number of employees:

A) Regular Faculty and Staff:

Items		CAY (2018-19)		CAY _{m1} (2017-18)		CAY _{m2} (2016-17)	
		Min	Max	Min	Max	Min	Max
Faculty in Pharmacy	M	15	15	13	13	11	11
	F	13	13	11	11	11	11
Faculty in Sciences & Humanities	M	10	10	10	10	10	10
	F	04	04	04	04	03	03
Non-teaching staff	M	05	05	05	05	05	05
	F	06	06	06	06	06	06

*** Means –**

Note: Minimum 75% should be Regular/Full Time faculty and the remaining shall be Contractual Faculty/Adjunct Faculty/Resource Source from industry as per AICTE norms and standards.

The contractual Faculty will be considered for assessment only if a faculty is drawing a salary as prescribed by the concerned State Government for the contractual faculty in the respective cadre and who have taught over consecutive 4 semesters.

CAY – Current Academic Year

CAYm1- Current Academic Year minus1= Current Assessment Year

CAYm2 - Current Academic Year minus2=Current Assessment Year minus 1

B) Contractual Staff (Not covered in Table A):

Items		CAY		CAYm1		CAYm2	
		Min	Max	Min	Max	Min	Max
Faculty in Pharmacy	M	1	1	1	1	1	1
	F	0	0	0	0	0	0
Faculty in Sciences & Humanities	M	1	1	0	0	1	1
	F	0	0	0	0	0	0
Non-teaching staff	M	01	01	01	01	01	01
	F	02	02	02	02	02	02

10. Total number of Pharmacy students:

Student Numbers (UG)	CAY (2018-2019)	CAYm1 (2017-2018)	CAYm2 (2016-17)
Total no. of boys	222	194	164
Total no. of girls	117	102	96
Total no. of students	339	296	280

(Instruction: The data may be categorized in tabular form in case institute runs UG, PG and doctoral programs, please prepare separate table for each level, if applicable)

Student Numbers (PG)	CAY (2018-2019)	CAYm1 (2017-2018)	CAYm2 (2016-17)
Total no. of boys	26	24	27
Total no. of girls	28	28	23
Total no. of students	54	52	50

Student Numbers (PhD)	CAY (2018-2019)	CAY_{m1} (2017-2018)	CAY_{m2} (2016-17)
Total no. of boys	7	10	9
Total no. of girls	12	11	7
Total no. of students	19	21	16

11. Vision:

11a. Vision of the University:

To be a top 200 global university by the year 2022.

11b. Vision of the School of Pharmaceutical Sciences:

To generate world class pharmacy professionals who are competent enough to efficiently fulfil the needs of pharmacy education, research and industry and are committed to serve the society with their professional expertise while being an indispensable part of healthcare team.

12. Mission:

12a. Mission of the University:

1. To provide the ideal environment for higher learning with a serene & beautiful campus, state-of-the-art facilities & a creative atmosphere conducive to excellence in pursuit of knowledge.
2. Be a knowledge leader in our selected specialties in the academia, and provide outsourcing and consultancy services to industrial/ organizational setups in this domain
3. Encourage our students to be 'balanced specialists', who excel in their own field, while being well-rounded through personality- development & extra-curricular activities.
4. Develop students who will be recruited by the best employers, and who will contribute to the economic vitality of the state & country.

12b. Mission of the School of Pharmaceutical Sciences:

1. To impart quality education utilizing innovative teaching methods and develop graduates with high standard technical, communication and leadership skills.
2. To stimulate the quest for excellence in research and scholarship, inculcate commitment to life-long learning, community service and social responsibility in students.
3. To focus research efforts on utilization of Himalayan flora for drug discovery for diseases of national relevance.

13. **Contact Information of the Head of the Institution and NBA coordinator, if designated:**

Head of the Institution	
Name	Prof. P. K. Khosla
Designation	Vice Chancellor
Mobile No.	+91 9816064182
Email id	vc@shooliniuniversity.com
NBA Coordinator	
Name	Dr. Deepak N. Kapoor
Designation	Dean
Mobile No.	9816991154, 9646142349
Email id	deanpharma@shooliniuniversity.com

Part B

Criteria Summary

Criterion- 1

Self-Assessment Report (SAR)

CRITERION 1	Vision, Mission and Program Educational Objectives	50
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1. **Vision, Mission and Program Educational Objectives (50)**

State the Vision and Mission (5)

Vision

To generate world class pharmacy professionals who are competent enough to efficiently fulfil the needs of pharmacy education, research and industry and are committed to serve the society with their professional expertise while being an indispensable part of healthcare team.

Mission

- To impart quality education utilizing innovative teaching methods and develop graduates with high standard technical, communication and leadership skills.
- To stimulate the quest for excellence in research and scholarship, inculcate commitment to life-long learning, community service and social responsibility in students.
- To focus research efforts on utilization of Himalayan flora for drug discovery for diseases of national relevance.

School of Pharmaceutical Sciences

The School of Pharmaceutical Sciences, in tune with the University vision and mission, aims to impart quality education in Pharmaceutical Sciences and to pursue research in areas relevant to the region and country. The School, established in 2009, is approved by AICTE and PCI and ranked 39th among all the Pharmacy Colleges in India by National

Institutional Ranking Framework (NIRF), Ministry of HRD, Government of India, 2019. As per NIRF ranking, it is among top 40 Pharmacy institutions for the last four consecutive years and only pharmacy school in Himachal Pradesh ranked in NIRF. The School offers B. Pharmacy, M. Pharmacy (Pharmaceutics, Pharmacology, Pharmaceutical Chemistry), and Ph.D. (Pharmaceutical Sciences).



The major research focus of the school is utilization of the Himalayan biodiversity for finding cures for unmet medical needs of the region. The faculty with doctoral and postdoctoral training from various national and international labs are focusing their research on drug delivery systems, natural products, molecular pharmacology, nanotoxicology and chemical biology to develop medication for major health problems such as diabetes, cancer, osteoporosis, psoriasis, Alzheimer's disease and malaria. The School has filed various patents that include isolation of bioactive compounds with anti-cancer, anti-Leishmaniasis and anti-osteoporotic activity. Another patent involves development of a novel formulation of thymoquinone for the treatment of dermal inflammatory disorders. The faculty members and students from the School have published various research and review articles in reputed SCOPUS or Thompson Reuters indexed national and international journals. The School has

obtained several extramurally funded projects from funding agencies such as ICMR, DBT DRDO and HIMCOSTE in relevant areas of pharmaceutical sciences providing students opportunity to work on wide range of research problems. The School also has MOUs with various industries such as Venus remedies Ltd., Tirupati Medicare Ltd. and Meridian Medicare Ltd. The faculty is involved in consultancy research projects with several research organizations and pharmaceutical industry. Joint projects with industry are also being submitted to various funding agencies. The School has a strong and proactive placement team that ensures placements of the students in reputed pharmaceutical organizations. Currently, the alumni of the School are well placed in renowned pharmaceutical industries such as Abbott, Novo Nordisk, Paraxel, Cipla, Mankind, IDS, Sentiss, eTeam, Morepen, Venus Remedies, Tirupati Medicare and many more.

The School follows standardized curriculum as prescribed by Pharmacy Council of India. The soft skills development program, SPRINT, focuses on personality, communication skills and liberal arts thus helping the student to prepare for the rigor of professional life. The invited lectures from experts from Industry and Academia are organized regularly to make students aware of current trends in industry and research. The School also has adjunct faculty from Industry who visit the School from time to time to share their experiences with the students. The eUNIV initiative of the University help the student to learn and explore in an innovative manner. Apart from modern library facilities, students and faculty have access to thousands of books and journals through subscriptions to library databases such as EBESCO and DELNET. Centralized laboratory system of the University provides modern laboratory facilities equipped with UPLC, HPTLC, GCMS, HPLC, FTIR, texture analyser etc. to train our students and to meet the aspirations of pharmaceutical industry. Industrial and Research lab visits at world class facilities are arranged to inculcate in students a sense of competition and an urge to be at best place. Special and guest lectures are organized regularly on topics where students need additional help. Students and faculty members are encouraged to participate in national and international conferences, seminars and workshops. School has organized various workshops sponsored by agencies such as ICMR, DST and industry.

In the era where employers are looking for students with proper balance of technical and soft skills, the programs in the School help develop professionals with high technical competence. The vision of the School is to generate world class pharmacy professionals who are competent enough to efficiently fulfil the needs of pharmacy education, research and

industry and are committed to serve the society with their professional expertise while being an indispensable part of healthcare team.

State the Program Educational Objectives (PEOs) (5)

Graduates of B. Pharm.

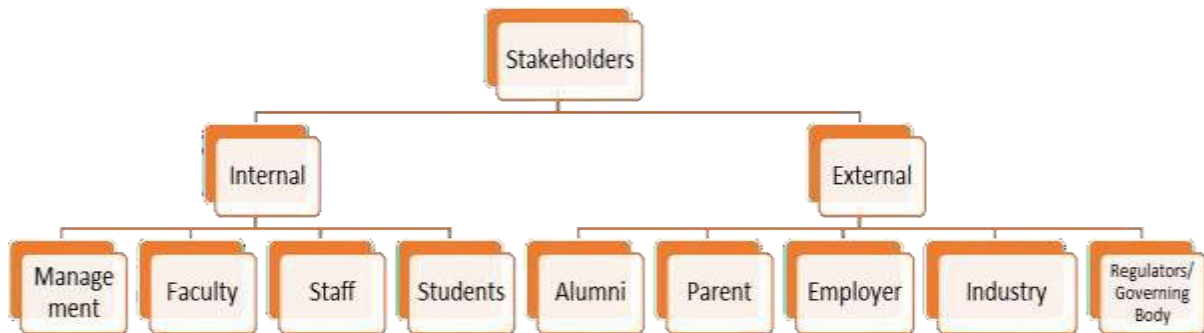
- PEO1: shall be able to utilize their scientific and technical skills for drug and dosage forms development and meet the requirements of academia industry and research.
- PEO2: shall be able to utilize their professional skills in the practice of Pharmacy as Hospital, Clinical or Community Pharmacists.
- PEO3: shall follow principles of professional ethics, display effective communication skills and should be able to work as a team with fellow Pharmacists and other healthcare professionals for the benefit of society.
- PEO4: should strive to pursue higher education, participate in continuous education programs and other related professional activities in order to keep abreast with the latest developments in the field.

Indicate where and how the Vision, Mission and PEOs are published and disseminated among stakeholders (15)

Vision, mission and PEOs are published and disseminated among stakeholders namely students, faculty, parents, industry, regulating authorities, alumni, management, etc. using:

- a) University Website
- b) University application available at play store [myShoolini (Official AADDOO)]
- c) School brochure
- d) Notice boards
- e) Direct communication by orientation programs to freshers/parents, induction programs to staff members.
- f) Interaction with students in classrooms.

List of stakeholders:



Various types of stakeholders

Students:

- Most prominent role in the program
- Their feedback is considered to introduce innovative teaching and learning methodologies
- Their input helps the program to introduce the elective programs to meet the changing trends

Faculty:

- Plays a vital role in working of the program
- Involved in various committees to check the consistency of the program
- Provides input for designing the program, establishment and PEOs/POs. course outcomes and assessment
- Mentoring of the students

Alumni:

- They are a measure of long-term success of the program
- Alumni feedback helps in curriculum design to meet the changing trends in management.
- Recollect their existence during their stay in the institute and advise the school with necessary inputs with respect to student's career.
- They are the ambassadors of the program
- Act as a mentor of the student

Employer:

- Represents the major end users of the graduates
- Gives inputs to overcome the gap between program and industry.

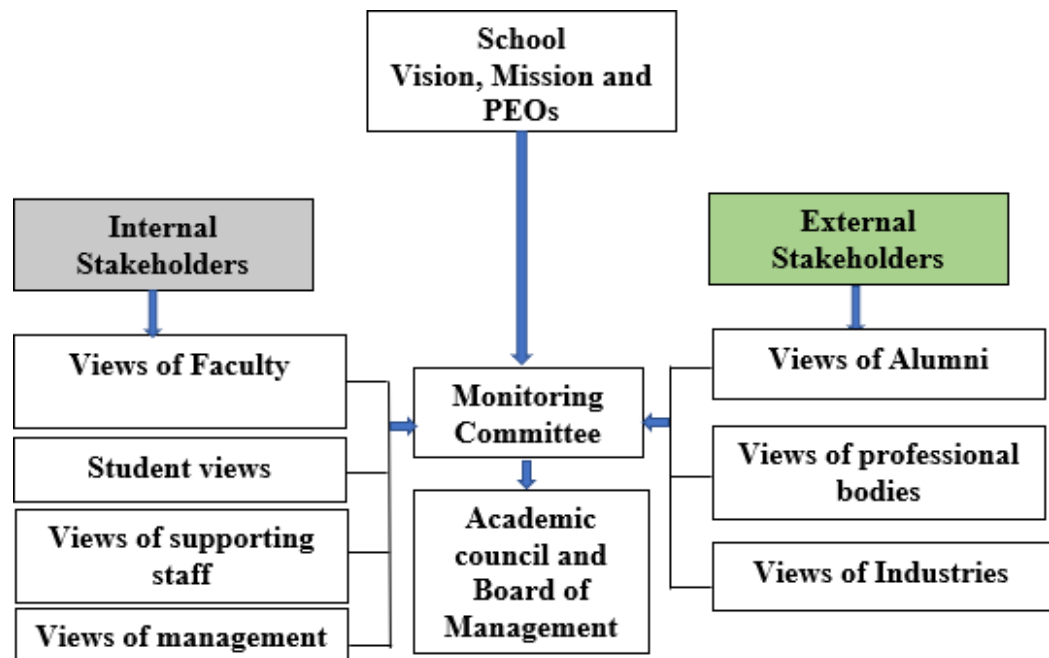
Parents:

- Expect their wards to have good professional career and higher education and become responsible citizens

Regulatory bodies:

- Provide guidelines and regulations to run the programs.

State the process for defining the Vision & Mission and PEOs of the program (10)



Process for Defining Vision, Mission and PEOs

The School established its vision and mission through consultative process involving the stake holders of the School such as management, faculty, students, staff, parents, alumni and employers, the future scope and the societal requirements.

The development of Program Educational Objectives is a continuous process and has evolved over a period of time. Vision, mission and PEOs are established through the following steps:

Step 1) Vision and Mission of the university were taken as basis for formulating the vision and mission of the School.

Step 2) Views were taken from the key constituents both internal and external stakeholders.

Step 3) Accepted views are analyzed and reviewed to check the consistency with the vision and mission of the School by the monitoring committee.

Step 4) Monitoring committee summarizes the collected views and expresses its opinion on the same, based on these views PEOs are established and forward to Academic council for consideration and approval.

Step 5) Final approval is given by Board of Management.

Inputs considered for establishing the PEOs:

Faculty interaction:

The members of the teaching faculty as course coordinators play an important role in establishing PEOs. They are responsible for generating, altering and analyzing all the activities related to the achievement of the course outcomes.

Alumni feedback:

Alumni have intimate knowledge of the program and play a vital role in the assessment of PEOs. Alumni feedback is obtained through alumni survey. Alumni meet is conducted twice a year.

Employer feedback:

Corporate insight/performance of the graduates with other employees of the organization is through employer feedback.

School Academic Committee (SAC):

It consists of Dean as the chairperson, Program Directors and course coordinators. It provides guidelines for program academic and administrations unit, revision of the courses and the curriculum. The respective members of the committee meet frequently to identify the need for revision in curriculum and course content. The entire process is guided by external experts.

Opinion and views of other stakeholders were also taken informally during discussion and other meetings.

Establish consistency of PEOs with Mission of the Institute (15)

The Program Education Objectives have evolved through a consultative process wherein the views and opinion of all the stakeholders were taken into consideration. The PEOs are highly consistent with the mission statement as School of Pharmaceutical Sciences aims to produce pharmacy graduates that are highly competent, employable and have high ethical values.

Mapping of PEOs vs. Mission of School of Pharmaceutical Sciences

1. Slightly (Low) 2. Moderate (Medium) 3. Substantial (High)

PEO Statements	M1 (To impart quality education utilizing innovative teaching methods and develop graduates with high standard technical, communication and leadership skills)	M2 (To stimulate the quest for excellence in research and scholarship, inculcate commitment to life-long learning, community service and social responsibility in students)	M3 (To focus research efforts on utilization of Himalayan flora for drug discovery for diseases of national relevance)
PEO1: shall be able to utilize their scientific and technical skills for	3	3	2

<p>drug and dosage forms development and meet the requirements of academia industry and research.</p>			
<p>Justification: Both theoretical knowledge and technical expertise are required to efficiently work in academic or industry environment. This needs in-depth and continuous exposure in all the relevant fields of pharmaceutical sciences, life sciences and medical sciences. As the University is located in the Himalayas, it provides us with useful source of medicinal plants. The school strives to utilize the available resources for development of Himalayan plants-based drugs and drug products.</p>			
<p>PEO2: shall be able to utilize their professional skills in the practice of Pharmacy as Hospital, Clinical or Community Pharmacists.</p>	<p>3</p>	<p>3</p>	<p>1</p>
<p>Justification: The practice of pharmacy profession require excellent professional skills and updated knowledge of drugs as the expertise and information is required by physicians, patients and fellow pharmacists. The pharmacist should be able to efficiently provide his services while practicing in all types of pharmacy set-ups.</p>			
<p>PEO3: shall follow principles of professional ethics, display effective communication skills and should be able to work as a team with fellow Pharmacists and other healthcare professionals for the benefit of society.</p>	<p>3</p>	<p>3</p>	<p>2</p>

<p>Justification: Pharmacy is the profession that works for the health of the patient and overall well-being of benefit of society. Thus, the pharmacist should be aware of the ethical principles and should have good communication skills in order to effectively interact with other professionals and patients.</p>			
<p>PEO4: should strive to pursue higher education, participate in continuous education programs and other related professional activities in order to keep abreast with the latest developments in the field.</p>	3	3	1
<p>Justification: Pharmacy is a science that is continuously evolving in terms of discovery of new drugs, development of novel formulations, advancements in the pharmaceutical technology and revisions in regulatory guidelines. It is important for a pharmacist to be well informed and aware of the latest development in the field.</p>			

Note: M1, M2,..., Mn are distinct elements of Mission statement. Enter correlation levels 1, 2 or 3 as defined below:

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

It there is no correlation, put '-'

Note: In this document wherever the term 'Process' has been used its meaning is process formulation, notification and implementation.

Criterion- 2

CRITERION 2	Program Curriculum and Teaching Learning Processes	150
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2. Program Curriculum and Teaching-Learning Processes (150)

Program Curriculum (40)

Delivery of Syllabus Contents and compliance of the curriculum for attainment of POs (10)

(State the contents of the syllabus; about the course/learning material/content/laboratory experiments/projects etc. also mention identified curriculum gaps, if any)

***Note:** In case all POs are being demonstrably met through University Curriculum then 2.1.2 will not be applicable and the weightage of 2.1.1 will be 30.*

As School of Pharmaceutical Sciences of Shoolini University is approved by Pharmacy Council of India (PCI), the course of study for B. Pharm has been extended over a period of eight semesters (four academic years) and six semesters (three academic years) for lateral entry students. The curricula and syllabi for the program have been prescribed from time to time by PCI, New Delhi. B. Pharmacy batches starting from July, 2017 strictly follows, all the subjects and their syllabus of theory as well as practical as prescribed by PCI while batches earlier to 2017 following the syllabus designed by the panel of Board of Studies of Shoolini University.

Program/Course credit structure by PCI:

As per the philosophy of Credit Based Semester System, certain quantum of academic work viz. theory classes, tutorial hours, practical classes, etc. are measured in terms of credits. On satisfactory completion of the courses, a candidate earns credits. The amount of credit associated with a course is dependent upon the number of hours of instruction per week in that course. Similarly, the credit associated with any of the other academic, co/extra-curricular activities is dependent upon the quantum of work expected to be put in for each of these activities per week.

Credit assignment: Theory and Laboratory courses

Courses are broadly classified as Theory and Practical. Theory courses consist of lecture (L) and /or tutorial (T) hours, and Practical (P) courses consist of hours spent in the laboratory. Credits (C) for a course is dependent on the number of hours of instruction per week in that course, and is obtained by using a multiplier of one (1) for lecture and tutorial hours, and a multiplier of half (1/2) for practical (laboratory) hours. Thus, for example, a theory course having three lectures and one tutorial per week throughout the semester carries a credit of 4. Similarly, a practical having four laboratory hours per week throughout semester carries a credit of 2.

Minimum credit requirements

The minimum credit points required for award of a B. Pharm. degree is 208. These credits are divided into Theory courses, Tutorials, Practical, Practice School and Project over the duration of eight semesters. Courses generally progress in sequences, building competencies and their positioning indicates certain academic maturity on the part of the learners. Learners are expected to follow the semester-wise schedule of courses given in the syllabus. The lateral entry students shall get 52 credit points transferred from their D. Pharm program. Such students shall take up additional remedial courses of 'Communication Skills' (Theory and Practical) and 'Computer Applications in Pharmacy' (Theory and Practical) equivalent to 3 and 4 credit points respectively, a total of 7 credit points to attain 59 credit points, the maximum of I and II semesters.

At the same time, Mathematics and Biology streams of students admitted into first year B. Pharmacy have to study biology (theory and laboratory) and mathematics respectively. Accordingly, syllabus is prescribed and steps are taken to give adequate time to bridge the gaps.

The list of subjects and its structure for the B. Pharmacy course under Shoolini University is given below. The University continues with the marks - pattern for the evaluation and the award of degree to the students.

Course of study for B-Pharmacy 1st to 4th semester according to PCI content of syllabus

1st semester				
Course code	Name of the course	No. of hours	Tutorial	Credit points
BP101T	Human Anatomy and Physiology I– Theory	3	1	4
BP102T	Pharmaceutical Analysis I – Theory	3	1	4
BP103T	Pharmaceutics I – Theory	3	1	4
BP104T	Pharmaceutical Inorganic Chemistry – Theory	3	1	4
BP105T	Communication skills–Theory *	2	-	2
BP106RBT BP106RMT	Remedial Biology/ Remedial Mathematics–Theory*	2	-	2
BP107P	Human Anatomy and Physiology – Practical	4	-	2
BP108P	Pharmaceutical Analysis I – Practical	4	-	2
BP109P	Pharmaceutics I – Practical	4	-	2
BP110P	Pharmaceutical Inorganic Chemistry – Practical	4	-	2
BP111P	Communication skills – Practical*	2	-	1
BP112RBP	Remedial Biology – Practical*	2	-	1
Total		36	4	30

#Applicable ONLY for the students who have studied Mathematics / Physics / Chemistry at HSC and appearing for Remedial Biology (RB)course.

\$Applicable ONLY for the students who have studied Physics / Chemistry / Botany / Zoology at HSC and appearing for Remedial Mathematics (RM)course.

* Non University Examination (NUE)

2nd semester				
Course code	Name of the course	No. of hours	Tutorial	Credit points
BP201T	Human Anatomy and Physiology II – Theory	3	1	4
BP202T	Pharmaceutical Organic Chemistry I – Theory	3	1	4
BP203T	Biochemistry – Theory	3	1	4
BP204T	Pathophysiology – Theory	3	1	4
BP205T	Computer Applications in Pharmacy – Theory *	3	-	3
BP206T	Environmental sciences – Theory *	3	-	3
BP207P	Human Anatomy and Physiology II –Practical	4	-	2
BP208P	Pharmaceutical Organic Chemistry I– Practical	4	-	2
BP209P	Biochemistry – Practical	4	-	2
BP210P	Computer Applications in Pharmacy – Practical*	2	-	1
Total		32	4	29

3rd semester				
Course code	Name of the course	No. of hours	Tutorial	Credit points
BP301T	Pharmaceutical Organic Chemistry II – Theory	3	1	4
BP302T	Physical Pharmaceutics I – Theory	3	1	4
BP303T	Pharmaceutical Microbiology – Theory	3	1	4
BP304T	Pharmaceutical Engineering – Theory	3	1	4
BP305P	Pharmaceutical Organic Chemistry II – Practical	4	-	2
BP306P	Physical Pharmaceutics I – Practical	4	-	2
BP307P	Pharmaceutical Microbiology – Practical	4	-	2
BP 308P	Pharmaceutical Engineering – Practical	4	-	2
Total		28	4	24

4th semester				
Course code	Name of the course	No. of hours	Tutorial	Credit points
BP401T	Pharmaceutical Organic Chemistry III– Theory	3	1	4
BP402T	Medicinal Chemistry I – Theory	3	1	4
BP403T	Physical Pharmaceutics II – Theory	3	1	4
BP404T	Pharmacology I – Theory	3	1	4
BP405T	Pharmacognosy and Phytochemistry I– Theory	3	1	4
BP406P	Medicinal Chemistry I – Practical	4	-	2
BP407P	Physical Pharmaceutics II – Practical	4		2
BP408P	Pharmacology I – Practical	4	-	2
BP409P	Pharmacognosy and Phytochemistry I – Practical	4	-	2
Total		31	5	28

Course of study for B-Pharmacy 5th to 8th semester according to Shoolini University content of syllabus

5th semester					
Subject	Subject Code	Hours	Total Credit Hrs.	Credit Hrs.	Total Credit Hrs.
Hospital & Community Pharmacy	PHR-PT-351	2	32	2	24
Hospital & Community Pharmacy Practical	PHR-PT-351(P)	2		1	
Pharmacognosy III	PHR-PG-352	3		3	
Pharmacognosy III Practical + Tutorial	PHR-PG-352(P)	3		2	
Medicinal Chemistry-I	PHR-PC-353	3		3	
Medicinal Chemistry-I Practical + Tutorial	PHR-PC-353(P)	4		2	
Pharmacology II	PHR-PT-354	3		3	
Pharmacology II Practical + Tutorial	PHR-PT-354 (P)	4		2	
Pharmaceutical Technology	PHR-PT-355	3		3	
Pharmaceutical	PHR-PT-355 (P)	3		2	

Technology Practical + Tutorial				
Project	PHR-PR-356	2		1

6th semester					
Subject	Subject Code	Hours	Total Credit Hrs.	Credit Hrs.	Total Credit Hrs.
Biopharmaceutics and Pharmacokinetics	PHR-PT-361	3	34	3	26
Biopharmaceutics and Pharmacokinetics Practical + Tutorial	PHR-PT-361(P)	5		3	
Medicinal Chemistry-II	PHR-PC-362	3		3	
Medicinal Chemistry-II Practical	PHR-PC-362(P)	5		3	
Pharmaceutical Jurisprudence	PHR-PT-363	3		3	
Chemistry of Natural Products	PHR-PG-364	3		3	
Chemistry of Natural Products Practical + Tutorial	PHR-PG-364(P)	3		2	
Pharmacology III	PHR-PL-365	3		3	
Pharmacology III Practical + Tutorial	PHR-PL-365(P)	4		2	
Project	PHR-PR-366	2		1	

7th semester					
Subject	Subject Code	Hours	Total Credit Hrs.	Credit Hrs.	Total Credit Hrs.
Pharmaceutical Technology II	PHR-PT-471	3	34	3	25
Pharmaceutical Technology II Practical + Tutorial	PHR-PT-471 (P)	3		2	
Pharmacovigilance	PHR-PL-472	3		3	
Pharmacovigilance Practical + Tutorial	PHR-PL-472 (P)	3		2	
Pharmaceutical Management	PHR-PT-473	3		3	

Medicinal Chemistry & Cheminformatics	PHR-PC-474	3		3	
Medicinal Chemistry & Cheminformatics Practical + Tutorial	PHR-PC-474 (P)	4		2	
Pharmaceutical Biotechnology	PHR-PT-475	3		3	
Pharmaceutical Biotechnology Practical + Tutorial	PHR-PT-475 (P)	3		2	
Project Literature Seminar/Approval	PHR-PR-476	6		2	

8th semester					
Subject	Subject Code	Hours	Total Credit Hrs.	Credit Hrs.	Total Credit Hrs.
Clinical Pharmacotherapeutics	PHR-PL-481	3	29	3	19
Industrial Pharmacognosy	PHR-PG-482	3		3	
Industrial Pharmacognosy Practical + Tutorial	PHR-PG-482 (P)	4		2	
Pharmaceutical Analysis-II	PHR-PC-483	3		3	
Pharmaceutical Analysis-II Practical + Tutorial	PHR-PC-483 (P)	4		2	
Chemical Biology	PHR-PC-484	3		3	
Project	PHR-PR-485	9		3	

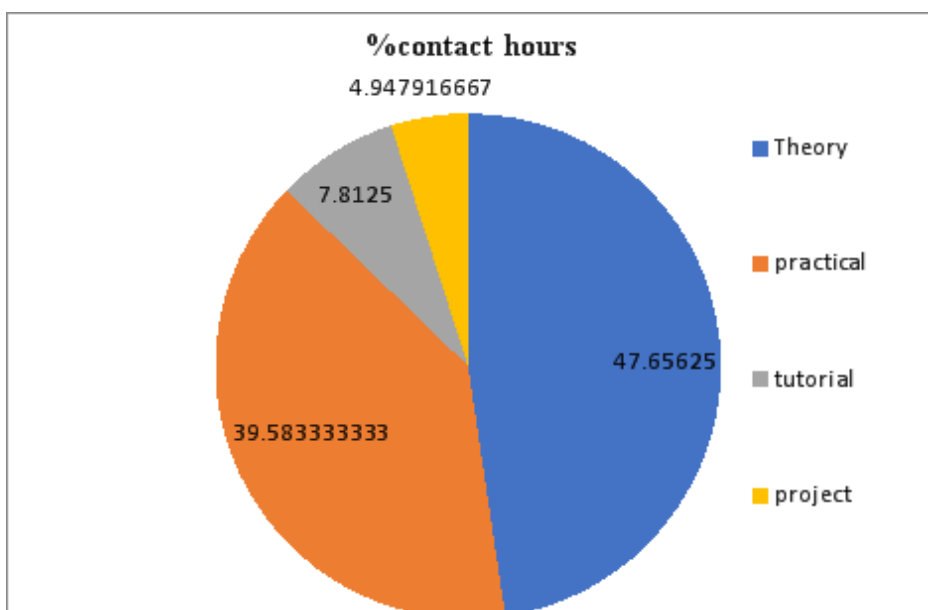


Figure 2.1: Percent contact hours of different component

Contents of each course, projects – Core Pharmacy Courses (Theory)

(Practical related content is described in 2.2.7)

1 st semester	
BP101T	Human Anatomy and Physiology I– Theory
<p>Anatomy, physiology and health education theory course is designed to provide elementary knowledge about anatomical features, histological features and physiological functioning of systems and organs. The students acquire knowledge about the generating and transmitting nerve impulses. The course design provides significant understanding about the cardio-vascular system and blood physiology including thrombosis and embolism. The course ensures the ability to assimilate the concepts of cardio-vascular system and blood physiology. It also describes the anatomical features and functioning of respiratory and digestive systems. The emphasis is given to the endocrine systems (thyroid, pancreas, pituitary, parathyroid, adrenal glands & gonads) including their functioning. Focus is given to gain knowledge about the diuretic system. Focus is also given to the appreciation of basic anatomy and physiology of the sensory organs (eye, ear, taste buds, nose and skin). The students also gain adequate knowledge about the inflammation process, edema and shock. The course also imparts on the nutritional values of vitamins and their deficiency disorders. The students should be able to:</p>	

1. Describe the various physiological aspect of the human body,
2. Explain various systems in coordination with various organs and tissues
3. Explain pathological and diseased process and repair mechanism of various systems, and
4. Acquire the knowledge regarding health education in human life.

BP102T

Pharmaceutical Analysis I – Theory

Pharmaceutical analysis theory course involves the principles and applications of volumetric analysis along with computation of analytical results. The concepts of error, precision, and accuracy, and specificity, detection of limit, linearity, ruggedness, and standard deviation are evaluated. The students also learn about the stoichiometric of ionic equations. Electrolytic dissociation, modern theory of acids, bases and salts, principles of neutralization reactions and theory of indicators are included. The principles and applications of acid-base, oxidation-reduction, complexometric, argentometric, iodometry, and nonaqueous titrations are included. The theory, principles and applications of gravimetric and gas analysis are analyzed.

The students should able to:

1. Explain about accuracy, precision and significant figure error concepts,
2. Acquire knowledge on computation of analytical results,
3. Understand the physiochemical concepts of analysis, theories of acids and bases, stoichiometry etc, and
4. Explain the principles and applications of complexometric, iodometric, redox, non-aqueous, gravimetric, and gas analysis techniques.

BP103T

Pharmaceutics I – Theory

Pharmaceutics (General and dispensing pharmacy) theory course provides significant insights about prescription, pharmaceutical calculations, dosage form preparations, incompatibility studies, containers and storage. The course design focus on the radio pharmaceuticals, tinctures, extracts and medicinal gases.

The students should able to:

1. Acquire knowledge of dispensing the prescriptions and the principals involved in the preparations,
2. Gain skill and confidence in preparing quality formulations of various types
3. Document and maintain the various records in experimental stage and during manufacture of pharmaceutical preparations, and

4. Meet the challenges occurring in practicing pharmacy profession.	
BP104T	Pharmaceutical Inorganic Chemistry – Theory
<p>Pharmaceutical inorganic chemistry theory course helps the students to assimilate the knowledge about inorganic pharmaceuticals based on their applications, therapeutic classes with examples. The concept of quality control tests (limit tests) and qualitative analysis for ions (anions and cations) are illustrated as per pharmacopoeias. Insights about the pharmaceutical benefits of inorganic pharmaceuticals including diagnostics are included. Focus to impart knowledge about the preparation, properties, evaluation studies including assay and their pharmaceutical applications. Significant insights are provided regarding the gastro-intestinal agents (acidifiers and antacids, adsorbents, laxatives), acid base regulators (electrolytes and dialysis fluids), expectorants, emetics, antidotes and inhalants. The course also concentrates to provide information about the mineral nutrients, haematinics, adsorbents, absorbents and antioxidants. The students also understand the significance of pharmaceutical aids (desiccants, excipients, suspending agents, colourants, diagnostic agent and surgical aid). Knowledge is imparted regarding the topical agents, astringents, anti-infectives, dental products, anti-neoplastic agents, sedative-hypnotics, anti-depressants, antirheumatic agents and anti-thyroid agents.</p> <p>The students should be able to:</p> <ol style="list-style-type: none"> 1. Explain the concepts of quality control tests in limiting the impurities, 2. Explain the preparations, properties and assay procedures of pharmaceutical agents including pharmaceutical aids, 3. Acquire knowledge on different types of diagnostic agents, dialysis fluids and dental products, and 4. Understand the concepts such as storage and therapeutic uses. 	
BP105T	Communication skills – Theory *
<p>This course will prepare the young pharmacy student to interact effectively with doctors, nurses, dentists, physiotherapists and other health workers. At the end of this course the student will get the soft skills set to work cohesively with the team as a team player and will add value to the pharmaceutical business. Communicative English theory course provides communication (verbal and non-verbal), and presentations. The details regarding the variation in the different form of English (spoken English vs written English; formal / informal English (one way/two way); British/American/Indian English) are included. The communicative English course enables students to acquire the knowledge about greetings,</p>	

polite expressions, agreements and disagreements. The students develop their skills in the use of thesaurus, vocabulary development, construct of letters, responses, memos, circulars and notices. The training to develop skill in the preparation of scientific/technical report is another important aspect.

At the end of the course, the student should be able to:

1. Understand the behavioral needs for a Pharmacist to function effectively in the
2. Areas of pharmaceutical operation
3. Communicate effectively (Verbal and Non-Verbal)
4. Effectively manage the team as a team player
5. Develop interview skills
6. Develop Leadership qualities and essentials
7. Develop skills of communication, medium and presentation,
8. Practice spoken and written English, communicate through letters and speech, and
9. Write essays on specified topics.

BP106RBT

Remedial Biology

Biology theory course concentrates on the morphology, histology, plant modifications, and plant taxonomy and plant physiology. Plants belonging to the apocynaceae, Solanaceae, umbelliferae, Leguminosae, Scrophulariaceae and rubiaceae families are included. The course provides adequate knowledge to the students regarding the mitosis and meiosis processes. Significant insight to the modifications in the roots, stems, barks, seeds, woods, leaf, flower and fruits are included. The emphasis is also given to the study of genetic code (heredity), animal cell with study of different systems of frog and rabbit. The students acquire adequate knowledge on the human parasites: plasmodium, entamoeba, tapeworm, ascaris, leishmania, anchylostoma, mosquitoes and housefly and trypanosome.

The students should able to:

1. Explain plant tissues morphology and histology along with their functions,
2. Familiarize with the plant physiology – absorption, transpiration, respiration, photosynthesis, mitosis and meiosis, DNA replication,
3. Identify histological features of different human organs/tissues through permanent slides, and
4. Explain the principles of morphology and life-history of human parasites.

BP106RMT

Remedial Mathematics – Theory*

Mathematics theory course is designed to give adequate training to the students (hands on

experience) about various mathematical principles. The course provides knowledge about the execution of logarithms, trigonometry and differential calculus. Focus to illustrate the differential coefficient rules, differentiation of a sum, product and quotient of functions, differentiation from first principles, differentiation of implicit, geometrical, composite and inverse functions. The course also imparts adequate knowledge regarding the integral calculus, simple integrations, matrices and biomathematics. The course also concentrates on the basic mathematical principles that are commonly used in biological testing such as integers, linear and non-linear graphs; 2D coordinate geometry, equation of line and circle.

The students should be able to:

1. Apply both conventional and creative techniques to the solutions of mathematical problems,
2. Solve problems of trigonometry, calculus and matrices,
3. Relate the mathematical tools in the wide professional views and
4. Apply a range of techniques effectively to solve problems including theory deduction, approximation and simulation.

This is the bridge course offered to BiPC students in to first year B. Pharmacy course.

2nd semester	
BP201T	Human Anatomy and Physiology II – Theory
<p>This subject is designed to impart fundamental knowledge on the structure and functions of the various systems of the human body. It also helps in understanding both homeostatic mechanisms. The subject provides the basic knowledge required to understand the various disciplines of pharmacy.</p> <p>Upon completion of this course the student should be able to:</p> <ol style="list-style-type: none"> 1. Explain the gross morphology, structure and functions of various organs of the human body. 2. Describe the various homeostatic mechanisms and their imbalances. 3. Identify the various tissues and organs of different systems of human body. 4. Perform the hematological tests like blood cell counts, hemoglobin estimation, bleeding/clotting time etc and also record blood pressure, heart rate, pulse and respiratory volume. 5. Appreciate coordinated working pattern of different organs of each system 1. 6. Appreciate the interlinked mechanisms in the maintenance of normal functioning 	

(homeostasis) of human body.

BP202T

Pharmaceutical Organic Chemistry I – Theory

Pharmaceutical organic chemistry theory course provides knowledge on general preparation, nomenclature, physical properties, chemical reactivity and reaction mechanisms on the aliphatic hydrocarbons and aryl diazonium salts. The electronic effects (inductive, electrometric and resonance) and isomerism of organic molecules are focused. The course highlights the reaction progress through the energy diagrams. The characteristic reactions (include stability, electrophilic and addition along with Sayetzeffs and Markonikovs rules.) of alkanes, alkenes and alkynes are included. The chemistry of cycloalkanes, alkyl halides, alcohols and ethers are important additions. The chemical features include preparation and reactivity of carbonyl compounds (aldehydes and ketones), carboxylic acids and their derivatives (acid halides, anhydrides, esters and amides), chemistry of nitrogen compounds (nitro compounds and aryl diazonium salts).

The students should able to:

1. Understand and explain the concepts of hybridization, electronic and steric effects of organic molecules,
2. Acquire knowledge about preparation and reactivity of compounds with functional groups, such as aldehydes and ketones, carboxylic acids, amino and azo compounds, and
3. Explain the mechanism involved in the substitution, addition, nucleophilic and elimination reactions.

BP203T

Biochemistry – Theory

Pharmaceutical biochemistry theory course is concerned with biochemical organization of the cell and transport processes across cell membrane. The concept of free energy and its biological significance are included. The kinetics and clinical applications of enzymes, iso-enzymes and coenzymes are also focused. Adequate inputs are provided on the metabolic reactions of carbohydrates, lipids and amino acids. Biosynthesis of RNA and DNA, DNA repair mechanism and recombinant DNA processes are part of the course. Qualitative and quantitative analysis of blood components, urine components and their clinical significance are included.

The students should able to:

1. Describe the molecular and functional organization of a cell, enzymology and its clinical relevance,

2. Explain the biochemical role of carbohydrates, proteins, lipids and metabolic pathway of nutrients,
3. Describe the electron transport mechanisms and role of cofactors involved in it,
4. Explain the metabolism of nucleotides, their clinical relevance, and
5. Understand the concepts of DNA replication, transcription and translation.

BP204T

Pathophysiology – Theory

Pathophysiology comprised of the basic knowledge about the etiology, anatomical & physiological aspects of nervous, cardiovascular, respiratory, renal digestive, and endocrine body systems. The characteristics and function of special senses like eye, ear, tongue etc are also included. The pathophysiological basis of various disorders of the systems was also discussed.

At the end of course the students will be able to:

1. Explain & interpret the use of ECG, EEG, LFTs and RFTs for body disorders.
2. Understand the biology of human body pertaining to functioning of all voluntary and involuntary controls.
3. Know about the process of digestion, secretions, respiration, kidney filtration, nervous control etc.
4. Explain the etiological factors, method of prevention & cure for various chronic disorders.

BP205T

Computer Applications in Pharmacy – Theory *

Basic computer applications theory course focus on evolution, structure and characteristics of computer concepts. The students acquire significant insights about the memory chips, principles of operating systems (MS, DOS, unix and windows), computer viruses and programming in 'C' language and structured query language (SQL). The appropriate measures to ensure students' knowledge about the operators, expressions, data input, output, control statements, library functions and arrays. The course introduces students to MS-word, MS-excel, MS-power point and MS-access. Focus is given to provide information about the world wide web (www), hypertext manuscript language (html) and e-mail.

The students should able to:

1. Acquire the up-to-date technical knowledge and develop the skills needed for a successful start to careers in pharmacy,
2. Understand the architecture, organization and programming of modern computing

<p>systems (C language and SQL), and</p> <ol style="list-style-type: none"> Practice MS Office, MS Word, MS Access and MS Power point and Understand the principles and design of internet and website. 	
BP206T	Environmental sciences – Theory *
<p>Environmental studies theory course describes the scope and importance of environmental studies, indicators for sustainable development and concepts of biodiversity and ecosystem diversity. It concentrates on environmental pollution, relevance of biotechnology and nanotechnology in sustainable development, solid and hazardous waste management, greenhouse gas effects: climate change, global warming, ozone layer and ground water depletion. The relationship between the human population and environmental problems and social problems are focused. It helps the students to appreciate the importance of water conservation and disaster management plan. It provides adequate details about the functioning of government regulatory bodies in monitoring and enforcement of environmental regulations. Environment impact assessment (EIA) studies, eco-audit and eco-labeling (ISO: 14000); environmental management plan (EMP), relevance of command control paradigm in environmental governance are also included.</p> <p>The student should able to:</p> <ol style="list-style-type: none"> Appreciate awareness and sensitivity to the total environmental and its allied problems, Explain the impact of biodiversity and its conservation, Solve environmental problems and pollution and Evaluate measures in terms of ecological, economic, social, aesthetic and educational factors. 	

3rd semester	
BP301T	Pharmaceutical Organic Chemistry II – Theory
<p>This subject deals with general methods of preparation and reactions of some organic compounds. Reactivity of organic compounds are also studied here. The syllabus emphasizes on mechanisms and orientation of reactions. Chemistry of fats and oils are also included in the syllabus.</p> <p>General methods of preparation and reactions of compounds superscripted with asterisk to be explained, emphasize on definition, types, classification, principles/mechanisms, applications, examples and differences</p>	

Upon completion of the course student shall be able to Upon completion of the course student shall be able to

1. Write the structure, name and the type of isomerism of the organic compound
2. Write the reaction, name the reaction and orientation of reactions
3. Account for reactivity/stability of compounds,
4. Prepare organic compounds

BP302T

Physical Pharmaceutics I – Theory

Physical pharmacy theory course deals with the knowledge of various physical and chemical processes and their applications in the manufacture of pharmaceuticals and also drug action. The solubility and distribution phenomena (surface and interfacial tensions) along with the partition coefficient are the essential components of course. The principles and methodology about the three component systems and different types of solutions are included. The course also provides adequate insights about the chemical kinetics (zero order, first order and second order). Acid base catalysis, accelerated stability analysis, adsorption at liquid and solid interfaces and electric properties of interfaces are also covered. Adequate inputs are given to the principles and other aspects about the colloids, micromeritics, rheology and thixotropy. The special emphasis is given to the pharmaceutical applications of polymers.

The students should able to:

1. Describe the process of solubility of solids, distribution phenomena for application in the design of drugs,
2. Explain the types of flow (rheology) and their measurement, thixotropic/stability of dispersions, semisolids systems,
3. Describe the reaction kinetics, rate, order and factors affecting the rate of reaction, prevent degradation, stabilization of drugs and shelf-life assessment, and
4. Explain principles and applications of colloids, micromeritics and interfacial phenomena.

BP303T

Pharmaceutical Microbiology – Theory

Pharmaceutical microbiology theory course involves microbiology techniques and microbes. The course ensures students to understand the biochemical reactions to identify organisms and staining techniques. The physiology and reproduction of microbes (bacteria, actinomycetes, fungi, yeast and viruses) are included. Insights about the microbial genetics, mutagenesis (physical and chemical), repair mechanism and isolation are also

attempted. The concepts of disinfections and sterilization techniques are included. The special emphasis is given to the principles and applications of immunogenetics, serology, bacterial toxins (exotoxins and endotoxins) and toxoids. The course also imparts the principles of infection and communicable diseases (epidemic and endemic diseases). The systematic studies of microbes (E.coli, Pencillium sps, Streptomyces sps and Saccharomyces sps), microbiology of water and milk are also incorporated in the course.

The students should able to:

1. Apply the principles in evaluation of microbiological quality of pharmaceutical preparations
2. Understand hygienic conditions required for the manufacture of non-sterile products,
3. Describe the principles of sterilization and disinfection processes and
4. Explain the techniques for the detection and isolation of pathogenic microorganisms, techniques for the enumeration of microorganisms.

BP304T

Pharmaceutical Engineering – Theory

Pharmaceutical engineering-I theory course involves the topic on the construction of instruments, corrosion, unit operations and unit processes. The concepts of fluid flow and heat transfer (conduction, convection, radiation) are included. Humidification, dehumidification and air conditioning along with their applications in pharmacy are highlighted. The principles, applications and limitations of filtration and centrifugation are included.

The students should able to:

1. Explain the concepts of energy transfer, mass transfer, unit operations, plant construction, operation and maintenance of pharmaceutical industry,
2. Describe the engineering approaches to avoid corrosion, and
3. Explain with current principles, fluid flow, heat transfer, material transportation, filtration and centrifugation methodologies.

4th semester

BP401T

Pharmaceutical Organic Chemistry III– Theory

This subject imparts knowledge on stereo-chemical aspects of organic compounds and organic reactions, important named reactions, chemistry of important hetero cyclic

compounds. It also emphasizes on medicinal and other uses of organic compounds.

At the end of the course, the student shall be able to

1. Understand the methods of preparation and properties of organic compounds
2. Explain the stereo chemical aspects of organic compounds and stereo chemical reactions
3. Know the medicinal uses and other applications of organic compounds

BP402T

Medicinal Chemistry I – Theory

Medicinal chemistry theory course deals several topics and physico chemical properties of drugs in their biological activity are also included. The course design covers the nomenclature, classification, mechanism of action, structural activity relationship and therapeutic uses of various categories of drugs. The special emphasis given to the chemical constitution of selective drugs from each pharmaceutical category. The focus is given to the appreciation of bioisosterism, stereochemistry, prodrugs, soft drugs and drug metabolism concepts. The students understand the physiological functions of adrenergic and cholinergic system and the chemistry of adrenergic and cholinergic drugs (includes muscarinic, nicotinic and ganglionic drugs). The cardiovascular drugs such as hypertensives, anti-arrhythmic, vasodilators, anti-hyper lipidemic agents, anti-platelet drugs and synthetic cardiac glycosides are included. The chemistry and medicinal properties of diuretics, positive inotropic agents, hypoglycemic agents, anti-thyroid gents and immune modulators are included. The chemistry knowledge about the anti-histaminic (H1 & H2), proton pump inhibitors and anti-coagulants also ensured.

The students should able to:

1. Explain the influence of physicochemical properties on drug action,
2. Outline the synthetic route for the selective medicinal compounds of each category and acquire knowledge on the mechanism of action of pharmacodynamics agents,
3. Classify the therapeutic agents and based on the chemical nature,
4. Explain the relationship between the biological activity and structure of therapeutic agents, and
5. Describe therapeutic uses of specified pharmacodynamics agents.

BP403T

Physical Pharmaceutics II – Theory

The course deals with the various physical, physicochemical properties and principle involved in dosage forms, formulations. Theory and practical components of the subject help the student to get a better insight in to various areas of formulation research and development and stability studies of pharmaceuticals.

<p>Upon the completion of the course student shall be able to</p> <ol style="list-style-type: none"> 1. Understand various physicochemical properties of drug molecules in the designing the dosage form 2. Know the principles of chemical kinetics & to use them in assigning expiry date for Formulation 3. Demonstrate use of physicochemical properties in evaluation of dosage forms. 4. Appreciate physicochemical properties of drug molecules in formulation research and Development 	
BP404T	Pharmacology I – Theory
<p>Pharmacology-I theory course includes the concepts of routes of administration, absorption, bioavailability, drug distribution, biotransformation and excretion of drugs. Drug mechanism of action and dose response relationship are incorporated. The pharmacological concepts of sympathetic drugs, parasympathetic drugs, CNS stimulants, hypnotics, anxiolytics, antipsychotics, anti-depressants, local anesthetics, analgesics and anti-inflammatory drugs. Pharmacology of drugs used in the treatment of congestive heart failure, anti-arrhythmic, anti-hypertensives & anti-hyperlipidemic drugs, anti-anginal and vasodilators are also included. The students also acquire knowledge about the pharmacological management of Parkinsonism disorder. Drugs used in the therapy of shock and drugs affecting respiratory system are also included. The adequate pharmacological knowledge about the diuretics, purgatives/laxatives, anti-diarrheal, anti- ulcers, emetics and anti-emetics also illustrated.</p> <p>The students should able to:</p> <ol style="list-style-type: none"> 1. Explain the structure, mechanism of action, systemic effects, side effects and contra-indications of cholinergic and adrenergic agents, 2. Describe the mechanism of drug action, pharmacokinetics, systemic and electro-physiological effects, uses and treatment of toxicity and drug interactions, 3. Describe the pharmacology of drugs acting on cardiovascular and respiratory systems, and 4. Explain drugs and their mechanism of action for various gastro-intestinal drugs. 	
BP405T	Pharmacognosy and Phytochemistry I– Theory
<p>This course focuses on the systematic description, classification, cultivation, collection, storage and therapeutic uses of crude drugs. The course imparts the knowledge regarding the influence of exogenous and endogenous factors in the variability of drug constituents.</p>	

Biosynthetic techniques, metabolic pathways, precursor – product sequence, competitive feeding and sequential analysis are also focused. It helps students to assimilate the concepts about carbohydrate synthesis, shikimic acid pathway and isoprenoid biosynthesis. Systematic study of carbohydrates, fixed oils, fats, waxes, tannins, fibers, and drugs from mineral and animal origin, proteins and enzymes is illustrated. Hazards, adulteration and drugs deterioration aspects are included.

The theory deals with the isolation, characterization, chemistry, structural determination and pharmaceutical importance of carbohydrates, proteins, oils and fats, flavonoids, alkaloids, terpenoids and steroids. The course also covers the bile acids, steroidal contraceptives, purines and xanthine derivatives. The structural elucidation and pharmaceutical importance of cardiac glycosides are also covered

The students should be able to:

1. understand the cultivation and collection methods of medicinal plants,
2. evaluate the crude drugs for adulteration,
3. explain various biosynthetic pathways of medicinal plant constituents, and
4. understand the methods of quality control of crude drugs according to WHO guidelines.
5. classify carbohydrates, fats/oils, proteins, terpenoids, flavonoids, alkaloids and steroids based on their structure,
6. describe extraction, isolation and purification methods of natural compounds,
7. describe qualitative and quantitative methods for the identification of natural compounds – alkaloids, purine and xanthines, and
8. highlight the importance of retro-synthetic analysis in the structural elucidation of compounds.

5th semester	
PHR-PT-351	Hospital & Community Pharmacy
<p>Hospital and clinical pharmacy theory course focus on hospital drug policy, therapeutic committee (PTC) and practice of rational drug therapy. Manufacturing of bulk and sterile supplies, storage and handling of radio isotopic pharmaceuticals, budget planning and inventory control are also included. The investigational use of drugs, drug therapy monitoring and adverse drug reaction management is the key areas. The students understand the functioning of drug and poison information centers. The history review,</p>	

patient counseling; patient compliance and patient data analysis are other components. Various hospital pharmacy services namely out-patient and in-patient services, unit dose drug distribution systems, floor ward stock systems, satellite pharmacy services, central sterile services and bed side pharmacy also given in the course. The focus is given to the mechanism of pharmacokinetic and pharmacodynamic drug- drug interactions and food and drug interactions. Therapeutic aspects of pharmacogenetics also included. The student gain knowledge about the pathophysiology and etiology of gastrointestinal diseases, cardio vascular diseases, respiratory diseases and sexually transmitted diseases.

The students should able to:

1. describe hospital and clinical pharmacy organization,
2. explain hospital functions, administration and pharmacy therapeutic committee and rational drug therapy,
3. discuss overview of hospital formulary i.e., inventory control of drugs, formulations, surgicals and radio isotopes,
4. explain the basic principles of clinical pharmacy, and
5. explain diseases, disease systems and treatment.

PHR-PG-352	Pharmacognosy III
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Pharmacognosy theory course involves the morphological characteristics, chemical constituents, chemical tests, uses, substituents and adulterants of the plant drugs. The course design includes the description about the plant drugs, active principles such as alkaloids, glycosides, volatile oils and resins. It also covers the various forms of plant drugs, such as leaf, barks, woods, stems, rhizomes, seeds and plant exudates. Isolation, estimation and characterization of selective active principles (sennosides, caffeine, cineole, quinine, carvone, tannic acid, rutin and hesperidin) are also included. The course also covers the concepts of tissue culture, immobilization and production of secondary metabolites.

The students should able to:

1. explain crude drugs containing alkaloids, glycosides and volatile oil,
2. isolate and characterize phytoconstituents
3. explain biotransformation and immobilization technique, and
4. explain the importance of the herbal and ayurvedic formulation.

PHR-PC-353	Medicinal Chemistry-I
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The course is comprised of basic knowledge of medicinal Chemistry its

introduction, the principle of medicinal chemistry, Study of classification, mechanism of action, structure activity relationship, physiochemical properties and synthesis of selected drugs (only drugs marked with asterisk): Sympathomimetic agents, Alpha adrenergic blockers, Beta adrenergic blockers, Cholinergic drugs, Cholinergic Blocking agents, Local Anesthetics, Skeletal Muscle Relaxant. The concept of these fundamental in medicinal chemistry are required to elaborate details study of pharmacological activities, mechanism of action, side effects and their adverse effect. The knowledge of this basic concept required to formulate an appropriate dosage form of the particular disease.

1. At the end of the course, the student should be able to understand the:
2. Basic concept, principle of Medicinal chemistry
3. Physico-chemical Properties their role in medicinal chemistry and applications
4. Route of synthesis of drugs
5. Structure activity relationship of sympathomimetic drugs
6. Knowledge of drugs acting on Autonomic Nervous System
7. Mechanism of action, uses of class of drugs
8. Study Structure activity relationship of compounds
9. Identify different steps of synthetic routes of various drugs their uses, mentioned in the contents.
10. Know the mechanism of action of drugs and their adverse conditions
11. Explain various synthetic routes in the field of medicinal chemistry

PHR-PT-354	Pharmacology II
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This course is designed to be the foundation course in the area of drugs. Pharmacology is an exciting discipline that provides insight into the mechanisms of action and beneficial and unwanted effects of drugs in the body. This is achieved by integrating knowledge from a range of biosciences including how the body works in health and disease. This subject uses specific examples of instantly recognizable and newly developed drugs to demonstrate how pharmacologists identify drug targets, design new drugs and test their therapeutic effectiveness, in addition, the subject investigates the ways in which drugs are handled by the body in terms of their absorption, distribution and metabolism.

At the end of the course, the student should be able to:

1. To learn about the drug with regard to classification, pharmacodynamic and pharmacokinetic aspects, adverse effects, uses, dose, route of administration,

- precautions, contraindications and interaction with other drugs.
2. To provide an understanding of the basic principles of drug action.
 3. Identify typical examples of drugs which are used to restore physiological functions in the cardiovascular, endocrine system, respiratory and urinary system
 4. Explain the role of absorption, distribution, metabolism and excretion in drug disposition.
 5. Explain the mechanisms of drug action of well-known drug examples.
 6. Explain how drugs modify the action of chemical mediators to produce therapeutic and adverse effect.

PHR-PT-355	Pharmaceutical Technology
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Pharmaceutical Technology is the theory and practice of development and production of various dosage forms. The course is divided into two major parts as pharmaceutical dosage form design and pharmaceutical dosage forms. Dosage form design, involve how physicochemical properties of a drug substance, influence the development of a dosage form. Pharmaceutical dosage forms deal with formulation consideration, manufacturing procedure and evaluation of liquid, semisolid, solid and sterile dosage forms.

At the end of lecture, the students will be able to:

1. Learn about various pharmaceutical dosage forms.
2. Learn about formulation considerations of different dosage forms
3. Understand manufacturing methods of various dosage forms.
4. Understand the design and working of various equipment used for production
5. To explain different dosage forms and their essential attributes
6. To explain various finished dosage form evaluation parameters and their limits

6th semester	
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PHR-PT-361	Biopharmaceutics and Pharmacokinetics
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Biopharmaceutics and pharmacokinetics course deals drug absorption mechanisms; drug distribution, excretion and biotransformation of drugs (phase I and phase II). The students also acquire adequate knowledge about the pharmacokinetics parameters, such as C_{max}, t_{max}, AUC, biological half-life, apparent volume of distribution and clearance. The knowledge about the basic concepts of compartment models, clinical pharmacokinetics, and application of pharmacokinetic principles and computation of parameters by graphical approach is also ensured.

The students should be able to:

1. explain the principles of biopharmaceutics and pharmacokinetics with relevance to clinical development,
2. determine factors affecting drug absorption, bioavailability and bioequivalence,
3. describe disposition kinetic models with applications,
4. evaluate the PK parameters related to distribution, metabolism and excretion, and
5. explain the clinical pharmacokinetics, dose adjustment and therapeutic drug monitoring.

PHR-PC-362

Medicinal Chemistry-II

The course is comprised of basic knowledge of medicinal Chemistry and their application in pharmaceutical sciences. It has been divided in subdivisions: Principles of drug design Classical Methods Modern Methods, Drug latentiation and Prodrugs Combinatorial Chemistry Anti-anginal Cardiotonics, Anti-arrhythmic Drugs, Anti-hypertensive Agents Anti-hyperlipidemic agents, Diuretics: Coagulant and Anticoagulants, Hypoglycemic agents Opioid Analgesics and Non-Steroidal Anti-inflammatory agents. The concept of these fundamental in medicinal chemistry are required to elaborate details study of pharmacological activities, mechanism of action, side effects and their adverse effect. The knowledge of this basic concept required to formulate an appropriate dosage form of the particular disease.

At the end of the course, the student should be able to:

1. Understand the basics of Drug discovery, combinatorial Chemistry, CADD, and QSAR Study.
2. Understand the basic concept and application of pro drugs design. Along with the history and development of combinatorial chemistry.
3. Understand the synthesis, uses and mechanism of action of anti anginal drugs, like Nitroglycerine and Isosorbide dinitrite.
4. Understand the synthesis, uses and mechanism of action of anti anginal drugs like, cardiotonics. Eg. Digoxin, Digitoxin, Deslanoside.
5. Understand the structural activity relationship. Stereochemistry and different synthetic aspect of calcium channel blockers, e.g. Verapamil, Diltiazem, Nifedipine.
6. Understand the synthesis, uses and mechanism of action structural activity relationship. Stereochemistry and different synthetic aspect of diuretics, coagulant and anticoagulant, hypoglycemic agent opioid analgesic and NASIDs.

PHR-PT-363**Pharmaceutical Jurisprudence**

This course deals with pharmaceutical legislation policies, ethics, Acts and their amendments in India. It provides comprehensive knowledge about the pharmacy Act 1948, consumer protection Act 1986, Narcotic and psychotropic substances Act 1985, Drugs and cosmetics Act 1940 and drugs and cosmetic rules 1945. Medicinal and toilet preparations Act 1955, drugs and magic remedies) act 1954, prevention of food adulteration Act 1954, the factories Act 1948 and the amendment also covered. The legal aspects of the manufacture, sale, distribution, import and export of drugs are included in schedules. Specific labelling and packing requirements are covered for all categories of drugs & cosmetics. The students acquire knowledge regarding the intellectual property rights, Indian patent Act 1970, drug price control order and pharmaceutical policy 2002.

The students should able to:

1. describe schedule rules, laws and regulations related to drugs and cosmetics,
2. explain pharmaceutical legislation, history, evolution and growth of pharmaceutical industry,
3. describe the pharmaceutical education and its regulatory bodies; pharmacy profession in concern to code of ethics,
4. explain other acts and rules associated with food and factories, and
5. explain the intellectual property rights.

PHR-PG-364**Chemistry of Natural Products**

This course is designed to be the foundation course in area of chemistry of natural products specially Phytochemistry. The course is concerned with study of various secondary metabolites obtained from plants. The course deals with study of the classes like Terpenoids, Alkaloids, Glycosides, Carotenoids, Lignans Flavonoids, coumarins and Xanthines. All classes focused on basic introduction, classification methodology, chemistry, structural elucidation, synthesis and pharmacological uses of the important plant examples of various secondary metabolites.

At the end of lecture, the students will be able to

1. Know the basic definition, concept, and classification methodology, general methods
2. of structural elucidation, structures, and pharmacological uses of the important examples of Terpenoids.
3. Know the basic definition, concept, classification methodology, general methods of

structural elucidation, structures, and pharmacological uses of the important examples of Alkaloids

4. Know the basic definition, concept, classification methodology, structures, and pharmacological uses of the important examples of Glycosides and lignanas.
5. Know the basic definition, concept, classification methodology, structures, and pharmacological uses of Carotenoids and Flavonoids.
6. To understand and become familiar with structures and pharmacological uses of the Xanthines and Coumarin.

PHR-PL-365

Pharmacology III

This course is designed to be the foundation course in the area of drugs. Pharmacology is an exciting discipline that provides insight into the mechanisms of action and beneficial and unwanted effects of drugs in the body. This is achieved by integrating knowledge from a range of biosciences including how the body works in health and disease. This subject uses specific examples of instantly recognizable and newly developed drugs to demonstrate how pharmacologists identify drug targets, design new drugs and test their therapeutic effectiveness. In addition, the subject investigates the ways in which drugs are handled by the body in terms of their absorption, distribution and metabolism

At the end of the course, the student should be able to:

1. To learn about the drug with regard to classification, pharmacodynamic and pharmacokinetic aspects, adverse effects, uses, dose, route of administration, precautions, contraindications and interaction with other drugs.
2. To provide an understanding of the basic principles of drug action.
3. Identify typical examples of drugs which are used to restore physiological functions in the cardiovascular, endocrine system, respiratory and urinary system

7th semester

PHR-PT-471

Pharmaceutical Technology II

The course is divided into four sections including seven chapters that are Preformulation Studies, Packaging of Pharmaceutical Products, QC, QA and GMP, Pilot Plant Scale Up, Sustained and Controlled release (CR) delivery systems, Blood Products and Plasma Substitutes, Cosmetic Preparations. Preformulation Studies mainly includes general introduction bulk characterization, Solubility Analysis and stability studies, Packaging of Pharmaceutical Products mainly focused packaging materials and different types of

packaging, QC, QA and GMP includes basic introduction and elements covering controls of area and processes and product. Pilot Plant Scale Up includes introduction and scale up of solid dosage forms, Sustained and Controlled release (CR) delivery systems includes introduction, concept and types of controlled release systems, osmotic pump, transdermal systems, Cosmetic Preparations describes the fundamentals of cosmetic science, structure and functions of skin, and different formulations, preparation and packaging of cosmetics

PHR-PL-472	Pharmacovigilance
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This subject will provide an opportunity for the student to learn about development of pharmacovigilance as a science, basic terminologies used in pharmacovigilance, global scenario of Pharmacovigilance, train students on establishing pharmacovigilance program in an organization, various methods that can be used to generate safety data and signal detection. This subject also develops the skills of classifying drugs, diseases and adverse drug reactions.

At the end of lecture, the students will be able to:

1. Why drug safety monitoring is important?
2. History and development of pharmacovigilance
3. National and international scenario of pharmacovigilance
4. Dictionaries, coding and terminologies used in pharmacovigilance
5. International standards for classification of diseases and drugs
6. Pharmacovigilance Program of India (PvPI) requirement for ADR reporting in India
7. ICH guidelines for ICSR, PSUR, expedited reporting, pharmacovigilance planning CIOMS requirements for ADR reporting
8. Writing case narratives of adverse events and their quality.
9. Detection of new adverse drug reactions and their assessment
10. Adverse drug reaction reporting systems and communication in pharmacovigilance
Methods to generate safety data during preclinical, clinical and post approval phases of drugs' life cycle
11. Drug safety evaluation in paediatrics, geriatrics, pregnancy and lactation
12. Writing case narratives of adverse events and their quality

PHR-PT-473	Pharmaceutical Management
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The course is designed as a foundation course to introduce basic concepts of management as appropriately applicable to the students of pharmaceutical sciences. Course consists of

four units incorporating Introduction to Management Concepts, Principles of Marketing Management, Principles of Economics and Accountancy and Principles of Production Management and Quality Control. Introduction to Management Concepts focuses on making students understand that management is a universal process found in all organized, social and economic activities. Principles of Marketing Management builds practical skills in introducing marketing management, marketing environment, buying behavior, marketing mix concept & sales management. Principles of Accountancy introduces them with the tradeoff between supply and demand. It also introduces the accounting system for recording the transactions of the business. It further teaches how to make balance sheet etc. At the end of lecture, the students will be able to

1. Understand the management process necessary to achieve organizational goal
2. Understand the role of marketing, sales and role of a salesman
3. Understand the role of an economic system
4. Understand the accounting principles and their need
5. Formulate a management plan and create standards to compare
6. Formulate marketing plan for a category of products
7. How to select sales representative and how to motivate them

PHR-PC-474	Medicinal Chemistry & Cheminformatics
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The course is divided into four sections including different chapters that are general anesthetics, opioid analgesics, NASIDS etc. course also include the information of cheminformatics.

1. Students will practically understand drug related problems in health care and ADR's
2. Able to understand Drug related diseases affecting GIT

PHR-PT-475	Pharmaceutical Biotechnology
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Pharmaceutical biotechnology theory course deals with the genetic engineering, fermentation technology, and immobilization processes. It covers the aspects of microbiological assay of antibiotics and vitamins. The preparation of bacterial vaccine, viral vaccine, toxoids, and other immune products are included. The processes involved in the glandular products also covered. The manufacture of biological products, microbial transformation of steroids, design of biotransformation processes, techniques and applications of animal cell culture also included. The production of monoclonal antibodies is also covered.

The students should be able to:

1. Design a suitable reactor for the industry based on their requirements of yield and cost,
2. Analyze the genetic code and explain the production of proteins using r-DNA technology,
3. Explain manufacture, standardization, storage and labeling of immunization products (passive and active),
4. Explain the biological/blood products, plasma substitutes regarding collection, processing and storage, and
5. Explain production techniques of monoclonal antibodies.

8th semester	
PHR-PL-481	Clinical Pharmacotherapeutics
<p>Clinical Pharmacotherapeutics theory course deals with the Definition, concept and scope of clinical pharmacology. Role of pharmacist in health care system.</p> <p>Drug development process: Definition, scope and preclinical evaluation of drugs, safety evaluation, clinical trials and post marketing surveillance of new drugs. Contract Research Organization (CROs).</p> <p>Pharmacotherapeutics of Cardio-vascular disorders, CNS Disorders, Respiratory disease and Gastrointestinal Disorders</p> <p>Students will understand</p> <ol style="list-style-type: none"> 1. Basic principles of drug therapy in pediatric and geriatric patients, and in pregnancy and lactation. 2. Epidemiology of drug use, organization of drug information services/center, Essential medicine list and national drug policy. 	
PHR-PG-482	Industrial Pharmacognosy
<p>This course is designed to be the foundation course in area utilization of pharmacognosy in industry. It is the learning concerned with therapeutic medications got from plants or other natural sources. This subject involves the study of procurement and supply channels of plant material. Subject also deals with the study of chemical standardization of plant drug material using HPTLC, HPLC and standardization of herbal formulation using WHO guidelines. Knowledge of trade of medicinal plants and their products across the world and India is also included in the course. Particulars of Plant tissue culture technique, Callus and</p>	

suspension culture has been involved and brief overview of anti-tumor agents, bitters, sweeteners and colorants.

At the end of lecture, the students will be able to

1. Know the procurement and supply channels details of plant drug material.
2. Know about the chemical standardization of plant drug material: through marker analysis and fingerprinting profiling using HPTLC
3. Know the various WHO guidelines utilized for the standardization of herbal formulation.
4. Know the plant tissue culture technique and various techniques utilized for extraction of plant material.
5. To understand economy status and trade of medicinal plants and their products across the world and India.
6. Know about the anti-tumor agents, bitters, sweeteners and colorants of plant origin.

PHR-PC-483

Pharmaceutical Analysis-II

This course is a foundation course designed to introduce the students to basic Instrumental analytical concepts and principles that can be used by the analyst in understanding the Pharmaceutical problems to quantitative and qualitative determination of APIs. Course provides an introduction to the very basic concepts of Pharmaceutical Instrumental Analysis like TLC, HPLC, GC, X-Ray, IR, NMR, MS and Hyphenated techniques. Course also provides some Thermal methods and electrophoresis. This course will help to develop analytical skills. Pharmaceutical analysis-II theory course deals with the qualitative and quantitative analysis of drugs and other pharmaceuticals as single and multiple components. The principles, components, sample preparation, instrumentation and pharmaceutical applications of various techniques such as spectroscopy, chromatography, electrochemical titrations and thermal analysis are included. The theoretical aspects molecular vibrations and characteristic absorption of various functional groups in infrared spectroscopy.

At the end of the course, the student should be able to:

1. Explain basic terminology used in Instrumental analysis and Fundamental of thermal analytical methods.
2. Describe the theoretical concept of HPLC.
3. Understand concepts of computation of analytical Data.
4. Interpretation of Analytical data.

5. Demonstrate Quantitative and qualitative determinations by using GLC, NMR, MS analytical methods and Thermal methods.
6. Understand the pharmaceutical applications of Instrumental analytical methods.
7. explain the principles, instrumentation and applications of different spectroscopy methods
8. describe separation techniques like chromatography and gel electrophoretic techniques
9. describe the theoretical aspects on electro analytical methods.
10. Calculate the %purity of compounds by using Instrumental analytical methods.
11. Compute the relevant analytical data.
12. Calculate and prepare the required concentrate standards.
13. Understand the dilution concept.

PHR-PC-484	Chemical Biology
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The course is designed to impart knowledge about Chemical Biology and its application in drug and probe discovery. The course is concerned with the introduction to use of small molecules as probes to explore biology, their synthesis and application of chemical biology in drug discovery and system biology.

At the end of the course, the student should be able to:

1. Apply chemical biology for discovery of biological mechanisms and drug discovery.
2. Use chemical tools and probes to elucidate biological mechanisms.
3. Design and synthesize designing probes.
4. Apply system biology in drug discovery

PHR-PR-356	Project
PHR-PR-366	Project
PHR-PR-476	Project Literature Seminar/Approval
PHR-PR-485	Project

This course is designed to provide students experience on doing projects in the field of pharmaceutical sciences. The purpose is to practically introduce and expose the students to the process and methodology of research. The idea is to stimulate the student's intellect and inculcate innovativeness, creativity and appreciation for research. Students will be able to select broad range of topics related to the field of pharmaceutical sciences, conduct literature survey, define aims & objectives, decide suitable research design, carry out

experimental work and report the findings. The complete project work will spread over all the eight semesters of their B. Pharmacy course.

Seminar component of the course provides an opportunity to the student to develop advanced knowledge on the search and manuscript preparation. The students become competent in presentations about the specific topic in scientific and pharmacy fields. It gives a chance to the learning community to describe new trends among group.

The course is targeted for the following points

- i. Novelty
- ii. Content
- iii. Presentation
- iv. Response to Questions
- v. Attendance

State the delivery details of the contents beyond the Syllabus for the attainment of POs (20)

(Provide details of the additional course/learning material/content/laboratory experiments/projects etc., arising from the gaps identified in 2.1.1 in a tabular form in the format given below)

As School of Pharmaceutical Sciences of Shoolini University is affiliated from Pharmacy Council of India (PCI), the course of study for B. Pharmacy has been extended over a period of eight semesters (four academic years) and six semesters (three academic years) for lateral entry students. The course content provided by the PCI is delivered to the B. Pharmacy students. The syllabus is delivered to students through the Power point presentation and class interaction with students, Practical examples, White board and marker.

All the learning materials are providing to the students on eUNIV portal of the students. All the B. Pharmacy students assigned for the projects in the groups under the mentor according to the topics. Guru series lectures, guest lectures and seminars are organized for improvement in overall performance of the students. The students are also encouraged to attend the workshops /conferences /training programs in Shoolini University and other institutes.

CAY (2018-19): - Contents beyond the syllabus

S. No.	Gap	Action taken	Date-Month-Year	Resource Person with designation	No. of students present	Relevance to POs
1	Patent Drafting	Time devoted in the Theory classes. Given as seminar	8/04/19	Mr. RP Yadav; Patent Attorney for Shoolini University	100	1, 2, 6, 7
2	Invention, Innovation & Entrepreneurship	Time devoted in the Theory classes. Given as Guru Talk	8/4/19	Dr. Aftab Alam, CEO, G-Biosciences, St. Luis USA	100	2,5,10,11
3	Preparation of p-nitro acetanilide from acetanilide	Extra experiment Conducted	2/4/19	Dr. Deepak Kumar, Assistant Professor	93	1,3
4	Alternative system of medicine	Extra class was Conducted	3/4/19	Dr. Ashutosh Kar Das	85	1,3
5	Chemistry on new drugs reversible proton pump inhibitors, antihistamines, hypoglycemics	Extra classes were taken	4/4/19	Dr. Deepak Kumar, Assistant Professor	88	1,3,
6	The Sustainability and cleanliness of the 'Himalayas	Time devoted in the Theory classes. Given as Guru Talk	14/3/19	Mr. Pardeep Sangwan	100	9,10,11
7	Software used to construct phase diagram	Demonstration was Given	5/3/19	Dr. Poonam Negi, Associate Professor	91	3,4,11
8	Classification and types of	Seminars given by the	12/3/19	Dr. Deepak Kumar	90	1,2,6

	proteins and amino-acids	Students		Assistant Professor		
9	Use of experimental animals in research	Handling of animals, various routes of drug administration-demo	13/3/19	Dr. Rohit Goyal Professor	90	1,3,4
10	HPLC practical component is required	Demonstration of HPLC usage was conducted during practical class	6/3/19	Dr. Navneet K Upadhyay, Assistant Professor	45	1,4
11	Latest developments in CDDS	Seminars were given by Students	11/3/19	Dr. DN Kapoor, Professor	90	1,4
12	Construction of distinct atomic model	Covered in regular Classes	12/3/19	Dr. Jagattaran Das	45	1,3,4
13	Disorders of CNS	Covered in regular Classes	13/3/19	Dr. Gurjot Kaur, Associate Professor	90	1,6,9
14	Disorder of Respiratory	Covered in regular Classes	14/3/19	Dr. Gurjot Kaur, Associate Professor	87	1,6,9
15	Software used for drawing chemical structure and its analysis	Covered in regular Classes as tutorial	8/3/19	Dr. Deepak Kumar, Assistant Professor	45	4,6
16	Software used for NMR interpretation	Covered in regular Classes as tutorial	13/3/19	Dr. Deepak Kumar, Assistant Professor	46	1, 3, 4
17	Application of pharmacokinetic parameters by using Microsoft Excel	Covered in regular Classes	14/3/19	Dr. Poonam Negi, Associate Professor	90	1, 3, 4
18	Sampling	Covered in	4/2/19	Dr. Navneet	45	1, 3,

	methods	regular classes (fundamentals of analysis), given seminars		K Upadhyay, Assistant Professor		
19	Standardization of Herbal drugs	Seminars given by the Students	13/2/19	Dr. Swati Pundir, Assistant Professor	85	1, 10
20	Alternatives to animal experimentations	Covered in regular Classes	15/11/18	Dr. Rohit Goyal, Professor	90	1, 9, 10
21	Future opportunities in R&D for pharma graduates	Covered in regular Classes	12/11/18	Dr. Rohit Goyal, Professor	90	1, 2, 3, 4,
22	Pursuing education in Canada	Time devoted in the Theory classes. Given as Guru Talk	03/10/18	Mr Christopher Gibbons,	100	2, 3, 5, 6, 9,10,11
23	Importance of water for injection and sterile water for injection	Time devoted in the Theory classes. Given as assignment	4/10/18	Dr. Deepak Kumar, Assistant Professor	60	1, 3, 9, 10, 11
24	Assay of compounds not mentioned in syllabus	2 experiments conducted (complexometric and acid base titrations)	9/10/18	Dr. Navneet Kumar Upadhyay, Assistant Professor	90	1, 3,
25	Acidity and basicity of organic molecules	Covered in regular classes (types of reagents)	10/10/18	Dr. Deepak Kumar, Assistant Professor	90	1, 3
26	Rules governing electronic configuration	Covered in regular Classes	11/10/18	Dr. Deepak Kumar Assistant Professor	91	1, 3, 4
27	Biochemical tests for Urea,	Extra practical was	11/10/18	Dr. Azar Assistant	90	1, 3, 6

	sodium, calcium etc.	Conducted		Professor		
28	Herbal extract – preparation and usage	Seminars given by the Students	10/10/18	Dr. Uma Ranjan Lal Associate Professor	90	1, 10
29	Importance of drug Discovery and Development	The topic was covered by giving the assignment	25/9/18	Dr. Rohit Goyal Professor	89	1, 3, 4

CAYm1 (2017-18):- Contents beyond the syllabus

S. No.	Gap	Action taken	Date- Month- Year	Resource Person with designation	No. of students present	Relevance to Pos
1	Stability testing – industrial aspects	Time devoted in the Theory classes	9/04/18	Mr. Navneet Kumar Upadhyay, Assistant Professor	90	1, 3, 6
2	Army life	Time devoted in the Theory classes. Given as seminar	12/4/18	Brig Kuldip Chandpuri	100	2, 5, 6, 8, 10, 11
3	Unleashing Potential	Time devoted in the Theory classes. Delivered as Guru Talk	19/4/18	Mr Sofi Zahur Director	100	3, 5, 6, 8, 10
4	Opportunities and Challenges in Civil	Time devoted in the	24/4/18	Er Ashutosh Garg	100	2, 3, 5, 6, 8, 11

	Services: As a career	Theory classes. Delivered as Guru Talk				
5	The correct guidance to join the Armed Forces	Time devoted in the Theory classes. Given as Guru Talk	26/4/18	Brigadier Gurung	100	2, 5, 6, 8, 10, 11
6	Role of nanoparticles - smart herbal drugs	Time devoted in the Theory classes	11/4/18	Dr. Uma Ranjan Lal, Associate Professor	90	1, 3, 10
7	Rules governing electronic configuration	Covered in regular Classes	10/4/18	Dr. Deepak Kumar Assistant Professor	91	1, 3
8	Acidity and basicity of organic molecules	Covered in regular classes (types of reagents)	9/04/18	Dr. Deepak Kumar, Assistant Professor	90	1, 3
9	Application of pharmacokinetics parameters by using Microsoft Excel	Covered in regular classes	4/4/18	Dr. Poonam Negi, Assistant Professor	50	1, 3, 4
10	Software used for drawing chemical structure and its analysis	Covered in regular Classes as tutorial	3/4/18	Dr. Deepak Kumar, Assistant Professor	55	1, 3, 4 10
11	Drug control acts and	Time devoted in the theory	14/3/18	Dr. Deepak N Kapoor, Associate	91	1, 3, 4

	its regulators	classes		Professor		
12	Biochemical tests for Urea, sodium, calcium etc.	Extra practical was Conducted	15/3/18	Dr. Azar Assistant Professor	90	1, 3, 4
16	Chemistry on new drugs reversible proton pump inhibitors, antihistamines, hypoglycemics	Extra classes were taken	13/3/18	Dr. Deepak Kumar, Assistant Professor	88	1, 3, 4
17	Software used to construct phase diagram	Demonstration was given	14/3/18	Dr. Poonam Negi, Associate Professor	91	1, 3, 4, 10, 11
18	Standardization of Herbal drugs	Seminars given by the students	8/3/18	Dr. Swati Pundir, Assistant Professor	85	1, 3, 4, 10, 11
19	Classification and types of proteins and amino-acids	Seminars given by the students	13/3/18	Dr. Deepak Kumar Assistant Professor	90	1, 3
20	Use of experimental animals in research	Handling of animals, various routes of drug administration - demo	14/3/18	Dr. Rohit Goyal Professor	90	1, 3, 10
21	Alternatives to animal experimentations	Covered in regular classes	12/3/18	Dr. Rohit Goyal, Professor	90	1, 3, 4, 10, 11
22	Future opportunities in R&D for pharma graduates	Covered in regular classes	13/3/18	Dr. Rohit Goyal, Professor	90	1, 3, 6, 9, 10

23	Preparation of p-nitro acetanilide from acetanilide	Extra experiment conducted	14/11/17	Dr. Deepak Kumar, Assistant Professor	93	1, 3,
24	Latest developments in CDDS	Seminars were given by students	15/11/17	Dr. DN Kapoor, Professor	90	1, 3, 4
25	Herbal extract – preparation and usage	Seminars given by the students	13/11/17	Dr. Swati Pundir, Assistant Professor	90	1, 3, 4, 10,11
26	Alternative system of medicine	Extra class was Conducted	12/11/17	Dr. Ashutosh Kar Das	85	1, 3, 4
27	Assay of compounds not mentioned in syllabus	2 experiments conducted (complexometric and acid base titrations)	9/10/17	Dr. Navneet Kumar Upadhyay, Assistant Professor	90	1, 3
28	Sampling methods	Covered in regular classes (fundamentals of analysis), given seminars	4/10/17	Dr. Navneet K Upadhyay, Assistant Professor	45	1, 3
29	Principle of drug discovery	Time devoted in the theory classes. Given as seminar	12/10/17	Dr. Satyendra K Rajput, HOD Pharmacology, Amity Institute of Pharmacy, Noida	100	1, 3,4, 10

30	Software used for NMR interpretation	Covered in regular Classes as tutorial	11/10/17	Dr. Deepak Kumar, Assistant Professor	54	1, 3, 4, 11
31	HPLC practical component is required	Demonstration of HPLC usage was conducted during practical class	6/9/17	Dr. Navneet K Upadhyay, Assistant Professor	45	1, 3, 4, 11
32	Importance of drug Discovery and Development	The topic was covered by giving the assignment	19/9/17	Dr. Rohit Goyal Professor	89	1, 3, 4
33	Importance of water for injection and sterile water for injection	Time devoted in the theory classes. Given as assignment	24/8/17	Dr. Deepak Kumar, Assistant Professor	88	1, 3, 4,10

CAYm2 (2016-17):- Contents beyond the syllabus

S. No.	Gap	Action taken	Date-Month-Year	Resource Person with designation	No. of students present	Relevance to POs
1	Preparation of p-nitro acetanilide from acetanilide	Extra experiment conducted	28/5/17	Dr. Deepak Kumar, Assistant Professor	93	1, 2, 6, 7
2	Acidity and basicity of organic molecules	Covered in regular classes (types of reagents)	24/4/17	Dr. Deepak Kumar, Assistant Professor	90	2,5,10,11

3	Drug control acts and its regulators	Time devoted in the theory classes	5/4/17	Dr. Deepak N Kapoor, Associate Professor	91	1,3
4	HPLC practical component is required	Demonstration of HPLC usage was conducted during practical class	12/4/17	Mr. Navneet K Upadhyay, Assistant Professor	45	1,3
5	Stability testing – industrial aspects	Time devoted in the theory classes	6/04/17	Mr. Navneet Kumar Upadhyay, Assistant Professor	90	1,3,
6	Rules governing electronic configuration	Covered in regular classes	27/4/17	Dr. Deepak Kumar Assistant Professor	91	9,10,11
7	Alternative system of medicine	Extra class was conducted	24/4/17	Ms. Devika Rana, Assistant Professor	85	3,4,11
8	Classification and types of proteins and amino-acids	Seminars given by the students	5/4/17	Dr. Deepak Kumar, Assistant Professor	90	1,2,6
9	Use of experimental animals in research	Handling of animals and demo of various routes of drug administration	3/4/17	Dr. Rohit Goyal Associate Professor	90	1,3,4

10	Latest developments in CDDS	Seminars were given by students	3/4/17	Dr. DN Kapoor, Associate Professor	90	1,4
11	Application of pharmacokinetics parameters by using Microsoft Excel	Covered in regular classes	7/04/17	Dr. Poonam Negi, Assistant Professor	50	1,4
12	Future opportunities in R&D for pharma graduates	Covered in regular classes	9/3/17	Dr. Rohit Goyal, Associate Professor	90	1,3,4
16	Software used for drawing chemical structure and its analysis	Covered in regular classes as tutorial	15/3/17	Dr. Deepak Kumar, Assistant Professor	50	1,6,9
17	Software used for NMR interpretation	Covered in regular classes as tutorial	6/3/17	Dr. Afroze Alam, Assistant Professor	48	1,6,9
18	Leadership Skills'	Time devoted in the theory classes. Given as Guru Talk.	17/3/17	Major Priya Jhingan, Teacher Lawrence school Sanawar.	100	4,6
19	Importance of water for injection and sterile water for injection	Time devoted in the theory classes. Given as assignment	14/3/17	Dr. Deepak Kumar, Assistant Professor	88	1, 3, 4

20	Herbal extract – preparation and usage	Seminars given by the students	6/3/17	Dr. Swati Pundir Assistant Professor	90	1, 3, 4
21	Alternatives to animal experimentations	Covered in regular classes	13/2/17	Dr. Rohit Goyal, Associate Professor	90	1, 3
22	Sampling methods	Covered in regular classes (fundamentals of analysis), given seminars	22/2/17	Dr. Navneet K Upadhyay, Assistant Professor	45	1, 3
23	Standardization of Herbal drugs	Seminars given by the students	24/2/17	Dr. Swati Pundir, Assistant Professor	85	1, 9, 10
24	Chemistry on new drugs reversible proton pump inhibitors, antihistamines, hypoglycaemics	Extra classes were taken	10/10/16	Dr. Deepak Kumar, Assistant Professor	88	1, 2, 3, 4,
25	Software used to construct phase diagram	Demonstration was given	11/10/16	Dr. Poonam Negi, Assistant Professor	91	2, 3, 4,5, 6, 9,10,11
26	Importance of drug Discovery and Development	The topic was covered by giving the assignment	12/10/16	Dr. Rohit Goyal Associate Professor	89	1, 3, 9, 10, 11

27	Industrial prospects of QC and QA	Time devoted in the theory classes. Given as Guru Talk.	14/10/16	Prof. Saranjit Singh, Head the Deptt. of Pharma NIPER, Mohali	100	1, 3,
28	Assay of compounds not mentioned in syllabus	2 Experiments conducted (complexometric and acid base titrations)	20/10/16	Dr. Navneet Kumar Upadhyay, Assistant Professor	90	1, 3

Note: Please mention *in detail* whether the Institution has given such inputs and suggestions to the Affiliating University regarding curricular gaps and possible addition of new content/add-on courses in the curriculum, to bridge the gap and to improve attain program outcome(s).

Inputs and suggestions for improvement were given for curricular gaps and addition of new content by the faculty members and course coordinators to School Academic Committee (SAC) and by SAC to Board of Studies. The BoS recommended the changes to be implemented. However, since 2017, new syllabus as prescribed by PCI has been implemented.

Adherence to Academic Calendar (10) (Demonstrate notified academic calendar & its adherence)

The Shoolini University provides academic and activity calendar separately for whole University in the beginning of each semester. Academic calendar provides semester-wise beginning dates for the conduct of examinations (sessional and final theory as well as practical), the dates for the beginning and end of the semester is also defined. In addition, it also provides list of various restricted and gazette holidays along with slot of winter, summer and Diwali vacations.

Academic calendar for year July 2018 to 31st July 2019

Shoolini University

Academic Calendar – 2018-19

FOR OLD/ NEWLY ADMITTED UG, PG and Ph.D. STUDENTS

Meeting of Academic Council		July 12, 2018		
Allotment of courses and Notification by Deans		July 17, 2018		
Release of Time Table by Vice Chancellor		July 20, 2018		
Course Design and Lecture Schedule		July 20, 2018		
SEMESTER (ODD)				
Registration	All old students (UG/PG / M.Phil/ Ph.D)	Newly admitted Undergraduate Students	Newly admitted Postgraduate Students	Newly admitted M.Phil / PhD Students
	July 30, 2018 (Monday)	Aug 6-7, 2018 (Monday - Tuesday)	Aug 08-09, 2018 (Wednesday-Thursday)	Aug 14, 2018 (Tuesday)
Orientation/ Induction/ I Card Preparation/ Fee for newly admitted students	-	Aug. 07-09, 2018 (Compulsory to attend) (Tuesday-Thursday)	Aug. 09-10, 2018 (Compulsory to attend) (Thursday-Friday)	Aug. 14, 2018 (Compulsory to attend) (Tuesday)
Commencement of Classes	July 31, 2018 (Tuesday)	Aug 10, 2018 (Friday)	Aug 10, 2018 (Friday)	Aug 16, 2018 (Thursday)
Late Registration (With late fee)	July 31-Aug 03, 2018 (Tuesday-Friday)	Aug 08-14, 2018 (Wednesday-Tuesday)	Aug 10-14, 2018 (Friday-Tuesday)	Aug 16-17, 2018 (Thursday-Friday)
Indoor Sports Championship	Aug. 25-26, 2018 (Saturday-Sunday)	Aug. 25-26, 2018 (Saturday-Sunday)	Aug. 25-26, 2018 (Saturday-Sunday)	Aug. 25-26, 2018 (Saturday-Sunday)
Teachers Day (Marathon 2018)	Sept 5, 2018 (Wednesday)	Sept 5, 2018 (Wednesday)	Sept 5, 2018 (Wednesday)	Sept 5, 2018 (Wednesday)
I Term Examination	Sept 20 – 23, 2018 (Thursday-Sunday)	Sept 20 – 23, 2018 (Thursday-Sunday)	Sept 20 – 23, 2018 (Thursday-Sunday)	Sept 20 – 23, 2018 (Thursday-Sunday)

State Level Moot Court Competition	Oct 07, 2018 (Sunday)	Oct 07, 2018 (Sunday)	Oct 07, 2018 (Sunday)	Oct 07, 2018 (Sunday)
Intra University Cultural Competition	Oct 12-14, 2018 (Friday-Sunday)	Oct 12-14, 2018 (Friday-Sunday)	Oct 12-14, 2018 (Friday-Sunday)	Oct 12-14, 2018 (Friday-Sunday)
II Term Examination	Oct. 27- 30, 2018 (Saturday-Tuesday)	Oct. 27- 30, 2018 (Saturday-Tuesday)	Oct. 27- 30, 2018 (Saturday-Tuesday)	Oct. 27- 30, 2018 (Saturday-Tuesday)
Diwali Vacation Student/Staff	Nov 05 -11, 2018 (Monday-Friday)	Nov 05 -11, 2018 (Monday-Friday)	Nov 05 -11, 2018 (Monday-Friday)	Nov 05 -11, 2018 (Monday-Friday)
University Athletic Meet	Nov 17-18, 2018 (Saturday-Sunday)	Nov 17-18, 2018 (Saturday-Sunday)	Nov 17-18, 2018 (Saturday-Sunday)	Nov 17-18, 2018 (Saturday-Sunday)
Inter Department Volley Ball/ Basketball	Nov 24-25, 2018 (Saturday-Sunday)	Nov 24-25, 2018 (Saturday-Sunday)	Nov 24-25, 2018 (Saturday-Sunday)	Nov 24-25, 2018 (Saturday-Sunday)
Payment of tuition fee/Hostel fee for next semester	Dec. 3-17, 2018 (Monday-Monday)	Dec. 3-17, 2018 (Monday-Monday)	Dec. 3-17, 2018 (Monday-Monday)	Dec. 3-17, 2018 (Monday-Monday)
Late fee payment with fine for next semester	Dec. 18-28, 2018 (Tuesday-Friday)	Dec. 18-28, 2018 (Tuesday-Friday)	Dec. 18-28, 2018 (Tuesday-Friday)	Dec. 18-28, 2018 (Tuesday-Friday)
Appraisal of staff	Dec. 10 -14, 2018 (Monday-Friday)	Dec. 10 -14, 2018 (Monday-Friday)	Dec. 10 -14, 2018 (Monday-Friday)	Dec. 10 -14, 2018 (Monday-Friday)
End Term Examination	Dec. 17-28, 2018 (Monday-Friday)	Dec. 17-28, 2018 (Monday-Friday)	Dec. 17-28, 2018 (Monday-Friday)	Dec. 17-28, 2018 (Monday-Friday)

Result Declaration	Jan. 18, 2019 (Friday)	Jan. 18, 2019 (Friday)	Jan. 18, 2019 (Friday)	Jan. 18, 2019 (Friday)
Working Days	102 Excluding Holidays)	97(Excluding Holidays)	96 (Excluding Holidays)	90 (Excluding Holidays)
Winter Vacation (Students)	Dec 31, 2018 - Jan 20, 2019 (Monday-Sunday)	Dec 31, 2018 - Jan 20, 2019 (Monday-Sunday)	Dec 31, 2018 - Jan 20, 2019 (Monday-Sunday)	Dec 31, 2018 - Jan 20, 2019 (Monday-Sunday)
Winter Vacation (Staff)	Dec 31, 2018 - Jan 13, 2019 (Monday-Sunday)	Dec 31, 2018 - Jan 13, 2019 (Monday-Sunday)	Dec 31, 2018 - Jan 13, 2019 (Monday-Sunday)	Dec 31, 2018 - Jan 13, 2019 (Monday-Sunday)
SEMESTER (EVEN)				
Allotment of courses and Notification by Deans		November 28, 2018		
Release of Time Table by Vice Chancellor		December 07, 2018		
Course Design and Lecture Schedule		December 20, 2018		
Start of next semester		Jan. 21, 2019		
Registration (Online)	Jan. 21, 2019 (Monday)	Jan. 21, 2019 (Monday)	Jan. 21, 2019 (Monday)	Jan. 21, 2019 (Monday)
Commencement of classes	Jan. 22, 2019 (Tuesday)	Jan. 22, 2019 (Tuesday)	Jan. 22, 2019 (Tuesday)	Jan. 22, 2019 (Tuesday)
Late Registration (With Late Fee)	Jan. 22 - 23, 2019 (Tuesday-Wednesday)	Jan. 22 - 23, 2019 (Tuesday-Wednesday)	Jan. 22 - 23, 2019 (Tuesday-Wednesday)	Jan. 22 - 23, 2019 (Tuesday-Wednesday)
National Level Moot Court Competition	Feb. 03, 2019 (Sunday)	Feb. 03, 2019 (Sunday)	Feb. 03, 2019 (Sunday)	Feb. 03, 2019 (Sunday)
I Term Examination	March 07-10, 2019 (Thursday-Sunday)	March 07-10, 2019 (Thursday-Sunday)	March 07-10, 2019 (Thursday-Sunday)	March 07-10, 2019 (Thursday-Sunday)
Spring cum Flower Festival	March 16-17, 2019 (Saturday-Sunday)	March 16-17, 2019 (Saturday-Sunday)	March 16-17, 2019 (Saturday-Sunday)	March 16-17, 2019 (Saturday-Sunday)
Theatre cum Musical Festival (MOKSH)	March 30-31, 2019 (Saturday-Sunday)	March 30-31, 2019 (Saturday-Sunday)	March 30-31, 2019 (Saturday-Sunday)	March 30-31, 2019 (Saturday-Sunday)
Inter Deptt. Cricket Championship	April 06-07, 2019 (Saturday-Sunday)	April 06-07, 2019 (Saturday-Sunday)	April 06-07, 2019 (Saturday-Sunday)	April 06-07, 2019 (Saturday-Sunday)

		Sunday)	Sunday)	
II term Examination	April 11-14, 2019 (Thursday-Sunday)	April 11-14, 2019 (Thursday-Sunday)	April 11-14, 2019 (Thursday-Sunday)	April 11-14, 2019 (Thursday-Sunday)
Payment of tuition fee/Hostel fee for next semester	May 1-15, 2019 (Wednesday-Wednesday)	May 1-15, 2019 (Wednesday-Wednesday)	May 1-15, 2019 (Wednesday-Wednesday)	May 1-15, 2019 (Wednesday-Wednesday)
Late fee payment with fine for next semester	May 16-30, 2019 (Thursday-Thursday)	May 16-30, 2019 (Thursday-Thursday)	May 16-30, 2019 (Thursday-Thursday)	May 16-30, 2019 (Thursday-Thursday)
End Term Examination	May 23-31, 2019 (Thursday-Friday)	May 23-31, 2019 (Thursday-Friday)	May 23-31, 2019 (Thursday-Friday)	May 23-31, 2019 (Thursday-Friday)
Working Days	94 (Excluding Holidays)	94 (Excluding Holidays)	94 (Excluding Holidays)	94 (Excluding Holidays)
Declaration of Result/ Graduation Day/ Parent- Teacher Interaction	June 08, 2019 (Saturday)	June 08, 2019 (Saturday)	June 08, 2019 (Saturday)	June 08, 2019 (Saturday)
Vacation (for students)	June 01–July 28, 2019 (Saturday-Sunday)	June 01–July 28, 2019 (Saturday-Sunday)	June 01–July 28, 2019 (Saturday-Sunday)	June 01–July 28, 2019 (Saturday-Sunday)

Note:

1. Quiz/Surprise test will be during class period.
2. Instructors will be giving assignments (8 for UG and 5 for PG) and after evaluation will return to the student within 4 days of submission.
3. Instructors to submit result of I, II term within 4 days of examinations to Controller of Examination through Dean Academics.

Academic calendar for year July 2017 to 31st July 2018

Shoolini University

Academic Calendar – 2017-18

FOR OLD/ NEWLY ADMITTED UG, PG and Ph.D. STUDENTS

Meeting of Academic Council		July 12, 2017		
Allotment of courses and Notification by Deans		July 17, 2017		
Release of Time Table by Vice Chancellor		July 20, 2017		
Course Design and Lecture Schedule		July 20, 2017		
SEMESTER (ODD)				
Registration	All old students (UG/PG / M.Phil/ Ph.D)	Newly admitted Undergraduate Students	Newly admitted Postgraduate Students	Newly admitted M.Phil. / PhD Students
	July 31, 2017	Aug 7-8, 2017	Aug 09-10, 2017	Aug 16, 2017
Orientation/ Induction/ I Card Preparation/ Fee for newly admitted students	–	Aug. 08, 2017 (Compulsory to attend)	Aug10, 2017 (Compulsory to attend)	Aug. 16, 2017 (Compulsory to attend)
Commencement of Classes	Aug 1, 2017	Aug 9, 2017	Aug 11, 2017	Aug 17, 2017
Late Registration (With late fee)	Aug. 1-04, 2017	Aug. 9-13, 2017	Aug. 11-14, 2017	Aug.17-19, 2017
Indoor Sports Championship	Aug. 26-27, 2017	Aug. 26-27, 2017	Aug. 26-27, 2017	Aug. 26-27, 2017
Teachers Day(Marathon 2017)	Sept 5, 2017	Sept 5, 2017	Sept 5, 2017	Sept 5, 2017
I Term Examination	Sept 19 – 22, 2017	Sept 19 – 22, 2017	Sept 19 – 22, 2017	Sept 27 – 29, 2017
Intra University Cultural Competition	Oct 6-8, 2017	Oct 6-8, 2017	Oct 6-8, 2017	Oct 6-8, 2017
II Term Examination	Nov. 1- 3, 2017	Nov. 1- 3, 2017	Nov. 1- 3, 2017	Nov. 6- 8, 2017

Diwali Vacation Student/Staff	Oct. 16 -20, 2017	Oct. 16 -20, 2017	Oct. 16 -20, 2017	Oct. 16 -20, 2017
University Athletic Meet	Nov 11-12, 2017	Nov 11-12, 2017	Nov 11-12, 2017	Nov 11-12, 2017
Inter Deptt. Volley Ball/ Basketball	Nov 18-19, 2017	Nov 18-19, 2017	Nov 18-19, 2017	Nov 18-19, 2017
Payment of tuition fee/Hostel fee for next semester	Dec. 1-15, 2017	Dec. 1-15, 2017	Dec. 1-15, 2017	Dec. 1-15, 2017
Late fee payment with fine for next semester	Dec. 16-30, 2017	Dec. 16-30, 2017	Dec. 16-30, 2017	Dec. 16-30, 2017
Appraisal of staff	Dec. 11 -15, 2017	Dec. 11 -15, 2017	Dec. 11 -15, 2017	Dec. 11 -15, 2017
End Term Examination	Dec. 18-30, 2017	Dec. 18-30, 2017	Dec. 18-30, 2017	Dec. 25-30, 2017
Result Declaration	Jan. 24, 2018	Jan. 24, 2018	Jan. 24, 2018	Jan. 24, 2018
Working Days	102 (Excluding Holidays)	97(Excluding Holidays)	96 (Excluding Holidays)	90 (Excluding Holidays)
Winter Vacation (Students)	Jan 01-28, 2018	Jan 01-28, 2018	Jan 01-28, 2018	Jan 01-28, 2018
Winter Vacation (Staff)	Jan 01-14, 2018	Jan 01-14, 2018	Jan 01-14, 2018	Jan 01-14, 2018
Release of Time Table by Vice Chancellor	Jan. 24, 2018			
Course Design and Lecture Schedule	Jan. 22, 2018			
Start of next semester SEMESTER (EVEN)	Jan. 30, 2018			
Registration (Online)	Jan. 30, 2018	Jan. 30, 2018	Jan. 30, 2018	Jan. 30, 2018
Commencement of classes	Jan. 31, 2018	Jan. 31, 2018	Jan. 31, 2018	Jan. 31, 2018
Late Registration (With Late Fee)	Jan. 31 – Feb. 02, 2018	Jan. 31 – Feb. 02, 2018	Jan. 31 – Feb. 02, 2018	Jan. 31 – Feb. 02, 2018
I Term Examination	March 06-09, 2018	March 06-09, 2018	March 06-09, 2018	March 07-09, 2018
Theatre cum Musical Festival(MOKSH)	March 24-25, 2018	March 24-25, 2018	March 24-25, 2018	March 24-25, 2018

Spring cum Flower Festival	April 01, 2018	April 01, 2018	April 01, 2018	April 01, 2018
Inter Deptt. Cricket Championship	April 07-08, 2018	April 07-08, 2018	April 07-08, 2018	April 07-08, 2018
II term Examination	April 24-27, 2018	April 24-27, 2018	April 24-27, 2018	April 25-27, 2018
Payment of tuition fee/Hostel fee for next semester	May 1-15, 2018	May 1-15, 2018	May 1-15, 2018	May 1-15, 2018
Late fee payment with fine for next semester	May 16-30, 2018	May 16-30, 2018	May 16-30, 2018	May 16-30, 2018
End Term Examination	June 04-16, 2018	June 04-16, 2018	June 04-16, 2018	June 04-16, 2018
Working Days	95 (Excluding Holidays)	95 (Excluding Holidays)	95 (Excluding Holidays)	95 (Excluding Holidays)
Declaration of Result/ Graduation Day/ Parent- Teacher Interaction	June 23, 2018	June 23, 2018	June 23, 2018	June 23, 2018
Vacation (for students)	June 18–July 29, 2018	June 18–July 29, 2018	June 18–July 29, 2018	June 18–July 29, 2018

Note:

- 1) Quiz/Surprise test will be during class period.
- 2) Instructors will be giving assignments (8 for UG and 5 for PG) and after evaluation will return to the student within 4 days of submission.
- 3) Instructors to submit result of I, II term within 4 days of examinations to Controller of Examination through Dean Academics.

Academic calendar for year August 2016 to 31st July 2017

Shoolini University

Academic Calendar – 2016-17

FOR OLD/ NEWLY ADMITTED UG, PG and Ph.D. STUDENTS

Course Title and Code to be offered	June 20,2016			
Meeting of Academic Council	June 24, 2016			
Admission Cell by Admission Cell	June 27- July 01, 2016			
Allotment of courses and Notification by Deans	July 01, 2016			
Release of Time Table by Vice Chancellor	July 28, 2016			
Course Design and Lecture Schedule	July 15, 2016			
SEMESTER (ODD)				
Registration	All old students (UG/PG / M. Phil/ Ph.D)	Newly admitted Undergraduate Students	Newly admitted Postgraduate Students	Newly admitted M. Phil / PhD Students
	Aug 1 2016	Aug 6-9, 2016	Aug 10-11, 2016	Aug 16, 2016
Orientation/ Induction/ I Card Preparation/ Fee for newly admitted students	–	Aug. 09, 2016 (Compulsory to attend)	Aug. 11, 2016 (Compulsory to attend)	Aug. 17, 2016 (Compulsory to attend)
Commencement of Classes	Aug 2, 2016	Aug 10, 2016	Aug 12, 2016	Aug 17, 2016
Late Registration (With late fee)	Aug 2-05, 2016	Aug 10-16, 2016	Aug 12-18, 2016	Aug 17-19, 2016
Indoor Sports Championship	Aug. 20-21, 2016	Aug. 20-21, 2016	Aug. 20-21, 2016	Aug. 20-21, 2016
Teachers Day (Marathon 2015)	Sept 5, 2016	Sept 5, 2016	Sept 5, 2016	Sept 5, 2016
I Term Examination	Sept 21 – 23, 2016	Sept 21 – 23, 2016	Sept 21 – 23, 2016	Sept 28 – 30, 2016
Intra University Cultural Competition	Oct 06-08, 2016	Oct 06-08, 2016	Oct 06-08, 2016	Oct 06-08, 2016

Shoolini Univ. Foundation Day Convocation	Oct. 16,2016	Oct. 16,2016	Oct. 16,2016	Oct. 16,2016
II Term Examination	Oct. 26- 28, 2016	Oct. 26- 28, 2016	Oct. 26- 28, 2016	Nov. 7- 9, 2016
Diwali Vacation Student/Staff	Nov 29- Nov. 4, 2016	Nov 29- Nov. 4, 2016	Nov 29- Nov. 4, 2016	Nov 29- Nov. 4, 2016
University Athletic Meet	Nov 19-20, 2016	Nov 19-20, 2016	Nov 19-20, 2016	Nov 19-20, 2016
Inter Department Volley Ball/ Basketball	Nov 26-27, 2016	Nov 26-27, 2016	Nov 26-27, 2016	Nov 26-27, 2016
Payment of tuition fee/Hostel fee for next semester	Dec. 1-15, 2016	Dec. 1-15, 2016	Dec. 1-15, 2016	Dec. 1-15, 2016
Late fee payment with fine for next semester	Dec. 16-30, 2016	Dec. 16-30, 2016	Dec. 16-30, 2016	Dec. 16-30, 2016
Appraisal of staff	Dec. 10,11,17 &18, 2016	Dec. 10,11,17 &18, 2016	Dec. 10,11,17 &18, 2016	Dec. 10,11,17 &18, 2016
End Term Examination	Dec. 16-30, 2016	Dec. 16-30, 2016	Dec. 16-30, 2016	Dec. 30, 2016- Jan 03,2017
Result Declaration	Jan. 7, 2017	Jan. 7, 2017	Jan. 7, 2017	Jan. 7, 2017
Working Days	98 (Excluding Holidays)	93(Excluding Holidays)	91 (Excluding Holidays)	90 (Excluding Holidays)
Winter Vacation (Students)	Jan 01- 29,2017	Jan 01-29,2017	Jan 01-29,2017	Jan 04-29,2017
Allotment of courses and Notification by Deans	Jan.02,2017			
Release of Time Table by Vice Chancellor	Jan.12,2017			
Course Design and Lecture Schedule	Jan.12,2017			
Start of next semester	Jan.30,2017			
SEMESTER (EVEN)				
Registration (Online)	Jan. 30, 2017	Jan. 30, 2017	Jan. 30, 2017	Jan. 30, 2017
Commencement of classes	Jan. 31, 2017	Jan. 31, 2017	Jan. 31, 2017	Jan. 31, 2017
Late Registration	Feb. 3-6,	Feb. 3-6, 2017	Feb. 3-6, 2017	Feb. 3-6, 2017

(With Late Fee)	2017			
I Term Examination	March 08-10, 2017	March 08-10, 2017	March 08-10, 2017	March 08-10, 2017
Spring cum Flower Festival	March 19, 2017	March 19, 2017	March 19, 2017	March 19, 2017
Theatre cum Musical Festival (MOKSH)	March 24-25, 2017	March 24-25, 2017	March 24-25, 2017	March 24-25, 2017
Inter Deptt. Cricket Championship	April 08-09, 2017	April 08-09, 2017	April 08-09, 2017	April 08-09, 2017
II term Examination	May 3-5, 2017	May 3-5, 2017	May 3-5, 2017	May 3-5, 2017
Payment of tuition fee/Hostel fee for next semester	May 1-15, 2017	May 1-15, 2017	May 1-15, 2017	May 1-15, 2017
Late fee payment with fine for next semester	May 16-30, 2017	May 16-30, 2017 (Thursday-Thursday)	May 16-30, 2017	May 16-30, 2017
End Term Examination	June 1-13, 2017	June 1-13, 2017	June 1-13, 2017	June 1-13, 2017
Declaration of Result/ Graduation Day/ Parent-Teacher Interaction	June 20,2017	June 20,2017	June 20,2017	June 20,2017
Vacation (for students)	June 19-Aug 6, 2017	June 19-Aug 6, 2017	June 19-Aug 6, 2017	June 19-Aug 6, 2017
Working Days	93 (Excluding Holidays)	93 (Excluding Holidays)	93 (Excluding Holidays)	93 (Excluding Holidays)

Note:

1. Quiz/Surprise test will be during class period.
2. Instructors will be giving assignments (8 for UG and 5 for PG) and after evaluation will return to the student within 4 days of submission.
3. Instructors to submit result of I, II term within 4 days of examinations to Controller of Examination through Dean Academics.

Activity calendar

Activity calendar provides the dates, timing and venue for various co-curricular activities and trips to be organized by University during the semester. Following is the table presenting the same data for even semesters of 2019.

Activity Calendar

Activity Calendar (Jan-May 2019)				
Sr. No.	Event	Date	Venue	Timing
1	Republic Day Quiz (Open to All)	26th Jan, 2019	OAT	All Day
2	Shubham Surya Night	30th Jan, 2019	OAT	05:30 PM Onwards
3	World Cancer Week - Cricket Tournament	4th to 6th Feb 2019	Yuv Raj Stadium	03:00 PM to 05:30 PM
4	Poster Making Competition	6th Feb, 2019	OAT	03:00 PM to 05:30 PM
5	Shoolini March for Life	8th Feb, 2019	Solan Mall Road	05:30 PM to 07:00 PM
6	Athletic Meet	9th to 10th Feb, 2019	Yuv Raj Stadium	All Day
7	Valentine Day (Musical Evening)	14th Feb, 2019	Basket Ball Court	06:00 PM Onwards
8	Tansen Ki Khoj	22nd Feb, 2019	OAT	05:00 PM Onwards
9	Volley Ball Tournament	22nd Feb to 23rd Feb, 2019	Yuv Raj Stadium	03:00 PM Onwards
10	World Science Day (Quiz)	28th Feb, 2019	OAT	05:00 PM Onwards
11	Theatre Workshop	28th Feb, 2019	OAT	03:30 PM Onwards
12	Play (For Day Scholars)	1st March, 2019	OAT	06:00 PM Onwards
13	Play (For Resident Students)	2nd March, 2019	OAT	06:30 PM Onwards
14	DJ Tishya Dance Nite	5th March, 2019	Basket Ball Ground	06:00 PM Onwards
15	Women's Day	8th March, 2019	RTH	02:00 PM Onwards
16	Flower Fest + Lit Fest	16th March to 17th March, 2019	Entire Campus	11:00 AM to 04:00 PM
17	Flash Dance / Theatre	25th March, 2019	Nescafe Point	Lunch Break

18	Moksh	29th March to 31st March, 2019	Whole Campus	All Day
19	Declamation (World Health Day)	5th April, 2019	RTH	03:00 PM Onwards
20	Trekking Trip	6th April, 2019	Dhaaron ki Dhar	All Day
21	Inter University Tournament	20th April to 21st April, 2019	Indoor Stadium	03:00 PM Onwards
22	World Earth Day (Rangoli)	22nd April, 2019	Open Spaces	03:00 PM Onwards
23	World Dance Day	29th April, 2019	OAT	05:00 PM Onwards
24	Indoor TT, Chess, Carrom Tournament	30th April to 3rd May, 2019	Indoor Stadium	03:00 PM Onwards
25	Labour Day	1st May, 2019	RTH	03:00 PM Onwards
26	Blood Donation Camp	8th May, 2019	Indoor Sports Complex	11:00 AM Onwards
27	Basket Ball Matches	10th May to 12th May, 2019	Basket Ball Ground	03:00 PM Onwards
28	Cooking Competition	14th May, 2019	TBD	03:00 PM Onwards

CAY 2018-19: University calendars (Commencement and conducted)

Year/ Semester	Date of commencement		I sessional exam date		II sessional exam date		Practical exam date conducted
	Chart	Actual	Chart	Actual	Chart	Actual	
I/I	Dec. 17-28, 2018	14 to 28/12/2018	Sept 20 – 23, 2018	20 to 22 / 09/ 2018	Oct. 27-30, 2018	26 to 30 /10/ 2018	1 to 15 /12/ 2018
I/II	May 23-31, 2019	to be conducted	March 07-10, 2019	7 to 9/ 3/ 2019	April 11-14, 2019	11 to 13 / 4/ 2019	to be conducted
II/III	Dec. 17-28, 2018	14 to 28/12/2018	Sept 20 – 23, 2018	20 to 22 / 09/ 2018	Oct. 27-30, 2018	26 to 30 /10/ 2018	1 to 15 /12/ 2018
II/IV	May 23-31, 2019	to be conducted	March 07-10, 2019	7 to 9/ 3/ 2019	April 11-14, 2019	11 to 13 / 4/ 2019	to be conducted
III/V	Dec. 17-28, 2018	14 to 28/12/2018	Sept 20 – 23, 2018	20 to 22 / 09/ 2018	Oct. 27-30, 2018	26 to 30 /10/ 2018	1 to 15 /12/ 2018

III/VI	May 23-31, 2019	to be conducted	March 07-10, 2019	7 to 9/3/ 2019	April 11-14, 2019	11 to 13 /4/ 2019	to be conducted
IV/VII	Dec. 17-28, 2018	14 to 28/12/2018	Sept 20 – 23, 2018	20 to 22 / 09/ 2018	Oct. 27-30, 2018	26 to 30 /10/ 2018	1 to 15 /12/ 2018
IV/VIII	May 23-31, 2019	to be conducted	March 07-10, 2019	7 to 9/3/ 2019	April 11-14, 2019	11 to 13 /4/ 2019	to be conducted

CAY 2017-18: University calendars (Commencement and conducted)

Year/ Semester	Date of commencement		I sessional exam date		II sessional exam date		Practical exam date conducted
	Chart	Actual	Chart	Actual	Chart	Actual	
I/I	Dec. 18-30, 2017	14 to 26/12/2017	Sept 19 – 22, 2017	21 to 23 / 09/ 2017	Nov. 1- 3, 2017	3 to 5 /11/ 2017	4 to 11 /12/ 2017
I/II	June 04-16, 2018	18 to 31/05/2018	March 06-09, 2018	8 to 10/ 3/ 2018	April 24-27, 2018	19 to 21 / 4/ 2018	10 to 18 / 5/ 2018
II/III	Dec. 18-30, 2017	14 to 26/12/2017	Sept 19 – 22, 2017	21 to 23 / 09/ 2017	Nov. 1- 3, 2017	3 to 5 /11/ 2017	4 to 11 /12/ 2017
II/IV	June 04-16, 2018	18 to 31/05/2018	March 06-09, 2018	8 to 10/ 3/ 2018	April 24-27, 2018	19 to 21 / 4/ 2018	10 to 18 / 5/ 2018
III/V	Dec. 18-30, 2017	14 to 26/12/2017	Sept 19 – 22, 2017	21 to 23 / 09/ 2017	Nov. 1- 3, 2017	3 to 5 /11/ 2017	4 to 11 /12/ 2017
III/VI	June 04-16, 2018	18 to 31/05/2018	March 06-09, 2018	8 to 10/ 3/ 2018	April 24-27, 2018	19 to 21 / 4/ 2018	10 to 18 / 5/ 2018
IV/VI I	Dec. 18-30, 2017	14 to 26/12/2017	Sept 19 – 22, 2017	21 to 23 / 09/ 2017	Nov. 1- 3, 2017	3 to 5 /11/ 2017	4 to 11 /12/ 2017
IV/VI II	June 04-16, 2018	18 to 31/05/2018	March 06-09, 2018	8 to 10/ 3/ 2018	April 24-27, 2018	19 to 21 / 4/ 2018	10 to 18 / 5/ 2018

CAY 2016-17: University calendars (Commencement and conducted)

Year/ Semester	Date of commencement		I sessional exam date		II sessional exam date		Practical exam date conducted
	Chart	Actual	Chart	Actual	Chart	Actual	
I/I	Dec. 16-30, 2016	16 to 26/12/2016	Sept 21 – 23, 2016	21 to 23 / 09/ 2016	Oct. 26-28, 2016	26 to 28 /10/ 2016	6 to 13 /12/ 2016
I/II	June 1-13, 2017	30 May to 10 June 2017	March 08-10, 2017	8 to 10/ 3/ 2017	May 3-5, 2017	3 to 5 / 5/ 2017	19 to 29 / 5/ 2017
II/III	Dec. 16-30, 2016	16 to 26/12/2016	Sept 21 – 23, 2016	21 to 23 / 09/ 2016	Oct. 26-28, 2016	26 to 28 /10/ 2016	6 to 13 /12/ 2016
II/IV	June 1-13, 2017	30 May to 10 June 2017	March 08-10, 2017	8 to 10/ 3/ 2017	May 3-5, 2017	3 to 5 / 5/ 2017	19 to 29 / 5/ 2017
III/V	Dec. 16-30, 2016	16 to 26/12/2016	Sept 21 – 23, 2016	21 to 23 / 09/ 2016	Oct. 26-28, 2016	26 to 28 /10/ 2016	6 to 13 /12/ 2016
III/VI	June 1-13, 2017	30 May to 10 June 2017	March 08-10, 2017	8 to 10/ 3/ 2017	May 3-5, 2017	3 to 5 / 5/ 2017	19 to 29 / 5/ 2017
IV/VII	Dec. 16-30, 2016	16 to 26/12/2016	Sept 21 – 23, 2016	21 to 23 / 09/ 2016	Oct. 26-28, 2016	26 to 28 /10/ 2016	6 to 13 /12/ 2016
IV/VIII	June 1-13, 2017	30 May to 10 June 2017	March 08-10, 2017	8 to 10/ 3/ 2017	May 3-5, 2017	3 to 5 / 5/ 2017	19 to 29 / 5/ 2017

Teaching-Learning Processes (110)

Initiatives in teaching and learning process (25)

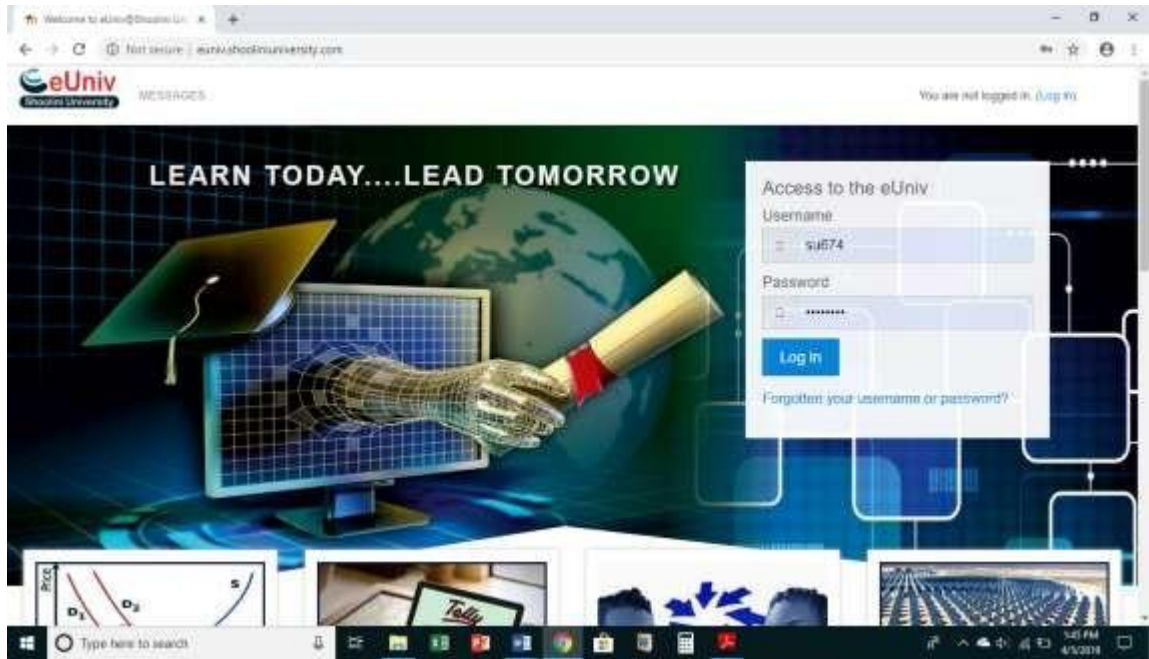
(Implemented teaching-learning process and Initiatives in improving instruction methods, using real world examples, collaborative learning, the quality of laboratory experiments with regard to conduct, record observations, analysis, Feedback collection process; collection, analysis and action taken etc. encouraging bright students, assisting weak students etc. The initiatives, implementation details and impact analysis need to be documented)

Initiatives taken up by the faculty at Pharmaceutical Sciences on teaching and learning are summarized in the following description. Faculty has been rigorously using contemporary pedagogy to make their teaching process an interesting process along with up keeping the effective and engaging learning process of the students.

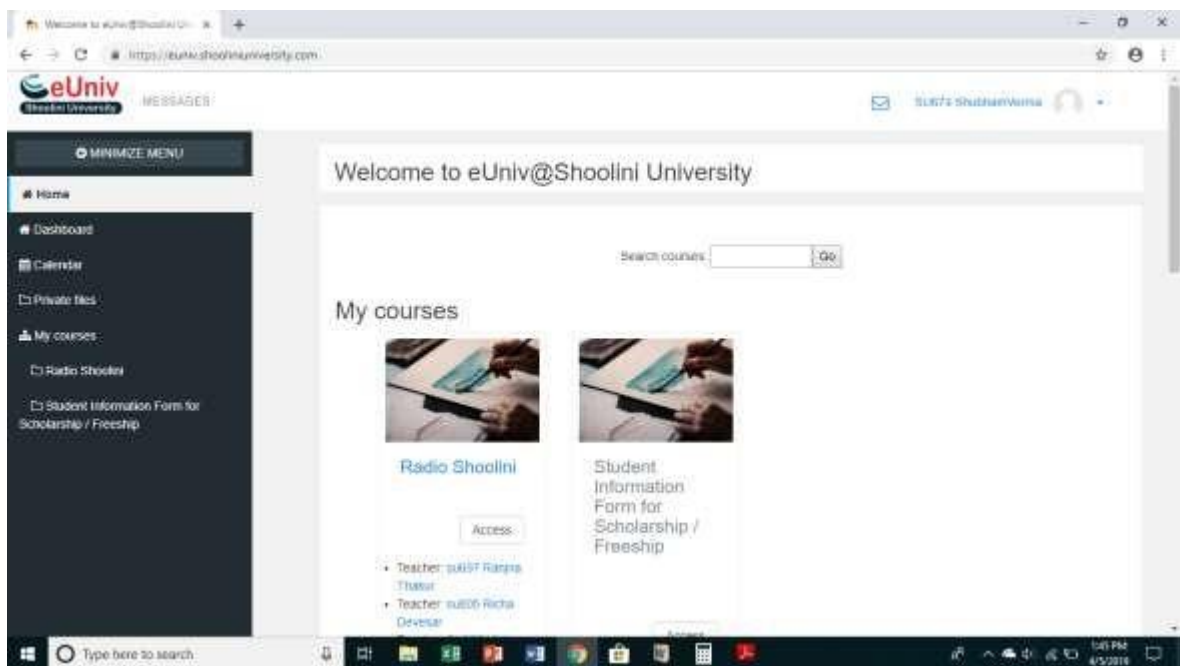
Some of the initiatives that are taken to have significant results are as follows:

1. eUniv Platform: The department is strengthening supplementary learning through inbuilt online Learning Management System (LMS) called eUniv and is making 100% use of e-learning and online resources through eUniv initiative and LMS (Learning Management System). Every faculty member uses laptop with Wi-Fi connection for appropriate execution of the academic as well as research activities via eUniv platform. EUniv platform is proliferating learning and has proved to be very effective. Under this initiative, in order to augment/supplement teaching the students and faculty are issued a unique login ID to facilitate access for all courses taught in the semester.

This also serves as a one-point solution for a student to know his/her current standing in various assignments, quizzes, surprise tests, term exams etc. The LMS helps faculty members to upload PPTs, learning materials and e-learning resources so that students have access to reading materials through the university website. While, faculty members cover the entire portions through normal teaching, the eUniv; LMS helps the students to learn at their own pace. Blogs are developed by some faculty members so that the students can interact with the subject teacher and also with class mates for clarifying doubts and sharing their understanding of the subject. The eUniv Team organizes workshops for preparing audio/ video slides, which might aid student learning more when compared to learning from regular slides (without audio). These videos are then made available to all the students and staff via the eUniv LMS platform.



eUniv Interface



eUniv Dashboard

Latest software for computer in the administration department are also deployed.

2. **My Shoolini app:** The attendance of the students is taken online in the class on my Shoolini app, which immediately updates the student with the percentage attendance. My Shoolini application was launched by Shoolini University Pro-Chancellor Satish Anand, this app has been jointly developed by the faculty and former students of the university.

The app has launched the university towards becoming completely digital end to end based digitization & knowledge management tool for School's activities. With all the features in place, the students and staff can download the app (Android & iOS) and have access to all the university services and features through a single window interface. My Shoolini App is also available for download on the university website, Google Play & Apples store.

The application allows performing multiple activities such as marking attendances, tracking bus locations, submitting assignments, timetables, fee payment, learning management system etc. on a single platform.

Some of the key features of the app include the My Knowledge Hub which deals with research thesis and the Geo Selfie GPS enabled attendance system. This attendance system allows the staff to mark their attendance by clicking a selfie in the university campus. GPS enabled bus-tracking system allows students to track all the university buses for convenience. myShoolini uses high end technology tools such as AI & predictive learning and includes:

- eUniv: Shoolini's moodle based (predictive learning) 24x7 flip classroom platform & LMS. eUniv has 6,000+users with access to 5,00,000 unique content eUniv also hosts Shoolini's secure online examination module.
- Sikander – Shoolini's AI & ML based (speech and face recognition) interview & skill learning module. Over 2000 students are actively using Sikander.
- myYKC – Shoolini's knowledge management system digitizes and provides access to over 1 million books & journals to Shoolini faculty & students along with digitizing the library process.

Others:

- GPS based transport module
- Face recognition-based attendance module
- AI based central time tabling module
- Hostel module

- Social networking module
- Payments module
- Grievance Redressal Module

Evidence of Success

- **Geo selfie attendance:** Employee in campus takes selfie attendance on the cell phone.
- **GPS enabled vehicle tracking system:** Student/Employee can see the location of bus/ car by logging in to the myShoolini application.
- **Digital library:** EBSCO platform provides a wide range of books to read ebooks.
- **Self-issue of books:** Books can be issued to the library by just scanning the barcode of any book.
- **Self-return of books:** Books can be returned to the library by scanning the barcode of any book.
- **Robust individual timetable:** Any student/employee can see the timetable under the menu to see their time & room number of their respective classes.
- **Extensive notification system:** Any notification to be communicated to Shoolinian is shown on myShoolini app.
- **Used by over 1,000+ people:** As lots of features are available in the app, it has more than 1000 users.

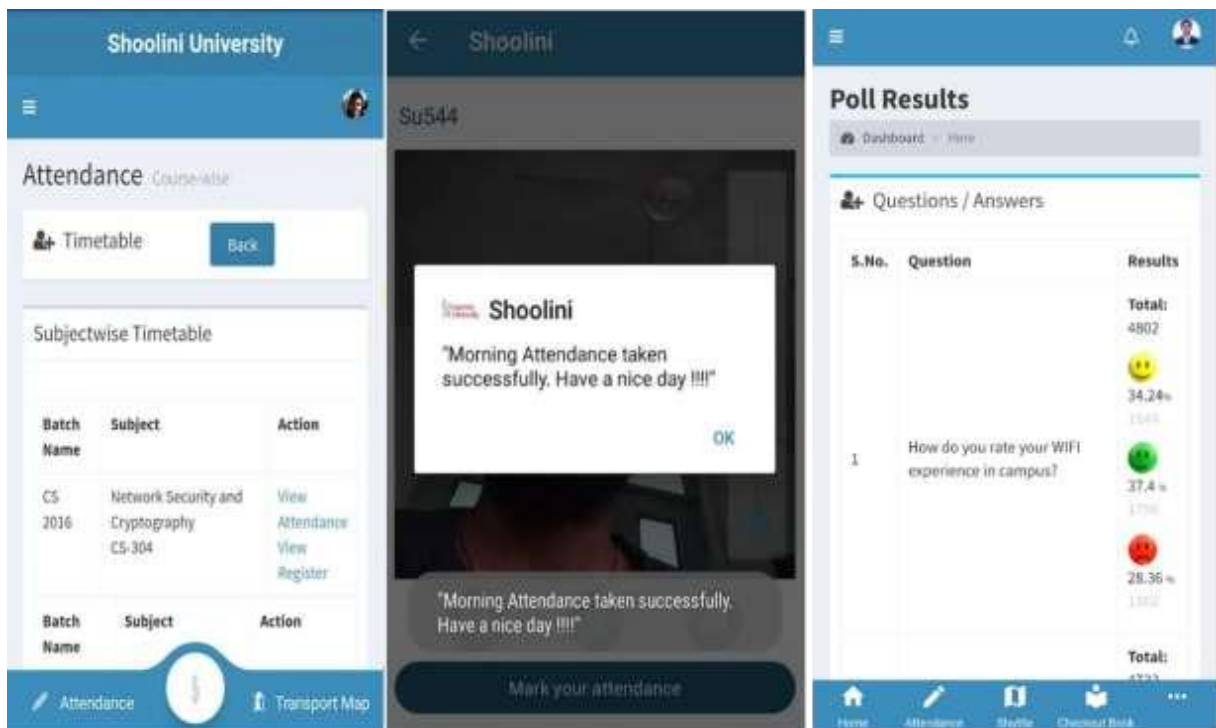




Menu

Dashboard

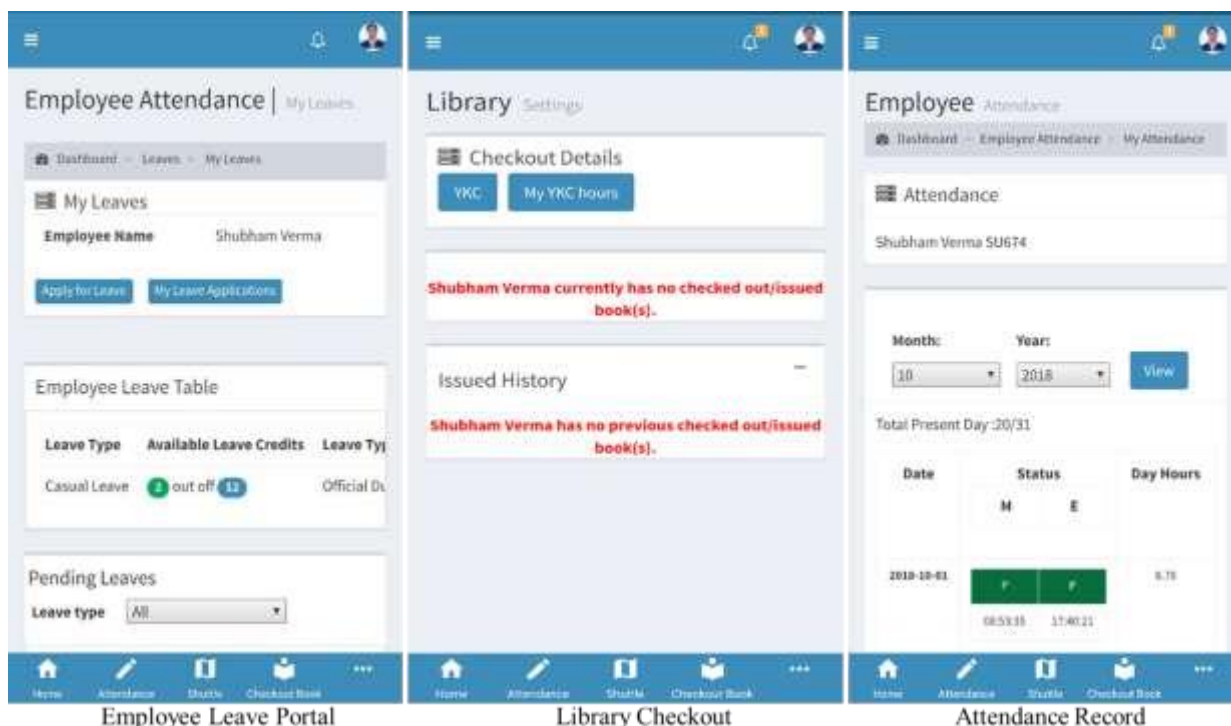
Bus/Car GPS location



Time Table

Selfie Attendance

Poll Results



3. **SPRINT program:** For functional and soft skills, the SPRINT workshops are a regular and continuous activity in the campus. SPRINT has the potential to be a role model for functional and soft skills training.
4. **Program booklet:** Detailed lecture schedule for all the courses in the program made available in form of a book. Each course lecture schedule includes lecture wise details including outcomes, pedagogy, topic to be covered, assignment if any, cases to be done and so on.
5. **Teaching Pedagogy:** All the lectures are executed using power point presentations supplemented by cases and uploading video lectures and OER (Open Educational Resources) study material on eUniv. Emergent initiatives (Activity based assignments, real life case studies, role plays etc.) taken to enable the students to think across disciplinary boundaries and / or to make connections between what they learn inside as well as outside the classroom.
6. **Discussion forums:** Online discussion forums allow having anytime and anywhere dialogue between faculty members and students, the facility is available on eUniv.
7. **Faculty learning initiatives:** The faculty members are encouraged to participate in short term courses, webinar, staff development programs and workshops on advanced topics to keep pace with the advanced level of knowledge and skills. The faculties

have been participating/presenting papers in national/international conferences and publish their articles in national and international journals to enrich their knowledge.

8. Teaching – learning methods:

- a. Lectures/Presentations:** Lectures are the effective ways of achieving the program outcomes (POs) and course outcomes (COs). The course outcomes could not be better achieved without these. Lectures are the best ways to get facts, make students to think and understand the concepts. The teacher is readily available to clear the doubts instantaneously. Thus, these make a platform to cover and improve the ability to design, formulate and solve problems. Mode of delivery of lectures is power point presentations. The course information and peripheral knowledge on the web are made available to promote learning.
- b. Laboratory Component:** Laboratory is an important component that allows the students to acquire psychomotor (practical) skills. In addition, students are trained to collect the data, transformation of data as per the scientific principles, analysis, interpretation and drawing conclusions. These skills also allow the students to appreciate the theoretical principles. It is a place wherein several PO's can be attained, because of high contact time and 1 to 1 basis.
- c. Educational/Industrial Visits:** Visiting of resource centers, work places and research organizations helps to explore all opportunities and have greater impact on the students. These allow the students to make real-life decisions. These have proved successful in career exploration, decision making and to become life-long learners.
- d. Seminars:** These serve as a platform for sharing knowledge/expertise in advanced areas, which results in collaboration and attempt for enhancement of the skills, techniques and modern tools necessary for the practice of pharmacy profession. Several POs can be attained in a seminar method on account of flexibility. Seminars are given be the students.
- e. Guest Lectures/Expert Talks:** Expert talks by the eminent persons working in pharmaceutical industries/research organizations/ practicing pharmacists help the students and the faculty to understand current trends in various spheres, which leads to the attainment of POs. External resource persons also add value to the program and help students to realize the link between education and real world in the profession. These talks become a bridge to fill the gaps and also develop

rapport for meeting the future need of the industries / research organization / universities. These promote the sense of life-long learning.

f. Workshops: The College organizes the orientation programs as a first step to introduce the students to the college, of course, profession etc. As a part of this exercise, the school also conducts workshops. These also help in developing self-learning process and support the lifelong learning.

g. Tutorial classes to address student questions: A tutorial is a method of transferring knowledge and may be used as a part of the learning process. These help the students to update their skills in the pharmaceutical field. Depending on the context, a tutorial can assume one of the many forms, ranging from a set of instructions to complete a task to an interactive problem-solving session. Tutorial classes taken by faculty which is the part of timetable

- More interactive and specific than a book or a lecture.
- A tutorial seeks to teach by example and supply the information to complete a certain task.
- Students are utilizing the services of teachers for getting clarifications and clearing their doubts.
- Average students: Emphasis is given to clarify their doubts or conducting group discussion and make them understand the basics of the subjects.
- Bright students: Group discussion with faculty to discuss on the advanced information of subjects (which is not there in the syllabus).
- Allow students to collect the information from the internet for e-learning materials and video clips about the latest technology on upcoming topics.

Tutorial helps the students to update their skills in the pharmaceutical field. The subject understanding of students is analyzed regularly by conducting the tests.

Our faculty has adopted following three main goals of tutorial class:

i. Active Learning - Structured activities are planned for students to do. Work hard to build interest on the students' parts. Ask questions and try to involve the students in getting the answer, instead of giving full answer. This involvement will build confidence in students, the most important step in improving the writing process.

ii. Independence - A confident student will become an independent student. Help the student to develop ideas and discuss them even if these may not be directly related to what the course is all about.

iii. Motivation - Tutorial classes give the time to identify the strengths and weaknesses of individual student. Then the teacher can develop his/her own way to motivate the students individually. Thus, faculty can tackle the weaker students to bring up their confidence level by motivation.

**Quality of internal semester question papers, assignments and evaluation
(10)**

(Mention the initiatives, implementation details and impact analysis related to quality assurance of semester question papers, assignments that encourage and empower the students to develop skills and higher orders of learning and evaluation)

A continuous evaluation system consisting of surprise tests, assignments, quizzes, mid-term examinations and end-term examination is followed. Evaluation criteria consist of internal assessment (25%) and end term examination (75%) weightage.

Question paper review committee has been setup to evaluate the quality of question papers. Question papers submitted by each faculty are routed through the question paper review committee to ensure the quality of question paper, coverage of course and program outcomes. Class tests, assignments and quizzes are held in online or offline mode and evaluation is done by the concerned course coordinator.

Quality of Students projects (15)

(Quality of the project is measured in terms of consideration to factors including, but not limited to, cost, type {application, product, research, review etc.} environment, safety, ethics and standards. Processes related to project identification, allotment, continuous monitoring, evaluation including demonstration of working prototypes, and to enhance the relevance of projects. Mention Implementation details including details of POs addressed through the projects with justification)

Projects constitute an important part of B-Pharmacy program. Projects are identified by the committee constituted for the purpose and are assigned to each faculty member preferably as per their area of specialization. The committee and faculty ensure that the projects meet the program outcomes. Projects reports are prepared under the guidance of project mentor and submitted.

Project reports are evaluated by a separate committee consisting of members of each specialization and an oral viva-voce is conducted by the committee to evaluate the performance of each student.

Quality of the project is measured in terms of:

- Very clear and concise objectives
- Very clear methodology, articulated using technical terms indicating all steps and tools
- Cites substantial current and good quality literature
- Clarity in research methodology
- Benchmarks used / Assumptions made
- Interpretation of results and justification thereof and validity of the results presented.
- Overall presentation of the report

Initiatives related to Industry and/or Hospital interaction (20)

(Give details of the industry/ hospital involvement in the program such as industry-attached laboratories, partial delivery of appropriate courses by industry experts and/or collaborative initiatives with the hospitals etc. Mention the initiatives, implementation details and impact analysis)

The School of Pharmaceutical Sciences, Shoolini University always strives to impart education of international standards as envisaged in the mission statement. In addition to the regular compliance to the PCI approved syllabus, several initiatives have been taken to foster the growth of the students. As part of our program, department also seeks the guidance of industry/hospital to deliver guest lectures to our students. As the B. Pharmacy course is largely industry oriented and industry-based guest lectures were planned.

The School has taken steps to conduct industrial visits, which includes the research laboratories (animal house, maintenance and handling) medicinal and botanical gardens, pharmaceutical industries (allopathic and ayurvedic products). Hospital training and visits are also organized for the students.

Initiatives related to skill Development programs/ industry internship / summer training (10)

(Mention the initiatives, implementation details and impact analysis)

SPRINT

Initiatives: The School of Pharmaceutical Sciences has made several efforts in order to improve the extra curriculum skills of B. Pharmacy students for the placements. A part of the efforts is to acquaint the students with the practices of group discussion, resume writing, communications skills, personality development, time management and all other soft skills activities during Sprint. The sprint program is the extra curriculum activity which organized by the professionals from managements, pharmaceutical industries etc.

Implementation: All the students are compulsory to attain the sprint during their 1st and last semesters. In the 1st semester the sprint program helps the students to understand the difference between school life and college life. They feel comfort during 1st semester. In last semester the sprint program helps the student to qualify the placement barrier.

Industrial training (150 hours)

Initiatives: The School of Pharmaceutical Sciences has made several efforts in order to improve the skills of B. Pharmacy students. A part of the efforts is to acquaint the students with the practices of industry, observing the industrial operations in terms of unit operations and processing, and organizing the unit operations in the production of tablets, capsules, injectable, quality control, quality assurance, instrumentation, managements etc.

Implementation: A list of B. Pharmacy students, their summer industrial training for the last three years is listed below. The industries covered are: production of formulations, Quality assurance and quality control.

Academic Year 2018-2019: Industry internship and summer training

S. No.	Name	Roll no	Company
1	Shubham	150035	Cipla
2	Nageshwar Sharma	150044	Unichem laboratories Ltd

3	Himanshu Kaushal	150049	Unichem Laboratories Ltd
4	Chitesh Sharma	150057	Fermenta Bitech Limited
5	Ashish Thakur	150070	Wockhardt Limited
6	Virender	150073	Wockhardt Limited
7	Unnat Angrish	150089	Yester Pharma
8	Anupam Thakur	150114	Fermenta Bitech Limited
9	Samarth Sharma	150160	Yester Pharma
10	Manish Kumar	150161	Accent Pharmaceuticals & Diagnostics
11	Harpreet Kaur	150230	Aarge Healthcarft
12	Sonia Rani	150245	Corona Remedies Pvt. Ltd
13	Shivanjali Sharma	150278	Aarge Healthcarft
14	Urvashi	150294	Lenus Life Care Pvt. Ltd.
15	Shubham Sharma	150298	Accent Pharmaceuticals & Diagnostics
16	Sunidhi Bhardwaj	150327	Corona remedies Pvt. Ltd
17	Diksha Chauhan	150342	Lenus Life Care Pvt. Ltd.
18	Manish Kumar	150346	Cipla
19	Pardeep Kumar	150348	Chiros Pharma
20	Himanshu Bhaik	150386	Ultra Drugs Pvt Ltd
21	Abhilasha Sharma	150390	Cadila
22	Ankit Sharma	150400	Accent Pharmaceuticals & Diagnostics
23	Diksha Kashyap	150410	Cadila
24	Vaishali Sharma	150420	Ultratech Pharmaceuticals
25	Neha Sharma	150426	Lenus Life Care Pvt. Ltd.
26	Himanshi Sharma	150431	Accent Pharmaceuticals & Diagnostics
27	Ashish Sharma	150450	Ultra Drugs Pvt Ltd

28	Usha Kumari	150457	Accent Pharmaceuticals & Diagnostics
29	Akhil Bhogal	150474	Fermenta Bitech Limited
30	Sushant	150567	Lenus Life Care Pvt. Ltd.
31	Yashima Patel	150572	Copmed Pharmaceutical Pvt Ltd
32	Payal	150573	Accent Pharmaceuticals & Diagnostics
33	Sheetal Malta	150588	Ultratech Pharmaceuticals
34	Satyan Sharma	150609	Sun Pharma
35	Shruti Thakur	150625	Accent Pharmaceuticals & Diagnostics
36	Praveen Thakur	150639	Unichem laboratories Ltd
37	Riya Mehta	150674	Copmed Pharmaceuticals Pvt Ltd
38	Nishchay Pahiya	150743	Aarge Healthcarft
39	Keshav Sharma	150744	Accent Pharmaceuticals & Diagnostics
40	Laxmi Gharti	150746	Corona remedies Pvt. Ltd
41	Akshay Kumar	150747	Glenmark
42	Abhay Charak	150763	Lenus Life Care Pvt. Ltd.
43	Mohammad Khalid Alam	150770	Corona Remedies Pvt. Ltd
44	Ashish	150774	Cipla
45	Sanjay Kumar	150840	Accent Pharmaceuticals & Diagnostics
46	Om Pal	150850	Fermenta Bitech Limited
47	Sumanjali	151022	Accent Pharmaceuticals & Diagnostics
48	Aditya Negi	151046	Unichem Laboratories
49	Sumedha Joshi	169130 1027	Accent Pharmaceutical & Diagnostics

Workshops attended by students

Conferences/training/workshops attended by students in last three years

Workshop/ Conference/ Seminar/	Venue and address	Date	Students	Faculty
Innovation and Entrepreneurship	UIPS, Panjab University, Chandigarh	9/4/19	40	Mr. Lalit Sharma and Dr. Poonam Negi
Bioinformatics and Proteomics Driven Biomarker Developments	Chitkara College of Pharmacy, Chitkara University, Chandigarh	7-8th April, 2017	6	Dr. Navneet Kumar Upadhyay and Dr. Rohit Goyal
Computer Aided Drug Design	Shoolini University, Solan	8/3/19	250	Dr. Deepak Kumar & Dr. Ashutosh Kar Das
Intellectual Property Rights (IPR) and Geographical Indications (GI)'	Shoolini University, Solan	16/3/17	10	Dr. Deepak N Kapoor and Dr. Rohit Goyal
New Horizons in Human Health and Nutrition	Shoolini University, Solan	2nd & 3rd March, 2017	10	Dr. Navneet Kumar Upadhyay
8th National IPA Student Congress	ISF college of Pharmacy, Moga, Punjab	3rd & 4th September, 2016	10	Dr. Deepak N Kapoor, Dr. Rohit Goyal and Mr. NK Upadhyay

Impact Analysis:

The Sprint program, training period and the workshops are provided make the students aware of latest developments in the field and help them understand the system in real life situations. It also helps the students in understanding the process and its actual applications. This also helped to attain the course outcomes.

Continuous Evaluation Process (10)

(Mention the process followed and its effectiveness)

Continuous evaluation is a practice in School of Pharmaceutical sciences, Shoolini University, Solan, keeping the spirit of semester system. Class test and assessments are counter-productive. The main components of evaluation are described below.

Theory evaluation:

In a semester period, two mid-term theory examinations are conducted with a gap of 40-45 days. These are conducted as per the University guidelines/ PCI Guidelines. Marks obtained in mid-term theory examinations are included while computing the internal assessment average. The pattern includes very short answers, short answers and long answers. The corrected answer sheets are shown in the regular class and each student is given feedback on the performance. Further, assignments are given to students, which are corrected and feedback is given. Quizzes and class tests are also conducted during the tutorial hours. Attendance, regularity, active interaction in the classroom are given due credit in the evaluation. The internal assessment is given weightage of 25% and end term theory exam is given weightage of 75%.

Practical Evaluation:

In the laboratory setup, the experiments are conducted as per the list given by the School of Pharmaceutical sciences, Shoolini University. Sufficient time is spent for acquiring practical skills. The continuous evaluation provides the opportunity to practice the skill. It normally involves feedback and corrective action. The writing of the practical records, submission and evaluation are done regularly. Viva voce conducted at the end of each experiment (every day) is another important feature of evaluation. Attendance is also given due to weightage. Two mid-term practical examinations are conducted with a gap of 40-45 days. These are conducted as per the University guidelines/ PCI Guidelines. Marks obtained in mid-term practical examinations are included while computing the internal assessment average. The mid- term practical examinations are followed with synopsis, practical performance, records checking, viva voce and overall performance of the students. Attendance is also given due weightage. The internal assessment is given weightage of 25% and end term practical exam is given weightage of 75%.

Quality of Experiments (20)

(Quality from the equipment set-up and performance perspective)

The syllabus of B. Pharmacy in School of Pharmaceutical Sciences, has specified the list of experiments for each experimental course after due consideration of the quality of the experiments. A few highlights are enumerated below.

1. The laboratories are spacious and equipped with the necessary infrastructure that facilitate the smooth conduct of experiments.
2. The School has necessary equipment, instruments and apparatus as prescribed the Pharmacy Council of India.
3. The School has procured the necessary equipment in order to conduct the labs.
4. The teachers are well qualified and experienced for handling the practical/labs work and effective learning.
5. The teachers are continuously striving and actively involved in research work, which is translated into the practical.
6. The language laboratory imparts specific skill/ / communication skills practical imparts soft skills. A multimedia aided language lab gives stress on experiments: grammatical exercises, phonetics pronunciation, oral presentations, vocabulary building, writing skills and interview skills.
7. Each student is given opportunity to conduct the experiments independently. For this reason, the practical batch size limited to 25 students.
8. Sufficient number of systems are maintained in the computer lab to enable that each student can get one terminal, so as to work independently in a lab.
9. The sophisticated equipment procured for PG programs are also provided to facilitate the learning of UG students.
10. The faculty is involved in developing laboratory. However, the students are expected to consult them, but they have to write their own laboratory notebooks or records.

Based on the perspectives and setup, the experimental course work is correlated to the program outcomes, while rating the equipment and performance of the students.

Course code	Name of the course	Program outcomes											
		1	2	3	4	5	6	7	8	9	10	11	
BP107P	Human Anatomy and Physiology – Practical	3									1		
BP108P	Pharmaceutical Analysis I – Practical	3		3									
BP109P	Pharmaceutics I – Practical	3					3						
BP110P	Pharmaceutical Inorganic Chemistry – Practical	3	3								3		
BP111P	Communication skills – Practical*	3		3	3		3		3				
BP112RBP	Remedial Biology – Practical*	3							3	3			3
BP207P	Human Anatomy and Physiology II –Practical	2									3	3	
BP208P	Pharmaceutical Organic Chemistry I– Practical	3					3				3		
BP209P	Biochemistry – Practical	3		3									
BP210P	Computer Applications in Pharmacy – Practical*	3									3		3
BP305P	Pharmaceutical Organic Chemistry II – Practical	2									3	3	
BP306P	Physical Pharmaceutics I – Practical	3					3				3		
BP307P	Pharmaceutical Microbiology – Practical	3		3							-		
BP 308P	Pharmaceutical Engineering –Practical	3		-							3		3
BP406P	Medicinal Chemistry I – Practical	2									3	3	
BP407P	Physical Pharmaceutics II – Practical	3					3				3		
BP408P	Pharmacology I – Practical	3		3							-		
BP409P	Pharmacognosy and Phytochemistry I – Practical	3		-							3		3
PHR-PT-351(P)	Hospital & Community Pharmacy Practical	3	1	1	1	-	-	2	-	2	-	-	-
PHR-PG-352(P)	Pharmacognosy III Practical + Tutorial	3	-	-	1	-	-	-	-	-	-	-	-

PHR-PC-353(P)	Medicinal Chemistry-I Practical + Tutorial	3	-	2	3	-	-	-	-	-	-	-
PHR-PT-354 (P)	Pharmacology II Practical + Tutorial	3	2	2	-	3	3	3	3	-	-	3
PHR-PT-355 (P)	Pharmaceutical Technology Practical + Tutorial	3	-	-	3	-	-	-	-	-	-	-
PHR-PR-356	Project	3	2	3	2	2	-	-	2	-	-	-
PHR-PT-361(P)	Biopharmaceutics and Pharmacokinetics Practical + Tutorial	3	3	2	2		3	3				3
PHR-PC-362(P)	Medicinal Chemistry-II Practical	3		3						3		3
PHR-PG-364(P)	Chemistry of Natural Products Practical + Tutorial	3				3			2			3
PHR-PL-365(P)	Pharmacology III Practical + Tutorial	3	3	2	3							3
PHR-PR-366	Project	3	2	3	2	2			2			3
PHR-PT-471 (P)	Pharmaceutical Technology II Practical + Tutorial	3		3						3		
PHR-PL-472 (P)	Pharmacovigilance Practical + Tutorial	3		2					3			
PHR-PC-474 (P)	Medicinal Chemistry & Cheminformatics Practical + Tutorial	3	1	3	3				-			2
PHR-PT-475 (P)	Pharmaceutical Biotechnology Practical + Tutorial	3										2
PHR-PR-476	Project Literature Seminar/Approval	3	2	3	2	2			2			
PHR-PG-482 (P)	Industrial Pharmacognosy Practical + Tutorial	3		2	1					1		
PHR-PC-483 (P)	Pharmaceutical Analysis- II Practical + Tutorial	3	1	2	3							1
PHR-PR-485	Project	3	2	3	2	2			2			

1st semester	
BP107P	Human Anatomy and Physiology – Practical
<p>Anatomy, physiology and health education laboratory course provides significant insights about histological features of the human tissues through permanent slides. It gives adequate knowledge to the students to identify the models and specimen of the human skeletal system and organs. Focus is made to acquire the knowledge on mechanisms and methodology involved in the determination of human blood group, hemoglobin content, bleeding time and clotting time. The students gain knowledge on mechanisms and methodology involved in the determination of RBC count and total WBC count. The practice to gain knowledge on mechanisms and methodology involved in the measurement of blood pressure, vital capacity and erythrocyte sedimentation rate (ESR) are provided.</p> <p>The students should be able to</p> <ol style="list-style-type: none"> 1. identify the different bones of the skeletal system and various models/specimen/slides of human organs and tissues, 2. explain various complete blood picture parameters and mechanisms involved blood experiments and 3. explain various methods, handling procedures in the estimation and analysis of various blood experiments 	
BP108P	Pharmaceutical Analysis I – Practical
<p>Pharmaceutical analysis laboratory course focus on calibration of weights and glassware (pipette and burette). Adequate exercises are provided regarding standardization of solutions of different strengths. Knowledge about the principles and methodology involved in the various volumetric analyses such as acidimetry, alkalimetry, oxidation reactions and reduction reactions, iodimetry, iodometry, complexometry, precipitation and non-aqueous titration is imparted. It helps students to acquire knowledge about principles and practice of gravimetric analysis.</p> <p>Students should be able to</p> <ol style="list-style-type: none"> 1. Calibrate the glass ware used in volumetric analysis. 2. Calculate the %purity of compounds by using analytical methods. 3. Compute the relevant analytical data. 4. Calculate and prepare the required concentrate solution 	
BP109P	Pharmaceutics I – Practical
<p>This course is designed to impart a fundamental knowledge on the preparatory pharmacy with</p>	

arts and science of preparing the different conventional dosage forms.

Upon completion of this course the student should be able to:

1. Know the history of profession of pharmacy
2. Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations
3. Understand the professional way of handling the prescription
4. Preparation of various conventional dosage forms

BP110P

Pharmaceutical Inorganic Chemistry – Practical

Pharmaceutical inorganic chemistry laboratory course focus to help the students to appreciate the concept of quality control tests in limiting traces of impurities present in pharmaceuticals through limit tests. The complete understanding is illustrated about chemical reaction mechanisms involved in the preparation of pharmaceutical inorganic compounds. A significant amount of knowledge is provided regarding the principle involved in the compound purification. The hands-on approach is provided to identify cations and anions present in the inorganic salts through systematic qualitative analysis. The course will involve the Qualitative and Quantitative assay of some pharmaceutical compounds by using volumetric analytical methods and electrochemical method.

The students should be able to

1. evaluate the impurities in pharmaceuticals through limit tests,
2. perform chemical reactions through the preparation of inorganic compounds and
3. Identify cations and anions present in the inorganic sample through systematic qualitative analysis.
4. understand the medicinal and pharmaceutical importance of inorganic compounds

BP111P

Communication skills – Practical*

Communication skills course will prepare the young pharmacy student to interact effectively with doctors, nurses, dentists, physiotherapists and other health workers. At the end of this course the student will get the soft skills set to work cohesively with the team as a team player and will add value to the pharmaceutical business.

Upon completion of the course the student shall be able to

1. Understand the behavioral needs for a Pharmacist to function effectively in the areas of pharmaceutical operation
2. Communicate effectively (Verbal and Non-Verbal)
3. Effectively manage the team as a team player

4. Develop interview skills
5. Develop Leadership qualities and essentials

BP112RBP

Remedial Biology – Practical*

Biology laboratory course is designed to provide students adequate knowledge on the plant morphology and their modifications through selective species. Sectioning (TS) of plant materials such as cinchona, clove, coriander and linseed are attempted to study their microscopical features. Insights are understood about the histological features of different human organs/tissues through permanent slides. The students also gain the significant knowledge about the human skeletal and spinal nervous system through the models.

The students should be able to

1. identify the plant parts and their modification,
2. explain the representative of families – apocynaceae, Solanaceae, umbelliferae and rubiaceae, and
3. identify histological features of different organs/tissues through permanent slides.

2nd semester

BP207P

Human Anatomy and Physiology II –Practical

Human Anatomy and Physiology II is designed to impart fundamental knowledge on the structure and functions of the various systems of the human body. It also helps in understanding both homeostatic mechanisms. The subject provides the basic knowledge required to understand the various disciplines of pharmacy.

Practical physiology is complimentary to the theoretical discussions in physiology. Practical allow the verification of physiological processes discussed in theory classes through experiments on living tissue, intact animals or normal human beings. This is helpful for developing an insight on the subject.

Upon completion of this course the student should be able to:

1. Explain the gross morphology, structure and functions of various organs of the human body.
2. Describe the various homeostatic mechanisms and their imbalances.
3. Identify the various tissues and organs of different systems of human body.
4. Perform the hematological tests like blood cell counts, hemoglobin estimation, bleeding/clotting time etc. and also record blood pressure, heart rate, pulse and respiratory volume.

5. Appreciate coordinated working pattern of different organs of each system
6. Appreciate the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body.

BP208P
Pharmaceutical Organic Chemistry I– Practical

Pharmaceutical organic chemistry laboratory course is designed to provide knowledge about the various laboratory techniques. Adequate training is imparted on the design and synthesis organic intermediates. Several organic reactions such as oxidation, reduction, acetylation, nitration, esterification, etherification, saponification and halogenation are conducted. Principles are illustrated, while understanding the factors. The course design also concentrates on the hands-on approach about the systematic qualitative analysis of unknown organic compounds.

The students should be able to

1. appreciate the reaction mechanism, and
2. perform systematic qualitative analysis of unknown organic compounds

BP209P
Biochemistry – Practical

Biochemistry deals with complete understanding of the molecular levels of the chemical process associated with living cells. The scope of the subject is providing biochemical facts and the principles to understand metabolism of nutrient molecules in physiological and pathological conditions. It is also emphasizing on genetic organization of mammalian genome and hetero & autocatalytic functions of DNA.

Upon completion of course student shall be able to

1. Understand the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzymes.
2. Understand the metabolism of nutrient molecules in physiological and pathological conditions.
3. Understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins.

BP210P
Computer Applications in Pharmacy – Practical*

Basic computer applications laboratory course is designed to give adequate hands on experience about the execution of DOS commands. The focus is also given to provide students regarding the architecture about the computer. A complete training is imparted on various computer languages (C and SQL). The computer skills on MS Office, MS Word, MS Excel, MS Access and MS Power point are practiced through the well-designed exercises.

Appropriate ability in designing and developing the computer tools is imparted.

The students should be able to

1. explain the underlying architecture of computer,
2. understand the paradigms of program languages and be exposed to at least one language from each model, C and SQL, and
3. use the software development tools.

3rd semester

BP305P

Pharmaceutical Organic Chemistry II – Practical

Pharmaceutical organic chemistry-II laboratory course concentrates on the synthetic strategies involved in the preparation of drug intermediates. The course allows conducting the synthetic procedures to the students and allowing understanding the reaction mechanism involved in them. The focus is also given to the purification of the heterocyclic drug intermediates.

The students should be able to

1. synthesize compounds and drugs,
2. propose reaction mechanisms involved in the synthesis, and
3. Adopt the purification strategies for hetero aryl derivatives.

BP306P

Physical Pharmaceutics I – Practical

Physical Pharmaceutics I laboratory course concentrates on determination of solubility of drug at room temperature, pKa value by Half Neutralization/ Henderson Hassel Balch equation, Partition co-efficient of benzoic acid in benzene and water, Partition co-efficient of Iodine in CCl₄ and water, % composition of NaCl in a solution using phenol-water system by CST method, particle size, particle size distribution using sieving method, bulk density, true density and porosity, angle of repose and influence of lubricant on angle of repose, stability constant and donor acceptor ratio of PABA-Caffeine complex by solubility method and stability constant and donor acceptor ratio of Cupric-Glycine complex by pH titration method

BP307P

Pharmaceutical Microbiology – Practical

Pharmaceutical Microbiology laboratory course concentrates

1. Introduction and study of different equipment and processing, e.g., B.O.D. incubator, laminar flow, aseptic hood, autoclave, hot air sterilizer, deep freezer, refrigerator, microscopes used in experimental microbiology.
2. Sterilization of glassware, preparation and sterilization of media.

<ol style="list-style-type: none"> 3. Sub culturing of bacteria and fungus. Nutrient stabs and slants preparations. 4. Staining methods- Simple, Grams staining and acid-fast staining (Demonstration with practical). 5. Isolation of pure culture of micro-organisms by multiple streak plate technique and other techniques. 6. Microbiological assay of antibiotics by cup plate method and other methods 7. Motility determination by Hanging drop method. 8. Sterility testing of pharmaceuticals. 9. Bacteriological analysis of water 10. Biochemical test (IMViC reactions) 11. Revision Practical Class 	
BP 308P	Pharmaceutical Engineering –Practical
<p>Pharmaceutical engineering –II laboratory course concentrates on unit operations such as size reduction, size separation, distillation and drying. The students determine the Reynolds number, heat transfer coefficient, humidity of air, particle size distribution and sieve analysis through experiments. The students verify Stokes law / determine of rate of drying of solid samples and several types of distillation processes. The students will gain knowledge regarding the drawing the symbols and equipment involved in the unit operations and also flow sheet for industrial manufacturing processes.</p> <p>The students should able to</p> <ol style="list-style-type: none"> 1. perform size reduction, size separation, distillation, drying experiments 2. quantitate heat transfer by radiation and convention, 3. measure humidity of room and 4. draw the symbols and equipment in unit operations and flow sheets. 	

4th semester	
BP406P	Medicinal Chemistry I – Practical
<p>Medicinal Chemistry I laboratory course concentrates on Preparation of drugs/ intermediates like 1,3-pyrazole, 1,3-oxazole, Benzimidazole, Benzotriazole, 2,3- diphenyl quinoxaline, Benzocaine, Phenytoin, Phenothiazine and Barbiturate.</p> <p>Medicinal Chemistry I laboratory course concentrates on Assay of drugs like Chlorpromazine, Phenobarbitone, Atropine, Ibuprofen, Aspirin and Furosemide</p>	

BP407P	Physical Pharmaceutics II – Practical
Physical Pharmaceutics II laboratory course concentrates on determination of surface tension of given liquids by drop count and drop weight method, HLB number of a surfactant by saponification method, Freundlich and Langmuir constants using activated char coal, critical micellar concentration of surfactants, viscosity of liquid using Ostwald's viscometer, sedimentation volume with effect of different suspending agent, sedimentation volume with effect of different concentration of single suspending agent, viscosity of semisolid by using Brookfield viscometer, reaction rate constant first order, reaction rate constant second order and Accelerated stability studies	
BP408P	Pharmacology I – Practical
<ol style="list-style-type: none"> 1. Pharmacology I laboratory course concentrates on 2. Introduction to experimental pharmacology. 3. Commonly used instruments in experimental pharmacology. 4. Study of common laboratory animals. 5. Maintenance of laboratory animals as per CPCSEA guidelines. 6. Common laboratory techniques. Blood withdrawal, serum and plasma separation, anesthetics and euthanasia used for animal studies. 7. Study of different routes of drugs administration in mice/rats. 8. Study of effect of hepatic microsomal enzyme inducers on the phenobarbitone sleeping time in mice. 9. Effect of drugs on ciliary motility of frog esophagus 10. Effect of drugs on rabbit eye. 11. Effects of skeletal muscle relaxants using rota-rod apparatus. 12. Effect of drugs on locomotor activity using actophotometer. 13. Anticonvulsant effect of drugs by MES and PTZ method. 14. Study of stereotype and anti-catatonic activity of drugs on rats/mice. 15. Study of anxiolytic activity of drugs using rats/mice. 16. 15. Study of local anesthetics by different methods 	
BP409P	Pharmacognosy and Phytochemistry I – Practical
Pharmacognosy and Phytochemistry I laboratory course focus on the	
<ol style="list-style-type: none"> 1. Analysis of crude drugs by chemical tests: (i)Tragacanth (ii) Acacia (iii)Agar (iv) Gelatin (v) starch (vi) Honey (vii) Castor oil 2. Determination of stomatal number and index 	

3. Determination of vein islet number, vein islet termination and palisade ratio.
4. Determination of size of starch grains, calcium oxalate crystals by eye piece micrometer
5. Determination of Fiber length and width
6. Determination of number of starch grains by Lycopodium spore method
7. Determination of Ash value
8. Determination of Extractive values of crude drugs
9. Determination of moisture content of crude drugs
10. 10. Determination of swelling index and foaming

5th Semester

Hospital & Community Pharmacy Practical

PHR-PT-351(P)

Hospital & Community Pharmacy laboratory course focus on the

1. Sterilization of certain glassware by using dry heat sterilization method.
2. Sterilization of the surgical cotton using autoclave.
3. Sterilization of surgical materials used in hospital.
4. Preparation ascorbic acid injection.
5. Preparation 50mL of 55 dextrose infusion IP and sterilize it by filtration method.
6. Preparation ampoules of 10mL water for injection IP.
7. Preparation and submit eye lotion for first aid.

Pharmacognosy III Practical + Tutorial

PHR-PG-352(P)

Pharmacognosy laboratory course focus on the macroscopical and microscopical evaluation of plant crude drugs. Also includes study of transverse sections and microscopical study of powdered crude in binary mixtures. Swelling factor and refractive index of crude plant materials are determined. The students acquire knowledge on the isolation and identification active principles from the plant sources; (eg: cineole present in eucalyptus oil), determination of stomatal index, palisade ratio and number and distillation of volatile oils. It also provides training on the measurements of fibers and grains.

The students should also able to

1. study morphology and microscopical characteristics of crude drugs and mixture of crude drug powders,
2. conduct transverse section of crude plant materials,
3. isolate and identify chemical constituents using chemical tests and

4. Evaluate quantitative parameters of leaf crude drugs.	
Medicinal Chemistry-I Practical + Tutorial	PHR-PC-353(P)
<p>Medicinal Chemistry-I laboratory course focus on the</p> <ol style="list-style-type: none"> 1. Determination of partition co-efficient, dissociation constant and molar refractivity of compounds for QSAR analysis 2. Preparation of medicinally important compounds or intermediates required for synthesis of drugs. 3. Assay of Selected drugs from course content prescribed as per I.P or B.P. 	
Pharmacology II Practical + Tutorial	PHR-PT-354 (P)
<p>Pharmacology laboratory course focus on the various bioassay methods and the instruments used. It gives complete knowledge about the different routes of administrations and their indications. The students construct and interpret dose response curve. The pharmacology course includes simulation methods of experiments on the isolated tissues including heart, intestine and rectus of frog, rabbit and guinea pig. It also provides the knowledge about the different bioassay methods such as matching method, graphical (interpolation) method, and three point and four-point methods.</p> <p>The student should able to</p> <ol style="list-style-type: none"> 1. Demonstrate the simulation of pharmacology and effect of drugs, and 2. explain the functioning of equipment available in pharmacology. 	
Pharmaceutical Technology Practical + Tutorial	PHR-PT-355 (P)
<p>Pharmaceutical Technology laboratory course are focused on the preparation of cold cream and vanishing cream, paracetamol microcapsules, glycerogelatin suppositories, cocoa butter suppositories, tablets by direct compression method and carry out IPQC tests, tablets by dry granulation method and carry out IPQC tests, tablets by wet granulation method and carry out IPQC tests, hard gelatin capsule formulation, compound sodium chloride injection, sterilize compound sodium lactate injection, water for injection (WFI) and carry out pharmacopoeia tests on it, sodium chloride eye drops and perform identification tests for sodium and chloride, castor oil emulsion and salicylic acid ointment</p>	

6th semester	
Biopharmaceutics and Pharmacokinetics Practical + Tutorial	PHR-PT-361(P)
<p>Biopharmaceutics and Pharmacokinetics laboratory course provides adequate knowledge to students for preparation of solid dispersions of paracetamol and to compare its dissolution</p>	

profile with plain paracetamol powder.

Student will be able to:

1. prove the validity of Noyes Whitney law of dissolution of sparingly soluble drug
2. find out the acid neutralization capacity of given brand by USP/AJPE method
3. study the effect of pH on dissolution of a sparingly soluble acid, benzoic acid
4. find out AUC of oral and i.v data by trapezoidal method
5. calculate various pharmacokinetic parameters for the given set of data obeying 1CBM kinetics following iv bolus administration
6. calculate various pharmacokinetic parameters for the given set of data obeying 1 CBM kinetics following oral administration

Medicinal Chemistry-II Practical

PHR-PC-362(P)

Medicinal chemistry-II laboratory course provides adequate training to students to design and synthesis organic intermediates and the understanding regarding the principle and methodology involved in the synthesis of various medicinal compounds of diverse chemical categories. This course also deals with the purification and characterization of the synthesized compounds. A special focus is given to the characterization of molecules through IR spectroscopy, practice for the isolation and estimation of active principles present in the pharmaceutical formulations.

The students should able to

1. Design and adopt the reaction schemes for the synthesis of various drugs of diverse chemical categories,
2. Analyze functional groups present in drugs through IR, and
3. Estimate the actual amount of drug present in pharmaceutical formulations.

Chemistry of Natural Products Practical + Tutorial

PHR-PG-364(P)

Pharmaceutical chemistry (Chemistry of natural products) laboratory course involves on the qualitative and quantitative determinations of natural products. Qualitative determination of the carbohydrates, proteins and amino acids are attempted. Qualitative analysis of alkaloids, triterpenoids and steroids are included. Acid value, saponification value, peroxide value and iodine value of plant products are estimated. Experiments include extraction and estimation of active principles present in the plant materials (eg: atropine and ephedrine).

The student should able to

1. evaluate the quality of oils by various analytical methods as per the
2. pharmacopoeial methods, qualitatively identify natural compounds and biomolecules

<p>– carbohydrates, amino acids, proteins, flavonoids, terpenoids, alkaloids and steroids, and</p> <p>3. Perform estimation of alkaloids by chemical methods.</p>	
Pharmacology III Practical + Tutorial	PHR-PL-365(P)
<p>Pharmacology III laboratory course involves</p> <ol style="list-style-type: none"> 1. To study demonstration of Sciatic nerve ligation method for neuropathic pain. 2. To study demonstration of Cotton-pellet induced Granuloma for Chronic inflammation. 3. To carry out bioassays for a drug using ex-vivo organ bath assembly method. 4. To calculate pA2 and pA10 values for a drug using ex-vivo experimentation. 5. To study demonstration of techniques like electrophoresis and PCR. 6. To study safety assessment or LD50 dose of a drug using toxicological studies. 7. To study various sign and symptoms for toxicological reaction of a drug. 8. To study the biological efficacy of agent for anti-microbial activity in-vitro. 9. To study the biological efficacy of agent for immune-modulatory activity in-vitro. 10. To study anti-oxidant activity of a drug using DPPH / NOx method. 11. To determine the level of serum ALT/AST level for Liver function using biochemical kit. 12. To determine serum Glucose / cholesterol level using biochemical kit. 13. To draw the standard curve of sodium nitrite/nitrate for estimation of serum Nitric oxide level. 	

7th semester	
Pharmaceutical Technology II Practical + Tutorial	PHR-PT-471 (P)
<p>Pharmaceutical Technology II laboratory course involves to determination of partition coefficient of a given drug and solubility of a given drug.</p> <p>Pharmaceutical Technology II laboratory course involves to carry out degradation study of aspirin at different temperature conditions, dissolution study of a conventional tablet, dissolution study of sustained release tablet, dissolution study of enteric coated formulation and drug excipient compatibility study.</p> <p>Pharmaceutical Technology II laboratory course involves to preparation of solid dispersion of a poorly soluble drug, effervescent tablets of a given drug, tooth powder and tooth paste, mouth wash and gargle, shampoo, nail lacquer/ nail polish and nail polish remover and</p>	

shaving cream and after shave lotion.	
Pharmacovigilance Practical + Tutorial	PHR-PL-472 (P)
Pharmacovigilance laboratory course train various case studies or report for adverse drug reactions of the disease profiles. Pharmacovigilance laboratory course also train various Collection and management of safety data during clinical trials	
Medicinal Chemistry & Cheminformatics Practical+Tutorial	PHR-PC-474 (P)
Pharmaceutical biotechnology laboratory course train various Synthesis process of selective drugs involving two steps. Pharmaceutical biotechnology laboratory course Establishing the Pharmacopoeial standards of the drugs synthesized (selected examples). Pharmaceutical biotechnology laboratory course also used to draw structures such as chem Draw, chem sketch etc. Pharmaceutical biotechnology laboratory course explains Identification of pharmacophores by computational analysis to the students	
Pharmaceutical Biotechnology Practical + Tutorial	PHR-PT-475 (P)
Pharmaceutical biotechnology laboratory course train various biotechnology techniques and sterility testing of pharmaceuticals, which include the preparation and standardization of cultures. The course also includes the experiments for the microbiological assay of antibiotics and vitamins. The students gain the experimental exposure on the fermentation and immobilization techniques. The course also focuses on the isolation of mutants and extraction of DNA. The preparation of bacterial vaccine, blood products / human normal immunoglobulin injection is ensured in the design. The students should able to <ol style="list-style-type: none"> 1. explain the factors affecting fermentation, 2. isolate bacterial DNA, 3. explain the passive and active immunization products usage, and application, 4. Select, isolate, and preserve useful microorganisms for industrial applications, and 5. perform microbiological assays of pharmaceutical dosage forms. 	

8th semester	
Industrial Pharmacognosy Practical + Tutorial	PHR-PG-482 (P)
Industrial Pharmacognosy laboratory course provides knowledge about the various WHO Herbal drug standardization techniques and Development of various chromatographic	

techniques: TLC fingerprinting profile, Column Chromatography, HPLC.

Pharmaceutical Analysis-II Practical + Tutorial

PHR-PC-483 (P)

Pharmaceutical analysis-II laboratory course provides knowledge about the various instrumental separation and identification techniques. The separation techniques include paper, thin-layer (TLC) and column chromatography. The students also determine related principles of drug solutions through colorimeter, UV-spectrophotometer and fluorimeter. The focus is given to determination ions present in drugs by turbidimetry, nephelometry, polarography, specific - ion electrode and flame photometer. The course also concentrates on the electrophoresis, potentiometric and conductometric experiments and determination of moisture content.

The students should able to

1. describe the separation techniques like paper, TLC and electrophoretic techniques,
2. demonstrate principles of fluorometry, nepheloturbidometry, IR and flame photometry, UHPLC, GC-MS, ICP-MS, HPTLC techniques in the quantitative identification of pharmaceuticals, and
3. illustrate the principles and applications of thermal analytical techniques like DSC, TGA and DTA.
4. understand the basic interpretation of IR spectrum and Mass spectrum for basic compounds

Criterion-3

CRITERION 3	Course Outcomes (COs) and Program Outcomes (POs)	100
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3. Course Outcomes (COs) and Program Outcomes (POs) (100)

Establish the correlation between the courses and the Program Outcomes (20) (NBA defined Program Outcomes as mentioned in Annexure I)

Course Outcomes (SAR should include course outcomes of one course from each semester of study, however, should be prepared for all courses)(05)

Note: Number of Outcomes for a Course is expected to be around 6.

The course outcomes are prepared for each course (each subject) after giving due consideration to the syllabus prescribed by the Shoolini University/PCI. Course outcomes (learning outcomes/ skill outcomes) are defined by the subject experts. These are drafted in the background of Mission Statement, PEOs prepared by the school for the B. Pharmacy program and program outcomes envisaged by NBA. The following course outcomes for each course in the B. Pharmacy program is given in Table-3.1.1

Course Name: Ciii Year of Study: YYYY – YY; For ex. C202 Year of study 2013-14

BP103T 2017-21	<ol style="list-style-type: none"> 1. Know about history and background of pharmacy profession 2. Learn about different pharmacopoeias 3. Understand different components of prescription 4. Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations 5. Gain experience in preparation of various dosage forms for dispensing 6. Impart knowledge of dispensing the prescriptions and the principals involved in the preparations.
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BP203T 2017-21	<ol style="list-style-type: none"> 1. Describe the molecular and functional organization of a cell, enzymology and its clinical relevance. 2. Explain the structure and biochemical role of carbohydrates, proteins, 3. lipids and metabolic pathway of nutrients. 4. Describe the mechanisms of electron transport chain reactions and cofactors involved in it. 5. Explain the metabolism of nucleotides and its clinical relevance and 6. Explain the DNA replication, transcription and translation
BP304-T 2017-21	<ol style="list-style-type: none"> 1. Explain the concepts of energy transfer, mass transfer, unit operations for the construction, operation and maintenance of pharmaceutical plants. 2. Describe the engineering approaches and alternatives for effective functioning of pharmaceutical plants by avoiding corrosion. 3. Make the student abreast with current principles, fluid flow, heat transfer, material transportation, filtration and centrifugation methodologies. 4. Understand the real time pharmaceutical industry situations for effective learning process of equipment, advantages and limitations. 5. Understand the principle, Theorem involved in fluid flow. 6. Gain knowledge about Plant location, Industrial hazards and Plant Safety.
BP405T 2017-21	<ol style="list-style-type: none"> 1. Understand the methods for cultivation and collection of crude drugs; medicinal plants, viz., origin, morphology, histology and uses. 2. Evaluate the crude drugs for adulteration and substitution 3. Have knowledge about different Sources and Classification of Drugs. 4. Understand about Plant Tissue Culture. 5. Understand the vital role of Pharmacognosy in Allopathy and Traditional systems of Medicines. 6. Students able to determine Ash value, Extractive value, Moisture content of Crude Drug.
PHR-PC-353 2015-19	<ol style="list-style-type: none"> 1. Explain the influence of physicochemical properties on drug action. 2. Outline the synthetic route for the selective medicinal compounds of each category and acquire knowledge on the mechanism of action of pharmacodynamics agents. 3. Classify the therapeutic agents based on the chemical nature. 4. Acquire knowledge about the relationship between the biological activity and structure of therapeutic agents.

	<ol style="list-style-type: none"> 5. Assimilate the therapeutic uses of adrenergic and cholinergic agents. 6. Knowledge of drugs acting on Autonomic Nervous System.
PHR-PT- 363 2015-19	<ol style="list-style-type: none"> 1. Acquire knowledge on schedule rules, laws and regulations related to drugs and cosmetics. 2. Explain pharmaceutical legislation, history, evolution and growth of pharmaceutical industry. 3. Describe the pharmaceutical education and its regulatory bodies; pharmacy profession in concern to code of ethics. 4. Explain other acts and rules associated with food and factories. 5. Explain the intellectual property rights. 6. Scope of Forensic Pharmacy.
PHR-PT-471 2015-19	<ol style="list-style-type: none"> 1. Knowledge about Preformulation studies. 2. Describe about Sustained and Controlled release delivery systems. 3. Explain different Cosmetic Preparation. 4. Explain the quality control and quality analysis of dosage forms. 5. Acquire knowledge about packaging materials, their properties and uses. 6. Having knowledge about Pilot Plant Scale Up includes introduction and scale up of solid dosage forms, Sustained and Controlled release (CR) delivery systems.
PHR-PC- 483 2015-19	<ol style="list-style-type: none"> 1. Explain the principles, instrumentation and applications of UV/Visible spectrophotometry, IR spectroscopy, mass spectroscopy, NMR spectroscopy. 2. Explain the principles, instrumentation and applications of Flame photometry, nepheloturbidometry, fluorescence spectroscopy. 3. Gain detailed knowledge about separation techniques like column chromatography, thin layer chromatography, paper chromatography, HPLC, GC. 4. Describe the theoretical aspects of X-Ray Diffraction studies. 5. Having Knowledge about Electrophoresis Technique. 6. Able to identify the compound by using Infra-Red Spectroscopy.

Table – 3.1.1

C202 is the second course in second year and ‘.1’ to ‘N’ are the outcomes of this course.

CO-PO matrices of courses selected in 3.1.1 (four matrices to be mentioned; one per semester from 1st to 8th semester; at least one per year) (05)

Course Code	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP103-T Pharmaceutics-I	CO1	3	-	3	-	-	2	3	1	2	-	3
	CO2	3	-	3	-	-	2	3	1	2	-	3
	CO3	3	-	2	-	-	2	1	1	2	-	3
	CO4	3	-	2	-	-	2	-	1	-	-	3
	CO5	3	-	-	-	-	2	-	2	-	-	3
	CO6	3	-	2	-	-	2	-	1	2	-	3
Mode		3	-	3	-	-	2	3	1	2	-	3
BP203-T Biochemistry	CO1	3	-	-	-	-	3	-	2	-	1	3
	CO2	3	-	-	-	-	-	-	2	-	1	2
	CO3	3	-	3	-	-	3	-	-	-	-	3
	CO4	3	-	-	-	-	3	1	-	-	-	2
	CO5	3	-	2	-	-	-	1	2	-	-	3
	CO6	3	-	-	-	-	3	-	2	-	-	2
Mode		3	-	3		-	3	1	2	-	1	3
BP304-T Pharmaceutical Engineering	CO1	3	2	3	3	-	3	-	3	3	-	3
	CO2	3	2	2	2	-	2	-	3	2	-	3
	CO3	3	-	3	3	-	3	-	2	3	-	2
	CO4	3	-	2	2	-	2	-	1	2	-	1
	CO5	3	2	3	3	-	3	-	3	2	-	3
	CO6	3	-	3	2	-	2	-	2	2	-	2
Mode		3	2	3	3	-	3	-	3	2	-	3
BP405-T Pharmacognosy and Phytochemistry	CO1	3	3	-	-	-	3	-	-	-	3	3
	CO2	3	-	-	-	-	-	-	-	-	2	3
	CO3	3	3	-	-	-	2	-	-	-	3	3
	CO4	3	-	-	-	-	3	-	-	-	2	3
	CO5	3	3	1	-	-	-	-	-	-	3	3
	CO6	3	-	-	-	-	-	-	-	-	2	3
Mode		3	-	1	-	-	3	-	-	-	3	3
PHR-PC-353 Medicinal Chemistry- I	CO1	3	-	-	3	3	3	-	3	-	-	3
	CO2	3	2	2	3	-	-	-	3	-	-	3
	CO3	3	-	-	2	2	2	-	3	-	-	3
	CO4	3	2	3	2	-	3	-	3	-	-	3

	CO5	3	-	-	1	2	-	-	3	-	1	3
	CO6	3	2	2	2	-	3	-	3	-	-	3
Mode		3	2	3	2	2	3	-	3	-	1	3
PHR-PT-363 Pharmaceutical Jurisprudence	CO1	3	3	3	-	3	2	2	2	-	-	2
	CO2	3	2	-	-	3	3	3	3	-	-	3
	CO3	3	2	2	-	2	3	3	3	-	-	3
	CO4	3	2	-	-	3	3	3	3	-	-	3
	CO5	3	2	2	-	2	3	3	3	-	-	3
	CO6	3	2	-	-	3	3	3	3	-	-	3
Mode		3	2	2	-	3	3	3	3	-	-	3
PHR-PT-471 Pharmaceutical Technology II	CO1	3	-	-	-	-	3	3	-	-	-	3
	CO2	3	2	2	2	-	2	-	-	-	-	2
	CO3	3	-	-	-	-	3	-	-	-	-	3
	CO4	3	3	2	2	-	2	-	-	-	-	2
	CO5	3	-	-	-	-	3	-	-	-	-	3
	CO6	3	2	2	2	-	2	-	-	-	-	2
Mode		3	3	2	2	-	3	3	-	-	-	3
PHR-PC-483 Pharmaceutical Analysis-II	CO1	3	1	3	3	-	-	-	-	-	-	3
	CO2	3	1	-	3	-	-	-	-	-	-	2
	CO3	3	1	3	3	-	-	-	-	-	-	2
	CO4	3	1	3	3	-	-	-	-	-	-	2
	CO5	3	1	-	3	-	-	-	-	-	-	2
	CO6	3	1	3	3	-	-	-	-	-	-	2
Mode		3	1	3	3	-	-	-	-	-	-	2

Table 3.1.2

Note: Correlation levels 1, 2 or 3 as defined below:

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

It there is no correlation, put „-“

Course-PO matrix of courses for all four years of study (10)

In Table 3.1.2, the matrixing of course outcomes and program outcomes was attempted. The details of all semesters are compiled, analyzed and documented in Table 3.1.3. All the information is consistent with the Table 3.1.2. For each course

objective, POs are assigned. Then each PO is marked on the scale of 1 to 3 (low, medium, high) and reported. Then all such averages of each PO are again averaged to report course outcome averages, again on the scale of 1 to 3 (slight to high).

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP101-T Human Anatomy and Physiology-I	3	-	-	-	-	-	-	-	-	-	3
BP102T Pharmaceutical Analysis	3	-	3	-	-	-	-	-	-	-	-
BP103T Pharmaceutics-I	3	-	3	-	-	2	3	1	2	-	3
BP107P Human Anatomy and Physiology – Practical	3	2	3	-	-	-	-	-	-	-	-
BP104T Pharmaceutical Inorganic Chemistry	3	-	3	-	-	-	-	-	-	-	-
BP105T Communication Skills – Theory	3	-	-	-	3	-	-	2	-	-	-
BP106RBT Remedial Biology Theory	3	-	-	-	-	-	-	-	-	-	-
BP106RMT Remedial Mathematics – Theory	3	-	3	-	-	-	-	-	-	-	-

BP108P Pharmaceutics. I – Practical.	3	-	-	-	-	3	-	-	-	-	-
BP109P Pharmaceutics I – Practical	3	3	-	-	-	-	-	-	3	-	-
BP110P Pharmaceutical Inorganic Chemistry-P	3	-	3	3	-	3	-	-	-	-	-
BP111P Communication skills Practical	3	-	-	-	-	-	-	3	3	-	3
BP112RBP Remedial Biology Practical	3	-	-	3	-	-	-	-	-	-	-
BP201T Human Anatomy and Physiology II	3	-	-	-	-	-	-	3	3	-	-
BP202T Pharmaceutical Organic Chemistry- I	3	-	-	-	-	-	-	-	-	-	-
BP203T Biochemistry Theory	3	-	3	-	-	3	1	2	-	1	3
BP204T Pathophysiology – Theory	3	-	-	-	-	-	-	2	3	-	-
BP205T Computer Applications in	2	-	-	3	-	-	-	-	-	-	-

Pharmacy											
BP206T Environmental sciences – Theory	2	-	-	-	-	-	-	-	3	3	-
BP207P Human Anatomy and Physiology II-P	3	-	-	-	-	3	-	-	3	-	-
BP208P Pharmaceutical Organic Chemistry I– P	3	-	3	-	-	-	-	-	-	-	-
BP209P Physical Pharmaceutics I – Practical	3	-	-	-	-	-	-	-	3	-	3
BP210P Computer Applications in Pharmacy – Practical	3	-	3	-	-	-	-	-	-	-	-
BP301T Pharmaceutical Organic Chemistry II – Theory	3	-	-	-	-	-	-	-	-	-	-
BP302T Physical Pharmaceutics I – Theory	3	-	-	-	-	-	-	-	-	-	-
BP 303 T Pharmaceutical Microbiology – Theory	3	3	-	-	-	-	-	-	-	-	-

BP 304 T Pharmaceutical Engineering – Theory	3	2	3	3	-	3	-	3	2	-	3
BP305P Pharmaceutical Organic Chemistry II – Practical	3	-	3	-	-	-	-	-	-	-	-
BP306P Physical Pharmaceutics I – Practical	3	-	-	-	-	-	-	-	3	-	-
BP 307P Pharmaceutical Microbiology – Practical	3	-	-	-	-	-	-	-	-	-	-
BP308P Pharmaceutical Engineering – Practical	3	-	-	-	-	-	-	-	-	-	-
BP401T Pharmaceutical Organic Chemistry III – Theory	3	-	-	-	-	-	-	-	-	-	-
BP402T Medicinal Chemistry I – Theory	3	-	-	-	-	-	-	-	-	-	-
BP 403 T Physical Pharmaceutics II – Theory	3	-	-	-	-	-	-	-	-	-	-

BP 404 T Pharmacology I- Theory	3	-	-	-	-	-	-	-	-	-	-
BP 405 T Pharmacognosy and Phytochemistry	3	-	1	-	-	3	-	-	-	3	3
BP406P Medicinal Chemistry I – Practical	3	-	-	-	-	-	-	-	-	-	-
BP407P Physical Pharmaceutics II – Practical	3	-	-	-	-	-	-	-	-	-	-
BP408 P Pharmacology I – Practical	3	-	-	-	-	-	-	-	-	3	-
BP409P Pharmacognosy I – Practical	3	-	-	-	-	-	-	-	-	-	-
PHR-PT-351 Hospital & Community Pharmacy	3	-	-	-	-	-	-	-	3	-	-
PHR-PG-352 Pharmacognosy-III	3	-	-	-	-	-	-	3	-	-	-
PHR-PC-353 Medicinal Chemistry-I	3	2	3	2	2	3	-	3	-	1	3
PHR-PT-354 Pharmacology-II	3	-	-	-	-	-	-	-	-	-	-
PHR-PT-355 Pharmaceutical	3	-	-	-	-	-	-	-	-	-	-

Technology											
PHR-PR-356 Project	3	2	3	2	2	-	-	2	-	-	-
PHR-PT-351(P) Hospital & Community Pharmacy	3	-	-	3	-	-	-	-	-	-	-
PHR-PG-352(P) Pharmacognosy III Practical	3	-	-	-	-	-	-	-	-	-	-
PHR-PC-353(P) Medicinal Chemistry-I Practical	3	3	-	-	-	-	-	-	-	-	-
PHR-PT-354(P) Pharmacology-II-P	3	-	-	-	-	-	-	-	-	-	-
PHR-PT-355(P) Pharmaceutical Technology-P	3	-	-	-	-	-	-	-	-	-	-
PHR-PT- 361 Biopharmaceutics and Pharmacokinetics	3	-	-	-	-	-	-	-	-	-	-
PHR-PC- 362 Medicinal Chemistry-II	3	-	-	3	-	-	-	-	-	-	-
PHR-PT-363 Pharmaceutical Jurisprudence	3	2	2	-	3	3	3	3	-	-	3
PHR-PG-364 Chemistry of Natural Products	3	-	-	3	-	-	-	-	-	-	-

PHR-PL-365 Pharmacology III	3	-	-	-	-	-	-	-	-	-	-
PHR-PR- 366 Project	3	-	3	3	2	-	-	3	-	-	-
PHR-PT- 361(P) Biopharmaceutics and Pharmacokinetics Practical + Tutorial	3	-	-	-	-	-	-	-	-	-	-
PHR-PC- 362(P) Medicinal Chemistry-II Practical	3	-	-	-	-	-	-	-	-	3	3
PHR-PG- 364(P) Chemistry of Natural Products Practical	3	-	-	3	-	-	-	-	-	-	-
PHR-PL- 365(P) Chemistry of Natural Products Practical + Tutorial	3	-	-	-	-	-	-	-	3	3	-
PHR-PT-471 Pharmaceutical Technology – II	3	3	2	2	-	3	3	-	-	-	3
PHR-PL-472 Pharmacovigilance	3	-	3	-	-	-	-	-	3	-	-
PHR-PT-473 Pharmaceutical Management	3	-	-	-	3	-	-	2	-	-	-
PHR-PC-474 Medicinal Chemistry & Cheminformatics	3	3	2	3	-	-	-	-	-	-	-
PHR-PT-475	3	-	-	-	-	-	-	-	-	-	-

Pharmaceutical Biotechnology											
PHR-PR-476 Project Literature Seminar/Approval	3	2	3	2	2	-	-	2	-	-	-
PHR-PT-471(P) Pharmaceutical Technology II Practical + Tutorial	3	-	3	3	-	-	-	-	-	-	-
PHR-PL-472(P) Pharmacovigilance Practical + Tutorial	3	-	-	-	-	-	-	3	3	3	3
PHR-PT-474(P) Medicinal Chemistry & Cheminformatics Practical + Tutorial	3	-	-	3	-	-	-	-	-	-	-
PHR-PT-475(P) Pharmaceutical Biotechnology Practical + Tutorial	3	-	-	-	-	-	-	-	-	-	-
PHR-PL- 481 Clinical Pharmacotherapeuti cs	3	-	3	-	-	-	-	-	3	-	-
PHR-PG-482 Industrial Pharmacognosy	3	-	2	-	-	-	-	3	-	-	-
PHR-PC-483 Pharmaceutical Analysis-II	3	1	3	3	-	-	-	-	-	-	2
PHR-PC-484 Chemical Biology	3	-	-	-	-	-	-	-	-	-	2

PHR-PR- 485 Project	3	2	3	2	2	-	-	2	-	-	-
PHR-PG- 482(P) Industrial Pharmacognosy Practical + Tutorial	3	-	2	2	3	-	-	-	-	-	3
PHR-PC- 483(P) Pharmaceutical Analysis-II Practical + Tutorial	3	-	2	3	-	-	-	-	-	-	2

Table 3.1.3*

Note: Correlation levels 1, 2 or 3, as defined below:

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)
It there is no correlation, put „-“

- It may be noted that contents of Table 3.1.2 must be consistent with information available in Table 3.1.3 for all the courses.

Attainment of Course Outcomes (40)

Describe the assessment processes used to gather the data upon which the evaluation of Course Outcome is based (10)

(Examples of data collection processes may include, but are not limited to, specific exam/tutorial questions, assignments, laboratory tests, project evaluation, student portfolios (A portfolio is a collection of artifacts that demonstrate skills, personal characteristics, and accomplishments created by the student during study period), internally developed assessment exams, project presentations, oral exams, focus groups etc. It is expected that each theory subject taught should impart specific knowledge and make a foundation for a set of Basic Concepts related to it. Similarly, the laboratory experiments should have some predetermined and predefined skills which can be developed during the study)

Data was collected from internal examinations (theory, practical, seminars, assignments and presentations) and university end term examinations (theory and practical).

End term and internal assessment: As per PCI, the marks allotted are 75% for end term examination and 25% for internal assessment. Internal assessment includes marks for sessional examination, assignments, quiz, class tests, attendance and student teacher interaction. The end examinations are organized by Shoolini University at central level and sessional examination are conducted by School of Pharmaceutical Sciences.

The internal assessment evaluation is separately compiled and graded to understand the process. The attainment of course outcomes of all courses are given in the following section. The above description allows us to evaluate the course outcomes achieved. In the present analysis, the targets for assessment were set using the standards prescribed by the PCIs

1. First class with distinction > 75 marks, attainment level is 3 (substantial)
2. First class 60 to 74 marks, attainment level is 2 (moderate)
3. Second class 50 to 59 marks, attainment level is 1 (low)

Record the attainment of Course Outcomes of all courses with respect to set attainment levels (30)

Program shall have set Course Outcome attainment levels for all courses.

(The attainment levels shall be set considering average performance levels in the university examination or any higher value set as target for the assessment years. Attainment level is to be measured in terms of student performance in internal assessments with respect the course outcomes of a course in addition to the performance in the University examination)

Measuring Course Outcomes attained through University Examinations

Target may be stated in terms of percentage of students getting more than the university average marks or more as selected by the Program in the final examination. For cases where the university does not provide useful

indicators like average or median marks etc., the program may choose an attainment level on its own with justification.

Example related to attainment levels Vs. targets: (The examples indicated are for reference only. Program may appropriately define levels)

Attainment Level 1: 60% students scoring more than University average percentage marks or set attainment level in the final examination is considered to be attainment of '1'

Attainment Level 2: 70% students scoring more than University average percentage marks or set attainment level in the final examination is considered to be attainment of '2'

Attainment Level 3: 80% students scoring more than University average percentage marks or set attainment level in the final examination is considered to be attainment of '3'

- *Attainment is measured in terms of actual percentage of students getting set percentage of marks.*
- *If targets are achieved then all the course outcomes are attained for that year. Program is expected to set higher targets for the following years as a part of continuous improvement.*
- *If targets are not achieved the program should put in place an action plan to attain the target in subsequent years.*

Measuring CO attainment through Internal Assessments: (The examples indicated are for reference only. Program may appropriately define levels)

Target may be stated in terms of percentage of students getting more than class average marks or set by the program in each of the associated COs in the assessment instruments (midterm tests, assignments, mini projects, reports and presentations etc. as mapped with the COs)

Example

Mid-term test 1 addresses C202.1 and C202.2. Out of the maximum 20 marks for this test 12 marks are associated with C202.1 and 8 marks are associated with C202.2.

Examples related to attainment levels Vs. targets:

Attainment Level 1: 60% students scoring more than 60% marks out of the relevant maximum marks is considered to be attainment of '1'

Attainment Level 2: 70% students scoring more than 60% marks out of the relevant maximum marks is considered to be attainment of '2'

Attainment Level 3: 80% students scoring more than 60% marks out of the relevant maximum marks is considered to be attainment of '3'

Attainment is measured in terms of actual percentage of students getting set percentage of marks.

- If targets are achieved then the C202.1 and C202.2 are attained for that year. Program is expected to set higher targets for the following years as a part of continuous improvement.*
- If targets are not achieved the program should put in place an action plan to attain the target in subsequent years.*

Similar targets and achievement are to be stated for the other mid term tests/internal assessment instruments

Course Outcome Attainment:

For example:

Attainment through University Examination:

Substantial i.e. 3 Attainment through Internal

Assessment: Moderate i.e. 2

Assuming 80% weightage to University examination and 20% weightage to Internal assessment, the attainment calculations will be (80% of University level) + (20% of Internal level) i.e. 80% of 3 + 20% of 2 = 2.4 + 0.4 = 2.8

Note: Weightage of 80% to University exams is only an example. Programs may decide weightages appropriately for University exams and internal assessment with due justification.

Methodology used in calculations

In the present analysis, the targets for assessment were set using the standards prescribed by the PCI. University examination were given weightage of 75% and Internal assessment were given weightage of 25%.

1. First class with distinction > 75 marks, attainment level is 3 (substantial)
2. First class 60 to 74 marks, attainment level is 2 (moderate)
3. Second class 50 to 59 marks, attainment level is 1 (low)

For example:

Attainment through University Examination: Substantial i.e. 3 Attainment through Internal Assessment: Moderate i.e. 2

Assuming 75% weightage to University examination and 25% weightage to Internal assessment, the attainment calculations will be (75% of University level) + (25% of Internal level) i.e. $75\% + 25\% \text{ of } 2 = 2.25 + 0.5 = 2.75$

2017-18				
Course code	Course name	Attainment through university examination	Attainment through internal assessment	Total attainment
1st Semester				
BP101T	Human Anatomy and Physiology I	0	0	0
BP102T	Pharmaceutical Analysis I	0	0.25	0.25
BP103T	Pharmaceutics I	1.5	0.5	2
BP104T	Pharmaceutical Inorganic Chemistry	0.75	0.5	1.25
BP105T/	Communication skills	1.5	0.25	1.75
BP106RBT/ BP106RMT	Remedial Biology/ Remedial Mathematics	1.5	0.25	1.75
BP107P	Human Anatomy and Physiology – Practical	2.25	0.5	2.75
BP108P	Pharmaceutical Analysis I – Practical	2.25	0.5	2.75
BP109P	Pharmaceutics I – Practical	2.25	0.75	3
BP110P	Pharmaceutical Inorganic Chemistry – Practical	2.25	0.75	3
BP111P	Communication skills – Practical	1.5		1.5
BP112RBP	Remedial Biology – Practical	0		0
2nd Semester				
BP201T	Human Anatomy and Physiology	1.5	0.5	2

	II			
BP202T	Pharmaceutical Organic Chemistry I	2.25	0.5	2.75
BP203T	Biochemistry	1.5	0	1.5
BP204T	Pathophysiology	1.5	0.5	2
BP205T	Computer applications in Pharmacy	2.25	0.5	2.75
BP206T	Environmental sciences	2.25	0.5	2.75
BP207P	Human Anatomy and Physiology II –Practical	2.25	0.75	3
BP208P	Pharmaceutical Organic Chemistry I– Practical	2.25	0.75	3
BP209P	Biochemistry – Practical	2.25	0.75	3
BP210P	Computer Applications in Pharmacy – Practical*	2.25	0.75	3
3rd Semester				
PHR-PG-231	Pharmacognosy-I	1.5	0.25	1.75
PHR-PC-232	Organic Chemistry-II	0.75	0.5	1.25
PHR-PC-233	Pharmaceutical Analysis-I	1.5	0	1.5
PHR-PT-234	Pharmaceutical Unit Operation-I	1.5	0.75	2.25
PHR-PL-235	APHE and Pathophysiology II	1.5	0.25	1.75
PHR-PG-231(P)	Pharmacognosy Practical+ Tutorial	2.25	0.75	3
PHR-PC-232(P)	Organic Chemistry-II Practical+Tutorial	2.25	0.5	2.75
PHR-PC-233(P)	Pharmaceutical Analysis-I Practical+Tutorial	2.25	0.5	2.75
PHR-PT-234(P)	Pharmaceutical Unit Operation-I Practical+Tutorial	2.25	0.75	3
PHR-PL-235 (P)	APHE and Pathophysiology II Practical+Tutorial	2.25	0.75	3
PHR-PR-236	Project	2.25		2.25
4th Semester				
PHR-PT-241	Pharmaceutical Microbiology	2.25	0.5	2.75
PHR-PL-242	Pharmacology I	2.25	0.5	2.75
PHR-PC-243	Biochemistry	2.25	0.5	2.75
PHR-PT-244	Pharmaceutical Unit Operation-II	2.25	0.5	2.75
PHR-PG-245	Pharmacognosy II	2.25	0.5	2.75
PHR-ES-246	Environmental Studies	2.25	0.75	3
PHR-PT-241(P)	Pharmaceutical Microbiology Practical+Tutorial	2.25	0.75	3
PHR-PL-242(P)	Pharmacology I Practical+Tutorial	2.25	0.75	3

PHR-PC-243(P)	Biochemistry Practical+Tutorial	2.25	0.75	3
PHR-PT-244(P)	Pharmaceutical Unit Operation-II Practical+Tutorial	2.25	0.75	3
PHR-PG-245(P)	Pharmacognosy II Practical	2.25	0.75	3
PHR-PR-247	Project	2.25		2.25
5th Semester				
PHR-PT-351	Hospital & Community Pharmacy	1.5	0.5	2
PHR-PG-352	Pharmacognosy III	2.25	0.5	2.75
PHR-PC-353	Medicinal Chemistry-I	1.5	0.5	2
PHR-PT-354	Pharmacology II	2.25	0.75	3
PHR-PT-355	Pharmaceutical Technology	1.5	0.25	1.75
PHR-PT-351(P)	Hospital & Community Pharmacy Practical	1.5	0.5	2
PHR-PG-352(P)	Pharmacognosy III Practical + Tutorial	1.5	0.75	2.25
PHR-PC-353(P)	Medicinal Chemistry-I Practical + Tutorial	1.5	0.5	2
PHR-PT-354(P)	Pharmacology II Practical + Tutorial	0.75	0.5	1.25
PHR-PT-355(P)	Pharmaceutical Technology Practical + Tutorial	1.5	0.5	2
PHR-PR-356	Project	2.25		2.25
6th Semester				
PHR-PT-361	Biopharmaceutics and Pharmacokinetics	2.25	0.5	2.75
PHR-PC-362	Medicinal Chemistry-II	1.5	0.5	2
PHR-PT-363	Pharmaceutical Jurisprudence/DRA & IPR	1.5	0.75	2.25
PHR-PG-364	Chemistry of Natural Products	2.25	0.5	2.75
PHR-PL-365	Pharmacology III	2.25	0.5	2.75
PHR-PT-361(P)	Biopharmaceutics and Pharmacokinetics Practical + Tutorial	2.25	0.5	2.75
PHR-PC-362(P)	Medicinal Chemistry-II Practical + Tutorial	2.25	0.75	3
PHR-PG-364(P)	Chemistry of Natural Products Practical + Tutorial	2.25	0.75	3
PHR-PL-365(P)	Pharmacology III Practical + Tutorial	2.25	0.75	3
PHR-PR-366	Project	2.25		2.25
7th Semester				

PHR-PT-471	Pharmaceutical Technology - II	2.25	0.5	2.75
PHR-PL-472	Pharmacovigilance	2.25	0.5	2.75
PHR-PT-473	Pharmaceutical Management	2.25	0.75	3
PHR-PC-474	Medicinal Chemistry & Cheminformatics	1.5	0.25	1.75
PHR-PT-475	Pharmaceutical Biotechnology	2.25	0.5	2.75
PHR-PT-471 (P)	Pharmaceutical Technology - II Practical + Tutorial	2.25	0.75	3
PHR-PL-472 (P)	Pharmacovigilance Practical + Tutorial	2.25	0.75	3
PHR-PC-474 (P)	Medicinal Chemistry & Cheminformatics Practical + Tutorial	1.5	0.5	2
PHR-PT-475 (P)	Pharmaceutical Biotechnology Practical + Tutorial	2.25	0.5	2.75
PHR-PR-476	Project	2.25		
8th Semester				
PHR-PL-481	Clinical Pharmacotherapeutics	2.25	0.75	3
PHR-PG-482	Industrial Pharmacognosy	2.25	0.75	3
PHR-PC-483	Pharmaceutical Analysis-II	2.25	0.75	3
PHR-PC-484	Chemical Biology	1.5	0.5	2
PHR-PG-482 (P)	Industrial Pharmacognosy Practical + Tutorial	2.25	0.75	3
PHR-PC-483 (P)	Pharmaceutical Analysis-II Practical + Tutorial	2.25		2.25
PHR-PR-485	Project	2.25		2.25
	Total			197
	Mean			2.37

2016-17				
Course code	Course name	Attainment through university examination	Attainment through internal assessment	Total attainment
1st Semester				
PHR-CS-111(FSU003)	Computers, Programming and applications	0	0.25	0.25
PHR-BIO-112/PHR-	Remedial Biology/Remedial Maths	0	0.5	0.5

MATH-112(FSU001)				
PHR-PT-113	Pharmaceutical Dispensing	0.75	0.25	1
PHR-PS-114(FSU005)	Presentation & Communication Skills (Writing seminar-I)	0.75	0	0.75
PHR-PC-115	Pharmaceutical Inorganic Chemistry	1.5	0.25	1.75
(FSU003(P))P HR-CS-111(P)	Computers, Programming and applications practical	2.25	0.75	3
PHR-BIO-112 (P)	Remedial Biology practical	2.25	0.75	3
PHR-PT-113 (P)	Pharmaceutical Dispensing practical	2.25	0.5	2.75
PHR-PC-115 (P)	Pharmaceutical Inorganic Chemistry Practical	2.25	0.5	2.75
PHR-PR-116	Project	2.25		2.25
2nd Semester				
PHR-PL-121	APHE and Pathophysiology I	2.25	0.25	2.5
PHR-PC-122	Pharmaceutical Physical Chemistry	0.75	0	0.75
PHR-PC-123	Organic Chemistry-I	0	0.25	0.25
PHR-PT-124	Physical Pharmacy	0.75	0	0.75
PHR-PS-125	Pharmaceutical Statistics	0	0	0
PHR-PL-121(P)	APHE and Pathophysiology I practical	2.25	0.75	3
PHR-PC-122(P)	Pharmaceutical Physical Chemistry practical	2.25	0.75	3
PHR-PC-123(P)	Organic Chemistry-I practical	2.25	0.25	2.5
PHR-PT-124(P)	Physical Pharmacy practical	2.25	0.75	3
PHR-PR-126	Project	2.25		2.25

3rd Semester				
PHR-PG-231	Pharmacognosy-I	1.5	0.25	1.75
PHR-PC-232	Organic Chemistry-II	2.25	0.5	2.75
PHR-PC-233	Pharmaceutical Analysis-I	1.5	0.75	2.25
PHR-PT-234	Pharmaceutical Unit Operation-I	1.5	0.25	1.75
PHR-PL-235	APHE and Pathophysiology II	2.25	0.5	2.75
PHR-PG-231(P)	Pharmacognosy-I practical	2.25	0.75	3
PHR-PC-232(P)	Organic Chemistry-II practical	2.25	0.75	3
PHR-PC-233(P)	Pharmaceutical Analysis-I practical	2.25	0.75	3
PHR-PT-234(P)	Pharmaceutical Unit Operation-I practical	2.25	0	2.25
PHR-PL-235(P)	APHE and Pathophysiology II practical	2.25	0.75	3
PHR-PR-236	Project	2.25		2.25
4th Semester				
PHR-PT-241	Pharmaceutical Microbiology	2.25	0.25	2.5
PHR-PL-242	Pharmacology I	0.75	0	0.75
PHR-PC-243	Biochemistry	1.5	0.75	2.25
PHR-PT-244	Pharmaceutical Unit Operation-II	2.25	0.25	2.5
PHR-PG-245	Pharmacognosy II	1.5	0.25	1.75
PHR-ES-246	Environmental Studies	1.5	0.75	2.25
PHR-PT-241(P)	Pharmaceutical Microbiology practical	2.25	0.5	2.75
PHR-PL-242(P)	Pharmacology I practical	2.25	0.75	3
PHR-PC-243(P)	Biochemistry practical	1.5	0.25	1.75
PHR-PT-244(P)	Pharmaceutical Unit Operation-II practical	2.25	0.5	2.75
PHR-PG-245(P)	Pharmacognosy II practical	2.25	0.75	3

245(P)				
PHR-PR-247	Project	2.25		2.25
5th Semester				
PHR-PT-351	Hospital & Community Pharmacy	2.25	0.25	2.5
PHR-PG-352	Pharmacognosy III	0.75	0	0.75
PHR-PC-353	Medicinal Chemistry-I	2.25	0.5	2.75
PHR-PT-354	Pharmacology II	1.5	0.75	2.25
PHR-PT-355	Pharmaceutical Technology	2.25	0.5	2.75
PHR-PT-351(P)	Hospital & Community Pharmacy	2.25	0.25	2.5
PHR-PG-352(P)	Pharmacognosy III	2.25	0.75	3
PHR-PC-353(P)	Medicinal Chemistry-I	2.25	0.75	3
PHR-PT-354(P)	Pharmacology II	2.25	0.75	3
PHR-PT-355(P)	Pharmaceutical Technology	2.25	0.75	3
PHR-PR-356	Project	2.25		2.25
6th Semester				
PHR-PT-361	Biopharmaceutics and Pharmacokinetics	2.25	0	2.25
PHR-PC-362	Medicinal Chemistry-II	1.5	0	1.5
PHR-PT-363	Pharmaceutical Jurisprudence/DRA & IPR	0.75	0.25	1
PHR-PG-364	Chemistry of Natural Products	0.75	0	0.75
PHR-PL-365	Pharmacology III	1.5	0.5	2
PHR-PT-361(P)	Biopharmaceutics and Pharmacokinetics	2.25	0.5	2.75
PHR-PC-362(P)	Medicinal Chemistry-II	2.25	0	2.25
PHR-PG-364(P)	Chemistry of Natural Products	2.25	0.75	3

PHR-PL-365(P)	Pharmacology III	2.25	0.75	3
PHR-PR-366	Project	2.25		2.25
7th Semester				
PHR-PT-471	Industrial Pharmacy-I	1.5	0.5	2
PHR-PC 471	Medicinal Chemistry-III	1.5	0.5	2
PHR-QA-471	Pharmaceutical Instrumental analysis-I	0.75	0.5	1.25
PHR-PL-471	Pharmacotherapeutics and clinical pharmacy-I	2.25	0.5	2.75
PHR-PT-473	Pharmaceutical jurisprudence	2.25	0.25	2.5
PHR-PT-471(P)	Industrial Pharmacy-I practical	2.25	0.75	3
PHR-PC 471(P)	Medicinal Chemistry-III practical	2.25	0.75	3
PHR-QA-471(P)	Pharmaceutical Instrumental analysis-I practical	2.25	0.5	2.75
PHR-PL-471(P)	Pharmacotherapeutics and clinical pharmacy-I practical	2.25	0.5	2.75
8th Semester				
PHR-PT-481	Industrial Pharmacy-II	0.75	0.25	1
PHR-PT-483	Pharma-management	2.25	0.25	2.5
PHR-QA-481	Pharmaceutical Instrumental analysis-II	0.75	0	0.75
PHR-PL-481	Pharmacotherapeutics and clinical Pharmacy-II	1.5	0	1.5
PHR-PT-481(P)	Industrial Pharmacy-II practical	2.25	0	2.25
PHR-499	Project	2.25		2.25
	Total			172
	Mean			2.15

2015-16				
Course code	Course name	Attainment through university examination	Attainment through internal assessment	Total attainment
1st Semester				
PHR-CS- 111	Computers, Programming and applications	0	0.75	0.75
PHR-BIO-112/PHR-MATH-112	Remedial Biology/Remedial Maths	0	0.5	0.5
PHR-PT-113	Pharmaceutical Dispensing	0	0.25	0.25
PHR-PS-114	Presentation & Communication Skills	0.75	0.75	1.5
PHR-PC-115	Pharmaceutical Inorganic Chemistry	0	0.25	0.25
PHR-CS-111(P)	Computers, Programming and applications practical	2.25	0.75	3
PHR-BIO-112 (P)	Remedial Biology practical	2.25	0	2.25
PHR-PT-113 (P)	Pharmaceutical Dispensing practicals	2.25	0.75	3
PHR-PC-115 (P)	Pharmaceutical Inorganic Chemistry Practicals	2.25	0.75	3
PHR-PR-116	Project	2.25		2.25
2nd Semester				
PHR-PL-121	APHE and Pathophysiology I	0	0.25	0.25
PHR-PC-122	Pharmaceutical Physical Chemistry	0.75	0.25	1
PHR-PC-123	Organic Chemistry-I	0	0	0

PHR-PT-124	Physical Pharmacy	0	0	0
PHR-PS-125	Pharmaceutical Statistics	0	0	0
PHR-PL-121(P)	APHE and Pathophysiology I practical	2.25	0.5	2.75
PHR-PC-122(P)	Pharmaceutical Physical Chemistry practical	2.25	0.75	3
PHR-PC-123(P)	Organic Chemistry-I practical	2.25	0.5	2.75
PHR-PT-124(P)	Physical Pharmacy practical	1.5	0.25	1.75
PHR-PR-126	Project	1.5		1.5
3rd Semester				
PHR-PG-231	Pharmacognosy-I	1.5	0.75	2.25
PHR-PC-232	Organic Chemistry-II	2.25	0.75	3
PHR-PC-233	Pharmaceutical Analysis-I	1.5	0.5	2
PHR-PT-234	Pharmaceutical Unit Operation-I	1.5	0.5	2
PHR-PL-235	APHE and Pathophysiology II	0	0	0
PHR-PG-231(P)	Pharmacognosy-I practical	2.25	0.75	3
PHR-PC-232(P)	Organic Chemistry-II practical	2.25	0.75	3
PHR-PC-233(P)	Pharmaceutical Analysis-I practical	2.25	0.75	3
PHR-PT-234(P)	Pharmaceutical Unit Operation-I practical	2.25	0.75	3
PHR-PL-235(P)	APHE and Pathophysiology II practical	2.25	0.75	3
PHR-PR-236	Project	2.25		2.25
4th Semester				
PHR-PT-241	Pharmaceutical Microbiology	1.5	0.75	2.25
PHR-PL-242	Pharmacology I	0	0.25	0.25
PHR-PC-243	Biochemistry	2.25	0.75	3
PHR-PT-244	Pharmaceutical Unit Operation-II	1.5	0.5	2

PHR-PG-245	Pharmacognosy II	2.25	0.5	2.75
PHR-ES-246	Environmental Studies	2.25	0.75	3
PHR-PT-241(P)	Pharmaceutical Microbiology practical	2.25	0.75	3
PHR-PL-242(P)	Pharmacology I practical	2.25	0.75	3
PHR-PC-243(P)	Biochemistry practical	2.25	0.75	3
PHR-PT-244(P)	Pharmaceutical Unit Operation-II practical	2.25	0.75	3
PHR-PG-245(P)	Pharmacognosy II practical	2.25	0.75	3
PHR-PR-247	Project	2.25		2.25
5th Semester				
PHR-PC-351	Phytochemistry -I	0	0	0
PHR-PL-351	Pharmacology-II	1.5	0	1.5
PHR-PC-353	Medicinal Chemistry-I	2.25	0.5	2.75
PHR-PT-351	Bio Pharmacy-I	0	0	0
PHR-PT-353	Hospital and community Pharmacy	0.75	0	0.75
PHR-PC-351(P)	Phytochemistry -I practical	2.25	0.75	3
PHR-PL-351(P)	Pharmacology-II practical	2.25	0.5	2.75
PHR-PC-353(P)	Medicinal Chemistry-I practical	2.25	0.75	3
PHR-PT-351(P)	Bio Pharmacy-I practical	2.25	0.25	2.5
PHR-PT-353(P)	Hospital and community Pharmacy practical	2.25	0.5	2.75
6th Semester				
PHR-PC-361	Phytochemistry -II	1.5	0	1.5
PHR-PL-361	Pharmacology-III	0.75	0	0.75

PHR-PT-361	Biopharmacy-II	1.5	0	1.5
PHR-PC-363	Medicinal Chemistry-II	1.5	0	1.5
PHR-PT-363	Biopharmaceutics and Pharmacokinetics	0.75	0	0.75
PHR-PC-361(P)	Phytochemistry -II practical	2.25	0.75	3
PHR-PL-361(P)	Pharmacology-III practical	2.25	0.5	2.75
PHR-PT-361(P)	Bio pharmacy-II practical	2.25	0.75	3
PHR-PC-363(P)	Medicinal Chemistry-II practical	2.25	0.5	2.75
PHR-PT-363(P)	Biopharmaceutics and Pharmacokinetics practical	2.25	0.75	3
7th Semester				
PHR-PT-471	Industrial Pharmacy-I	1.5	0.5	2
PHR-PC 471	Medicinal Chemistry-III	2.25	0.75	3
PHR-QA-471	Pharmaceutical Instrumental analysis-I	2.25	0.5	2.75
PHR-PL-471	Pharmacotherapeutics and clinical pharmacy-I	2.25	0.75	3
PHR-PT-473	Pharmaceutical jurisprudence	1.5	0.5	2
PHR-PT-471(P)	Industrial Pharmacy-I practical	2.25	0.75	3
PHR-PC 471(P)	Medicinal Chemistry-III practical	1.5	0.75	2.25
PHR-QA-471(P)	Pharmaceutical Instrumental analysis-I practical	2.25	0.75	3
PHR-PL-471(P)	Pharmacotherapeutics and clinical pharmacy-I practical	2.25	0.75	3
8th Semester				
PHR-PT-481	Industrial Pharmacy-II	1.5	0.25	1.75
PHR-PT-483	Pharma-management	2.25	0	2.25
PHR-QA-481	Pharmaceutical Instrumental	0.75	0.5	1.25

	analysis-II			
PHR-PL-481	Pharmacotherapeutics and clinical Pharmacy-II	1.5	0.5	2
PHR-PT-481(P)	Industrial Pharmacy-II practical	2.25	0.5	2.75
PHR-499	Project	2.25		2.25
	Total			162.5
	mean			2.08

Attainment of Program Outcomes (40)

3.3.1. Describe assessment tools and processes used for assessing the attainment of each PO (10)

(Describe the assessment tools and processes used to gather the data upon which the evaluation of each the Program Outcome is based indicating the frequency with which these processes are carried out. Describe the assessment processes that demonstrate the degree to which the Program Outcomes are attained and document the attainment levels)

The program outcomes are achieved through curriculum that offers a number of mandatory courses. Each course has defined course outcomes that are mapped to the program outcomes and a set of performance criteria that are used to provide quantitative measurement of how well course outcomes are achieved.

The linkage among program outcomes and course outcomes is shown in Table 3.1.2. The course outcomes are thus directly and quantitatively assessed, and are tied to the program outcomes as shown in the course syllabi. Therefore, if the course outcomes are met, the program outcomes also met.

3.3.2 Provide results of evaluation of each PO (30)

Program shall set Program Outcome attainment levels for all POs.

(The attainment levels by direct (student performance) and indirect (surveys) are to be presented through Program level Course-PO matrix as indicated).

PO Attainment Program outcomes are assessed by using both the direct and indirect tools. Direct assessment includes the identification and incorporation of the courses in curriculum which are linked with the attainment of program outcomes. Indirect assessment is through the student exit surveys, feedback from stakeholders and co-curricular activities etc.

Direct assessment

Clearly stated program outcomes are discussed in all faculty and School Academic Committee meetings in every six months. Direct and indirect assessment tools are discussed and finalized in the School Academic Committee. Direct assessment includes primarily the discussion on specific courses directly meeting the program outcomes.

Course allocation is done in School Academic Committee meetings as per compatibility of the course outcomes and specializations of the faculty members. Each faculty member brings out a detailed lecture schedule for the assigned course including course content, learning and skill outcomes, assessment tools and pedagogy etc. The lecture schedules for each course is discussed in the School Academic Committee for further inputs from all faculty members under the Chairmanship of Dean of the Faculty. Lecture schedules finally approved by the School Academic Committee are presented in the Board of Studies for inputs from external experts from the industry and academia. BoS verifies the alignment of courses and syllabi with the program outcomes.

We follow a continuous evaluation process wherein the student performance is assessed through mid-term examination, surprise tests, short quizzes, projects, case study discussions, role plays, group discussions, seminars and end term examinations.

Question papers are prepared by the concerned course coordinators and reviewed by the Question Paper Review Committee to ensure that the program and course outcomes are duly assessed.

Methodology used in calculations

Direct assessment:

Individual PO attainment was calculated by multiplying the average % of students attaining COs with

average level (1, 2 or 3) of that PO divided by 100.

For example,

Average % of students who attained COs = 82%

Average of all COs for PO1 = 3

PO1 attainment = $3 \times 82 \div 100 = \sim 2.5$

Indirect assessment: Placements, extra-curricular activities

PO Attainment level = 80% of direct assessment + 20% of indirect assessment.

2017-18		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP101T	Human Anatomy and Physiology I	1.3										1.3
BP102T	Pharmaceutical Analysis I	1.4		1.4	1.4							
BP103T	Pharmaceutics I	1.9		1.9			1.3	1.9	0.6	1.3		1.9
BP104T	Pharmaceutical Inorganic Chemistry	1.6	1.1	1.6								
BP105T/	Communication skills	1.8		1.8								
BP106RBT/ BP106RMT	Remedial Biology/ Remedial Mathematics	2.0				2.0			1.3			
BP107P	Human Anatomy and Physiology – Practical	2.4								0.8		
BP108P	Pharmaceutical Analysis I – Practical	2.4		2.4								
BP109P	Pharmaceutics I – Practical	2.6					2.6					
BP110P	Pharmaceutical Inorganic Chemistry – Practical	2.4	2.4							2.4		
BP111P	Communication skills – Practical	1.9		1.9	1.9		1.9		1.9			
BP112RBP	Remedial Biology – Practical	0.7							0.7	0.7		0.7
BP201T	Human Anatomy and Physiology II	2.1			2.1							
BP202T	Pharmaceutical Organic Chemistry I	2.3							2.3	2.3		
BP203T	Biochemistry	1.7		1.7			1.7	0.6	1.1		0.6	1.7
BP204T	Pathophysiology	1.9		1.9			1.9	0.6	1.3		0.6	1.9
BP205T	Computer applications in Pharmacy	2.3							1.6	2.3		
BP206T	Environmental sciences	1.7			2.5							

BP207P	Human Anatomy and Physiology II –Practical	1.8								2.6	2.6	
BP208P	Pharmaceutical Organic Chemistry I–Practical	2.6				2.6		0.0		2.6		
BP209P	Biochemistry –Practical	2.6		2.6								
BP210P	Computer Applications in Pharmacy – Practical*	2.6								2.6		2.6
PHR-PG-231	Pharmacognosy-I	1.9		1.9								
PHR-PC-232	Organic Chemistry-II	1.6										
PHR-PC-233	Pharmaceutical Analysis-I	2.0										
PHR-PT-234	Pharmaceutical Unit Operation-I	2.3	2.3									
PHR-PL-235	APHE and Pathophysiology II	1.9	1.3	1.9	1.9		1.9		1.9	1.3		1.9
PHR-PG-231(P)	Pharmacognosy Practical+Tutorial	2.3		2.3								
PHR-PC-232(P)	Organic Chemistry-II Practical+Tutorial	2.4								2.4	0.0	0.0
PHR-PC-233(P)	Pharmaceutical Analysis-I Practical+Tutorial	2.4										
PHR-PT-234(P)	Pharmaceutical Unit Operation-I Practical+Tutorial	2.4										
PHR-PL-235 (P)	APHE and Pathophysiology II Practical+Tutorial	2.3										
PHR-PR-236	Project	2.3	1.6	2.3	1.6	1.6			1.6			
PHR-PT-241	Pharmaceutical Microbiology	2.3										
PHR-PL-242	Pharmacology I	2.2										
PHR-PC-243	Biochemistry	2.3		0.8			2.3				2.3	2.3
PHR-PT-244	Pharmaceutical Unit Operation-II	2.5										
PHR-PG-245	Pharmacognosy II	2.3										
PHR-ES-246	Environmental Studies	2.6									2.6	
PHR-PT-241(P)	Pharmaceutical Microbiology Practical+Tutorial	2.6										
PHR-PL-242(P)	Pharmacology I Practical+Tutorial	2.7								2.7		
PHR-PC-	Biochemistry	2.6							2.6			

243(P)	Practical+Tutorial											
PHR-PT-244(P)	Pharmaceutical Unit Operation-II Practical+Tutorial	2.6	1.7	2.6	1.7	1.7	2.6		2.6		0.9	2.6
PHR-PG-245 (P)	Pharmacognosy II Practical	2.7										
PHR-PR-247	Project	3.0	2.0	3.0	2.0	2.0			2.0			
PHR-PT-351	Hospital & Community Pharmacy	1.9	1.3	1.9	1.3	1.3			1.3			
PHR-PG-352	Pharmacognosy III	2.4			2.4							
PHR-PC-353	Medicinal Chemistry-I	2.1	1.4	2.1	1.4	1.4	2.1		2.1		0.7	2.1
PHR-PT-354	Pharmacology II	2.6	2.6									
PHR-PT-355	Pharmaceutical Technology	1.8										
PHR-PT-351(P)	Hospital & Community Pharmacy Practical	1.9	0.6	0.6	0.6			1.3		1.3		
PHR-PG-352(P)	Pharmacognosy III Practical + Tutorial	2.2			0.7							
PHR-PC-353(P)	Medicinal Chemistry-I Practical + Tutorial	2.0		1.3	2.0							
PHR-PT-354 (P)	Pharmacology II Practical + Tutorial	1.7	1.2	1.2		1.7	1.7	1.7	1.7			1.7
PHR-PT-355 (P)	Pharmaceutical Technology Practical + Tutorial	2.1			2.1							
PHR-PR-356	Project	3.0	2.0	3.0	2.0	2.0			2.0			
PHR-PT-361	Biopharmaceutics and Pharmacokinetics	2.6		2.6	2.6	1.7			2.6			
PHR-PC-362	Medicinal Chemistry-II	2.1										
PHR-PT-363	Pharmaceutical Jurisprudence/DR A & IPR	2.1	1.4	1.4		2.1	2.1	2.1	2.1	1.4		2.1
PHR-PG-364	Chemistry of Natural Products	2.2			2.2							
PHR-PL-365	Pharmacology III	2.4								2.4	2.4	
PHR-PT-361(P)	Biopharmaceutics and Pharmacokinetics Practical + Tutorial	2.6	2.6	1.7	1.7		2.6	2.6				2.6
PHR-PC-362(P)	Medicinal Chemistry-II Practical +	2.5		2.5						2.5		

	Tutorial											
PHR-PG-364(P)	Chemistry of Natural Products Practical + Tutorial	2.7				2.7			1.8			
PHR-PL-365(P)	Pharmacology III Practical + Tutorial	2.7	2.7	1.8	2.7							
PHR-PR-366	Project	3.0	2.0	3.0	2.0	2.0			2.0			
PHR-PT-471	Pharmaceutical Technology - II	2.4	2.4	1.6	1.6		2.4	2.4				2.4
PHR-PL-472	Pharmacovigilance	2.6		2.6	2.6							
PHR-PT-473	Pharmaceutical Management	2.6							2.6	2.6	2.6	2.6
PHR-PC-474	Medicinal Chemistry & Cheminformatics	1.9			1.9							
PHR-PT-475	Pharmaceutical Biotechnology	2.1			1.4					0.7		
PHR-PT-471 (P)	Pharmaceutical Technology - II Practical + Tutorial	2.6		2.6						2.6		
PHR-PL-472 (P)	Pharmacovigilance Practical + Tutorial	2.4		1.6					2.4			
PHR-PC-474 (P)	Medicinal Chemistry & Cheminformatics Practical + Tutorial	2.1	0.7	2.1	2.1							1.4
PHR-PT-475 (P)	Pharmaceutical Biotechnology Practical + Tutorial	2.3										1.5
PHR-PR-476	Project	3.0	2.0	3.0	2.0	2.0			2.0			
PHR-PL-481	Clinical Pharmacotherapeutics	2.7		1.8	1.8	2.7						2.7
PHR-PG-482	Industrial Pharmacognosy	2.6		1.7	2.6							1.7
PHR-PC-483	Pharmaceutical Analysis-II	2.4	0.8	2.4	2.4							1.6
PHR-PC-484	Chemical Biology	2.2		1.4	1.4			0.7		0.7	0.7	0.7
PHR-PG-482 (P)	Industrial Pharmacognosy Practical + Tutorial	2.7		1.8	0.9					0.9		
PHR-PC-483 (P)	Pharmaceutical Analysis-II Practical + Tutorial	2.7	0.9	1.8	2.7							0.9
PHR-PR-485	Project	3.0	2.0	3.0	2.0	2.0			2.0			

Average PO Attainment	2.28	1.69	2.01	1.89	1.93	2.12	1.54	1.77	1.86	1.46	1.78
Average Percentage	75.87	56.36	67.13	63.08	64.19	70.78	51.34	59.11	61.95	48.60	59.46
80% of Average	60.70	45.09	53.70	50.47	51.36	56.62	41.07	47.29	49.56	38.88	47.57

2016-17		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PHR-CS-111(FSU003)	Computers, Programming and applications	1.1										1.1
PHR-BIO-112/PHR-MATH-112(FSU001)	Remedial Biology/Remedial Maths	1.5		1.5	1.5							
PHR-PT-113	Pharmaceutical Dispensing	1.6		1.6			1.0	1.6	0.5	1.0	0.0	1.6
PHR-PS-114(FSU005)	Presentation & Communication Skills(Writing seminar-I)	1.3		1.3								
PHR-PC-115	Pharmaceutical Inorganic Chemistry	1.8		1.8								
(FSU003(P))PHR-CS-111(P)	Computers, Programming and applications practical	2.9				2.9			1.9			
PHR-BIO-112 (P)	Remedial Biology practical	2.8								0.9		
PHR-PT-113 (P)	Pharmaceutical Dispensing practicals	2.5		2.5								
PHR-PC-115 (P)	Pharmaceutical Inorganic Chemistry Practical	2.8					2.8					
PHR-PR-116	Project	2.9	1.9	2.9	1.9	1.9			1.9			
PHR-PL-121	APHE and Pathophysiology I	2.2		2.2	2.2		2.2		2.2			
PHR-PC-122	Pharmaceutical Physical Chemistry	1.5							1.5	1.5		1.5
PHR-PC-123	Organic Chemistry-I	1.0			1.0							
PHR-PT-124	Physical Pharmacy	1.5							1.5	1.5		
PHR-PS-125	Pharmaceutical Statistics	0.8		0.8			0.8	0.3	0.6		0.3	0.8
PHR-PL-121(P)	APHE and Pathophysiology I practical	2.9		2.9			2.9	1.0	1.9		1.0	2.9
PHR-PC-122(P)	Pharmaceutical Physical Chemistry	2.8							1.9	2.8		

	practical										
PHR-PC-123(P)	Organic Chemistry-I practical	1.8			2.7						
PHR-PT-124(P)	Physical Pharmacy practical	1.6							2.4	2.4	
PHR-PR-126	Project	2.3	1.5	2.3	1.5	1.5			1.5		
PHR-PG-231	Pharmacognosy-I	1.8		1.8							
PHR-PC-232	Organic Chemistry-II	2.4							2.4		2.4
PHR-PC-233	Pharmaceutical Analysis-I	2.0		2.0							
PHR-PT-234	Pharmaceutical Unit Operation-I	1.8									
PHR-PL-235	APHE and Pathophysiology II	2.2									
PHR-PG-231(P)	Pharmacognosy-I practical	2.6	2.6								
PHR-PC-232(P)	Organic Chemistry-II practical	2.7	1.8	2.7	2.7		2.7		2.7	1.8	2.7
PHR-PC-233(P)	Pharmaceutical Analysis-I practical	2.9		2.9							
PHR-PT-234(P)	Pharmaceutical Unit Operation-I practical	2.3							2.3		
PHR-PL-235(P)	APHE and Pathophysiology II practical	2.9									
PHR-PR-236	Project	3.0	2.0	3.0	2.0	2.0			2.0		
PHR-PT-241	Pharmaceutical Microbiology	2.2									
PHR-PL-242	Pharmacology I	1.6	1.1	1.6	1.1	1.1			1.1		
PHR-PC-243	Biochemistry	2.1									
PHR-PT-244	Pharmaceutical Unit Operation-II	2.3									
PHR-PG-245	Pharmacognosy II	2.0		0.7			2.0			2.0	2.0
PHR-ES-246	Environmental Studies	2.2									
PHR-PT-241(P)	Pharmaceutical Microbiology practical	2.8									
PHR-PL-242(P)	Pharmacology I practical	2.9								2.9	
PHR-PC-243(P)	Biochemistry practical	2.1									

PHR-PT-244(P)	Pharmaceutical Unit Operation-II practical	2.7								2.7		
PHR-PG-245(P)	Pharmacognosy II practical	2.9							2.9			
PHR-PR-247	Project	2.7	1.8	2.7	1.8	1.8			1.8			
PHR-PT-351	Hospital & Community Pharmacy	2.4	0.8		0.8		0.8				0.0	0.0
PHR-PG-352	Pharmacognosy III	1.4	0.9	1.4	0.9	0.9			0.9			
PHR-PC-353	Medicinal Chemistry-I	2.4	1.6	2.4	1.6	1.6	2.4		2.4		0.8	2.4
PHR-PT-354	Pharmacology II	2.3			2.3							
PHR-PT-355	Pharmaceutical Technology	2.2	1.5	2.2	1.5	1.5	2.2		2.2		0.7	2.2
PHR-PT-351(P)	Hospital & Community Pharmacy	2.7	2.7									
PHR-PG-352(P)	Pharmacognosy III	2.7		0.9			0.9				0.9	
PHR-PC-353(P)	Medicinal Chemistry-I	2.8	0.9	0.9	0.9			1.9		1.9		
PHR-PT-354(P)	Pharmacology II	2.8			0.9							
PHR-PT-355(P)	Pharmaceutical Technology	2.6		1.8	2.6							
PHR-PR-356	Project	2.9	2.0	2.9	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0
PHR-PT-361	Biopharmaceutics and Pharmacokinetics	2.3			2.3							
PHR-PC-362	Medicinal Chemistry-II	2.0	1.3	2.0	1.3	1.3			1.3			
PHR-PT-363	Pharmaceutical Jurisprudence/DR A & IPR	1.6	1.0	1.0		1.6	1.6	1.6	1.6			1.6
PHR-PG-364	Chemistry of Natural Products	1.5										
PHR-PL-365	Pharmacology III	2.2	1.4	1.4		2.2	2.2	2.2	2.2	1.4		2.2
PHR-PT-361(P)	Biopharmaceutics and Pharmacokinetics	2.4			2.4							
PHR-PC-362(P)	Medicinal Chemistry-II	2.5								2.5	2.5	
PHR-PG-364(P)	Chemistry of Natural Products	2.8	2.8	1.9	1.9		2.8	2.8				2.8
PHR-PL-365(P)	Pharmacology III	2.9		2.9						2.9		

PHR-PR-366	Project	3.0	2.0	3.0	2.0	2.0			2.0			
PHR-PT-471	Industrial Pharmacy-I	2.1	2.1	1.4	1.4		2.1	2.1				2.1
PHR-PC-471	Medicinal Chemistry-III	2.1	1.4	2.1	1.4	1.4			1.4			
PHR-QA-471	Pharmaceutical Instrumental analysis-I	1.6	1.6	1.1	1.1		1.6	1.6				1.6
PHR-PL-471	Pharmacotherapeutics and clinical pharmacy-I	2.4		2.4	2.4							
PHR-PT-473	Pharmaceutical jurisprudence	2.3							2.3	2.3	2.3	2.3
PHR-PT-471(P)	Industrial Pharmacy-I practical	2.9			2.9							
PHR-PC-471(P)	Medicinal Chemistry-III practical	2.7			1.8					0.9		
PHR-QA-471(P)	Pharmaceutical Instrumental analysis-I practical	2.5		2.5						2.5		
PHR-PL-471(P)	Pharmacotherapeutics and clinical pharmacy-I practical	2.8		1.9					2.8			
PHR-PT-481	Industrial Pharmacy-II	1.5	0.5	1.5	1.5							1.0
PHR-PT-483	Pharm-management	2.3										1.6
PHR-QA-481	Pharmaceutical Instrumental analysis-II	1.6	0.5	1.6	1.6							1.1
PHR-PL-481	Pharmacotherapeutics and clinical Pharmacy-II	1.8		1.2	1.2	1.8						1.8
PHR-PT-481(P)	Industrial Pharmacy-II practical	2.6		1.7	2.6							1.7
PHR-499	Project	3.0	2.0	3.0	2.0	2.0			2.0			
Average PO Attainment		2.3	1.6	2.0	1.8	1.7	1.8	1.5	1.8	1.9	1.2	1.7
Average Percentage		75.5	53.2	65.2	58.7	57.7	60.8	49.7	60.4	62.5	40.7	57.0
80% of Average		60.37	42.57	52.13	46.95	46.13	48.61	39.79	48.33	49.97	32.53	45.61

2015-16		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PHR-CS- 111	Computers, Programming and applications	1.4										1.4
PHR-BIO-112/PHR-	Remedial Biology/Remedial	1.0		1.0	1.0							

MATH-112	Maths											
PHR-PT-113	Pharmaceutical Dispensing	1.1		1.1			0.7	1.1	0.4	0.7		1.1
PHR-PS-114	Presentation & Communication Skills	1.9		1.9								
PHR-PC-115	Pharmaceutical Inorganic Chemistry	1.1		1.1								
PHR-CS-111(P)	Computers, Programming and applications practical	2.9				2.9			1.9			
PHR-BIO-112 (P)	Remedial Biology practical	2.3								0.8		
PHR-PT-113 (P)	Pharmaceutical Dispensing practicals	2.4		2.4								
PHR-PC-115 (P)	Pharmaceutical Inorganic Chemistry Practicals	2.8					2.8					
PHR-PR-116	Project	2.6	1.7	2.6	1.7	1.7			1.7			
PHR-PL-121	APHE and Pathophysiology I	1.5		1.5	1.5		1.5		1.5			
PHR-PC-122	Pharmaceutical Physical Chemistry	1.7							1.7	1.7		1.7
PHR-PC-123	Organic Chemistry-I	0.8			0.8							
PHR-PT-124	Physical Pharmacy	1.4							1.4	1.4		
PHR-PS-125	Pharmaceutical Statistics	0.6		0.6			0.6	0.2	0.4		0.2	0.6
PHR-PL-121(P)	APHE and Pathophysiology I practical	2.3		2.3			2.3	0.8	1.6		0.8	2.3
PHR-PC-122(P)	Pharmaceutical Physical Chemistry practical	2.5							1.7	2.5		
PHR-PC-123(P)	Organic Chemistry-I practical	1.5			2.3							
PHR-PT-124(P)	Physical Pharmacy practical	1.3								1.9	1.9	
PHR-PR-126	Project	2.1	1.4	2.1	1.4	1.4			1.4			
PHR-PG-231	Pharmacognosy-I	2.2		2.2								
PHR-PC-232	Organic Chemistry-II	2.6								2.6		2.6
PHR-PC-233	Pharmaceutical Analysis-I	2.0		2.0								
PHR-PT-234	Pharmaceutical Unit Operation-I	1.9										
PHR-PL-235	APHE and Pathophysiology II	1.4										
PHR-PG-231(P)	Pharmacognosy-I practical	2.8	2.8									
PHR-PC-232(P)	Organic Chemistry-II practical	2.9	1.9	2.9	2.9		2.9		2.9	1.9		2.9

PHR-PC-233(P)	Pharmaceutical Analysis-I practical	2.9		2.9								
PHR-PT-234(P)	Pharmaceutical Unit Operation-I practical	2.8							2.8			0.0
PHR-PL-235(P)	APHE and Pathophysiology II practical	2.8										
PHR-PR-236	Project	2.9	2.0	2.9	2.0	2.0			2.0			
PHR-PT-241	Pharmaceutical Microbiology	2.3										
PHR-PL-242	Pharmacology I	1.2	0.8	1.2	0.8	0.8			0.8			
PHR-PC-243	Biochemistry	2.7										
PHR-PT-244	Pharmaceutical Unit Operation-II	2.1										
PHR-PG-245	Pharmacognosy II	2.2		0.7			2.2				2.2	2.2
PHR-ES-246	Environmental Studies	2.5										
PHR-PT-241(P)	Pharmaceutical Microbiology practical	2.9										
PHR-PL-242(P)	Pharmacology I practical	3.0										
PHR-PC-243(P)	Biochemistry practical	3.0										
PHR-PT-244(P)	Pharmaceutical Unit Operation-II practical	2.7							2.7			0.0
PHR-PG-245(P)	Pharmacognosy II practical	3.0							3.0			
PHR-PR-247	Project	3.0	2.0	3.0	2.0	2.0			2.0			
PHR-PC-351	Phytochemistry -I	1.0	0.3		0.3		0.3					
PHR-PL-351	Pharmacology-II	1.7	1.1	1.7	1.1	1.1			1.1			
PHR-PC-353	Medicinal Chemistry-I	2.2	1.4	2.2	1.4	1.4	2.2		2.2		0.7	2.2
PHR-PT-351	Bio Pharmacy-I	1.4			1.4							
PHR-PT-353	Hospital and community Pharmacy	1.4	1.0	1.4	1.0	1.0	1.4		1.4		0.5	1.4
PHR-PC-351(P)	Phytochemistry -I practical	2.8	2.8									
PHR-PL-351(P)	Pharmacology-II practical	2.4		0.8			0.8		0.0	0.0	0.8	
PHR-PC-353(P)	Medicinal Chemistry-I practical	2.7	0.9	0.9	0.9			1.8		1.8		
PHR-PT-351(P)	Bio Pharmacy-I practical	2.1			0.7							
PHR-PT-353(P)	Hospital and community Pharmacy practical	2.3		1.5	2.3							
PHR-PC-361	Phytochemistry -II	1.7	1.1	1.7	1.1	1.1			1.1			

PHR-PL-361	Pharmacology-III	1.6			1.6							
PHR-PT-361	Biopharmacy-II	1.8	1.2	1.8	1.2	1.2			1.2			
PHR-PC-363	Medicinal Chemistry-II	1.8	1.2	1.2		1.8	1.8	1.8	1.8			1.8
PHR-PT-363	Biopharmaceutics and Pharmacokinetics	1.6										
PHR-PC-361(P)	Phytochemistry -II practical	2.6	1.8	1.8		2.6	2.6	2.6	2.6	1.8		2.6
PHR-PL-361(P)	Pharmacology-III practical	2.3			2.3							
PHR-PT-361(P)	Biopharmacy-II practical	2.8								2.8	2.8	
PHR-PC-363(P)	Medicinal Chemistry-II practical	2.3	2.3	1.5	1.5		2.3	2.3				2.3
PHR-PT-363(P)	Biopharmaceutics and Pharmacokinetics practical	2.6		2.6						2.6		
PHR-PT-471	Industrial Pharmacy-I	2.0	1.4	2.0	1.4	1.4			1.4			
PHR-PC 471	Medicinal Chemistry-III	2.6	1.7	1.7		2.6	2.6	2.6	2.6			2.6
PHR-QA-471	Pharmaceutical Instrumental analysis-I	2.3	1.5	2.3	1.5	1.5			1.5			
PHR-PL-471	Pharmacotherapeutics and clinical pharmacy-I	2.5	2.5	1.6	1.6		2.5	2.5				2.5
PHR-PT-473	Pharmaceutical jurisprudence	1.9	1.3	1.3		1.9	1.9	1.9	1.9			1.9
PHR-PT-471(P)	Industrial Pharmacy-I practical	2.9							2.9	2.9	2.9	2.9
PHR-PC 471(P)	Medicinal Chemistry-III practical	2.4			2.4							
PHR-QA-471(P)	Pharmaceutical Instrumental analysis-I practical	2.9			1.9					1.0		
PHR-PL-471(P)	Pharmacotherapeutics and clinical pharmacy-I practical	2.9		2.9						2.9		
PHR-PT-481	Industrial Pharmacy-II	1.9		1.3					1.9			
PHR-PT-483	Pharma-management	2.1	0.7	2.1	2.1							1.4
PHR-QA-481	Pharmaceutical Instrumental analysis-II	1.6	1.1	1.6	1.1	1.1			1.1			1.1
PHR-PL-481	Pharmacotherapeutics and clinical Pharmacy-II	2.2	0.7	2.2	2.2							1.4

PHR-PT-481(P)	Industrial Pharmacy-II practical	2.5		1.7	1.7	2.5						2.5
PHR-499	Project	2.8	1.9	2.8	1.9	1.9			1.9			0.0
Average PO Attainment		2.2	1.5	1.8	1.5	1.7	1.8	1.7	1.6	1.9	1.4	1.8
Average Percentage		72.2	49.8	60.9	51.4	56.3	61.5	58.3	54.5	64.1	47.2	59.8
80% of Average		57.77	39.86	48.7 4	41.1 0	45.0 4	49.2 4	46.6 1	43.6 4	51.27	37.7 5	47.86

Indirect Assessment: Presently, the indirect assessment on students' feedback/survey are conducted at every six months to ascertain their perception towards attainment of program outcomes. In future, it is proposed that feedback on program outcome attainment is frequently collected from the recruiters, alumni and parents through well-structured questionnaires. Student exit surveys will also be conducted to identify the gap in program attainment level.

In addition, co-curricular activities such as the development of business plans, marketing activities to develop selling skills, participation in expert lectures etc. will be conducted in each semester and assessed by the committee constituted for the same.

Extracurricular activities are also informally used as an assessment tool to measure the program outcomes. There are different hobby clubs functional at the University level. School of Pharmaceutical Sciences students are encouraged to participate in such club activities like dancing, singing, cooking, sports and inter school competitions. For example: Cancer awareness drives are frequently run by our students which help in inculcating the sense of responsibility towards the society among our students.

2017-18											
Assessment Tool	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Students Feedback Survey	2	2	2	2	2	1			2		
Placement	3	2	2	2	2	1		2	1		
Extra curriculum activity	2	2	2	2	2	1	1	3	2		
Average PO Assessment	2.67	2.00	2.00	2.00	2.00	1.00	1.00	2.33	1.67	1.00	1.00
Percentage	88.89	66.67	66.67	66.67	66.67	33.33	33.33	77.78	55.56	33.33	33.33
20% of Average	17.78	13.33	13.33	13.33	13.33	6.67	6.67	15.56	11.11	6.67	6.67

2016-17											
Assessment Tool	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Students Feedback Survey	3	1	2	2	1	1		2	2		
Placement	3	2	2	1	1			1	1		
extra curriculum activity	2	1	2	2	2	1	1	3	2	1	1
Average PO Assessment	2.67	1.33	2.00	1.67	1.33	1.00	1.00	2.00	1.67	1.00	1.00
Percentage	88.89	44.44	66.67	55.56	44.44	33.33	33.33	66.67	55.56	33.33	33.33
20% of Average	17.78	8.89	13.33	11.11	8.89	6.67	6.67	13.33	11.11	6.67	6.67

2015-16											
Assessment Tool	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Students Feedback Survey	3	1	2	2	1	1		2	2		
Placement	2	1	2	1	1			1	1		
extra curriculum activity	2	1	1	1	2	1	1	2	1	1	1
Average PO Assessment	2.33	1.00	1.67	1.33	1.33	1.00	1.00	1.67	1.33	1.00	1.00
Percentage	77.78	33.33	55.56	44.44	44.44	33.33	33.33	55.56	44.44	33.33	33.33
20% of Average	15.56	6.67	11.11	8.89	8.89	6.67	6.67	11.11	8.89	6.67	6.67

PO Attainment level = 80% of direct assessment + 20% of indirect assessment

2017-18											
Assessment Tool	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
80% of Average Direct Attainment	60.7	45.09	53.7	50.47	51.36	56.62	41.07	47.29	49.56	38.88	47.57
20% of Average Indirect Attainment	17.78	13.33	13.33	13.33	13.33	6.67	6.67	15.56	11.11	6.67	6.67
Sum (% Attainment)	78.48	58.42	67.03	63.8	64.69	63.29	47.74	62.85	60.67	45.55	54.24
2016-17											
Assessment Tool	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
80% of Average Direct Attainment	60.37	42.57	52.13	46.95	46.13	48.61	39.79	48.33	49.97	32.53	45.61
20% of Average	17.78	8.89	13.33	11.11	8.89	6.67	6.67	13.33	11.11	6.67	6.67

Indirect Attainment											
Sum (% Attainment)	78.15	51.46	65.46	58.06	55.02	55.28	46.46	61.66	61.08	39.2	52.28
2015-16											
Assessment Tool	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
80% of Average Direct Attainment	57.77	39.86	48.74	41.1	45.04	49.24	46.61	43.64	51.27	37.75	47.86
20% of Average Indirect Attainment	15.56	6.67	11.11	8.89	8.89	6.67	6.67	11.11	8.89	6.67	6.67
Sum (% Attainment)	73.33	46.53	59.85	49.99	53.93	55.91	53.28	54.75	60.16	44.42	54.53

Criterion- 4

CRITERION 4	Student's performance	180
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4. Students' Performance (180)

Item	CAY	CAYm1	CAYm2	CAYm3
Sanctioned intake of the program (<i>N</i>)	100	100	100	60
Total number of students admitted in first year(<i>N1</i>)	96*	88*	81*	49
Number of students admitted in 2nd year in the same batch via lateral entry (<i>N2</i>)		03	04	01
Total number of students admitted in the Program (<i>N1 + N2</i>)	96*	91*	85*	50*

*Excluding students who left the course

Enrolment Ratio (20)

Enrolment Ratio= $N1/N$

Item	CAY	CAYm1	CAYm2	CAYm3
Enrolment Ratio= $N1/N$	0.96	0.88	0.81	0.81
Average Enrolment ratio	0.87			
Marks	18			

Item	Marks
(Students enrolled at the First Year Level on average basis during the previous three academic years starting from current academic year)	
>=90% students enrolled	20

>=80% students enrolled	18
>=70% students enrolled	16
>=60% students enrolled	12
>=50% students enrolled	08
<50% students enrolled	0

Success Rate in the stipulated period of the program (50)

Year of entry	Number of students admitted in 1st year + admitted via lateral entry in 2nd year (N1 + N2)	Number of students who have successfully graduated without backlogs in any year of study (Without backlog means no compartment/failure in any semester/year of study)			
		I Year	II Year	III Year	IV Year
CAY	96				
CAY _{m1}	88+3=91	53			
CAY _{m2}	81+4=85	46	53		
CAY _{m3}	49+1=50	10	21	26	
CAY _{m4} (LYG)	59+1=60	17	28	34	33
CAY _{m5} (LYG _{m1})	48	26	21	23	24
CAY _{m6} (LYG _{m2})	47+3=50	24	15	00	30

Year of entry	Number of students admitted in 1st year + admitted via lateral entry in 2nd year (N1 + N2)	Number of students who have successfully graduated (Students with backlog in stipulated period of study)			
		I Year	II Year	III Year	IV Year
CAY	96				
CAY _{m1}	88+3=91	35			
CAY _{m2}	81+4=85	35	32		
CAY _{m3}	49+1=50	39	29	24	
CAY _{m4} (LYG)	59+1=60	42	32	26	27
CAY _{m5} (LYG _{m1})	48	22	27	25	24
CAY _{m6} (LYG _{m2})	47+3=50	23	35	50	20

Success rate without backlogs in any year of study (30)

*SI= (Number of students who graduated from the program without backlog)/
{(Number of students admitted in the first year of that batch) plus (lateral
entry students admitted in second year of study)} Average*

Item	Latest Year of Graduation (LYG) 2017-18	Latest Year of Graduation minus 1 (LYG _{m1}) 2016-17	Latest Year of Graduation minus 2 (LYG _{m2}) 2015-16
Number of students admitted in the corresponding First Year + admitted in 2nd year via lateral entry	60	48	50
Number of students who have graduated without backlogs in the stipulated period	33	22	25
Success index (SI)	0.55	0.46	0.45
Average SI	0.49		
Success Rate	14.7		

$SI = \text{Mean of success index (SI) for past three batches Success rate without backlogs in any year of study} = 30 \times \text{Average SI}$

Note: If 100% students clear without any backlog then also total marks scored will be 50 as both 4.2.1 & 4.2.2 will be applicable simultaneously.

4.2.2 Success rate with backlog in stipulated period of study (20)

$SI = (\text{Number of students who graduated from the program in the stipulated period of course duration}) / \{(\text{Number of students admitted in the first year of that batch}) \text{ plus } (\text{lateral entry students admitted in second year of study})\}$

$\text{Average SI} = \text{mean of success index (SI) for past three batches Success rate} = 20 \times \text{Average SI}$

Item	LYG (2017-18)	LYGm1 (2016-17)	LYGm2 (2015-16)
Number of students admitted in the corresponding First Year + admitted in 2nd year via lateral entry	60	48	50
Number of students who have graduated with backlog in the stipulated period	20	18	23
Success index (SI)	0.33	0.38	0.46
Average SI	0.39		
Success Rate	7.8		

Academic Performance in Final Year (10)

Academic Performance = Average API

$\text{Academic Performance Index(API)} = ((\text{Mean of Final Year Grade Point Average of all successful Students on a 10 point scale}) \text{ or } (\text{Mean of the$

percentage of marks of all successful students in Final Year/10)) x (successful students/number of students appeared in the examination)

Successful students are those who passed in all the final year courses

Academic Performance	CAYm1	CAYm2	CAYm3
Mean of CGPA or Mean Percentage of all successful students (X)	7.53	7.48	6.57
Total no. of successful students (Y)	32	24	30
Total no. of students appeared in the examination (Z)	60	48	50
API = $x * (Y/Z)$	4.014	3.81	4.02
Academic Performance = Average API = $(AP1 + AP2 + AP3)/3$	3.95		

Academic Performance in Third Year (10)

Academic Performance = Average API

Academic Performance Index = *((Mean of 3rd Year Grade Point Average of all successful Students on a 10-point scale) or (Mean of the percentage of marks of all successful students in Third Year/10)) x (successful students/number of students appeared in the examination)*

Successful students are those who are permitted to proceed to the final year

Academic Performance	CAYm1	CAYm2	CAYm3
Mean of CGPA or Mean Percentage of all successful students (X)	5.80	5.68	5.69
Total no. of successful students (Y)	60	48	50
Total no. of students appeared in the examination (Z)	60	48	50
API = $x * (Y/Z)$	5.80	5.68	5.69
Average API = $(AP1 + AP2 + AP3)/3$	5.72		
Academic Performance = Average API = $(AP1 + AP2 + AP3)/3$	5.72		

Academic Performance in Second Year (10)

Academic Performance = Average API

Academic Performance Index = (API) = ((Mean of 2nd Year Grade Point Average of all successful Students on a 10 point scale) or (Mean of the percentage of marks of all successful students in Second Year/10)) x (successful students/number of students appeared in the examination)

Successful students are those who are permitted to proceed to the third year

Academic Performance	CAYm1	CAYm2	CAYm3
Mean of CGPA or Mean Percentage of all successful students (X)	5.55	6.05	5.77
Total no. of successful students (Y)	60	48	50
Total no. of students appeared in the examination (Z)	60	48	50
API = x* (Y/Z)	5.55	6.05	5.77
Academic Performance = Average API = (AP1 + AP2 + AP3)/3	5.79		
Academic Performance=2.0*Average API	11.58		

Academic Performance in First Year (20)

Academic Performance Index (API) = ((Mean of 1st Year Grade Point Average of all successful Students on a 10 point scale) or (Mean of the percentage of marks of all successful students in first Year/ 10)) x (successful students/number of students appeared in the examination)

Successful students are those who are permitted to proceed to the second year

Academic Performance	CAYm1	CAYm2	CAYm3
Mean of CGPA or Mean Percentage of all successful students (X)	5.80	6.62	6.08
Total no. of successful students (Y)	59	48	47
Total no. of students appeared in the examination (Z)	59	48	47
API = x* (Y/Z)	5.80	6.62	6.08

Average API = (AP1 + AP2 + AP3)/3	6.16
Academic Performance = 2.0 * Average API	12.33

Placement and Higher Studies (40)

$$\text{Assessment Points} = 40 \times (x + y)/N$$

Item	LYG	LYG _{m1}	LYG _{m2}
Total No. of Final Year Students (N)	60	48	50
Number of students placed in Industries/ Hospitals/ Government sector through on/off campus Recruitment or opted for Entrepreneurship (x)	22	22	28
No. of students admitted to higher studies with valid scores in various qualifying exams(y)	30	16	15
x + y	52	38	43
Placement Index: (x + y)/N	0.87	0.79	0.86
T = Average of (x + y)/N	0.84		
Assessment = 40 X T	33.6		

Professional Activities (20)

Professional societies / chapters and organizing pharmacy events (5)

S. No.	Year	Program Type	Name of Event	Activities
1	2015-16	Seminar	World Pharmacist Day	Lectures, Declamation contest, Poster competition
2	2015-16	Camp	Blood Donation Camp	Collection of blood
3	2016-17	Seminar	World Pharmacist Day	Lectures, Disease (Cancer, diabetes, women hygiene) Awareness in the villages nearby Shoolini University

4	2016-17	Camp	Blood Donation Camp	Collection of blood
5	2017-18	Seminar	World Pharmacist Day	
6	2017-18	Camp	Blood Donation Camp	Collection of blood
7	2018-19	Seminar	World Pharmacist Day	Lectures, Declamation contest, Poster competition and Panel Discussion on the theme antimicrobial Resistance
8	2018-19	Camp	Blood Donation Camp	Collection of blood

Publication of technical magazines, newsletters, etc. (5)

(List the publications mentioned along with the names of the editors, publishers, etc.)

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Shoolini

University NEWSLETTER

PRODUCED BY STUDENTS OF DEPT. OF JOURNALISM AND MASS COMMUNICATION

NIRF RANKINGS All India Ranking: 101-150; MBA: 51-75; Pharmacy: 30

SHOOLINI AMONG TOP PVT UNIVS IN INDIA

VAISHNAVI SOOD

Shoolini University has emerged one of the leading private universities of India as per rankings given by the prestigious National Institutional Ranking Framework (NIRF) set up by union ministry of Human Resource Development (HRD). It has not only retained its position in the top overall 101-150 band from among about 4500 institutions of higher learning in the country but has earned a slot in the 51-75 band in MBA and has improved its performance in pharmacy by attaining 30th rank.

While only four private

universities from the northern region have found a place in the top 100 band, Shoolini University is only among three who have figured in the 101-150 band in the overall University rankings. Two of these are from Himachal Pradesh and one from Uttarakhand. While Shoolini has maintained its consistent place in the 101-150 band, where it was also placed last year, the other private university from the state, Jaypee University of Information Technology, was at 93rd rank last year and is placed this year in the 101-150 band.

Among the top 100 universities, three of the four private

universities in the northern region comprising Delhi, Uttar Pradesh, Punjab, Haryana, Uttarakhand, Jammu and Kashmir and Himachal Pradesh, are located in UP and one in Punjab (Thapar University, Patiala). Another interesting and significant item called out of

NIRF figures is that out of 101 private universities in the north only 10 have found a place, including Shoolini University; Bihar rankings.

Shoolini University had applied for rankings only in three categories - overall, Management and Pharmacy - and figured well in all the three categories.

The School of Pharmaceutical Sciences has performed consistently well and was placed at 30th rank among more than one thousand Pharm Schools from across the country. It scaled up its position by 9 places and moved to 30th rank from 39th place last year.

Everyone's delight, School of Business Management, which applied for the rankings for the first time, completed with 457 Management Schools from across the nation and has been placed in the rank band of 53-75. Top Management Schools in the country. It has emerged as one of the leading Business Schools in the region and placed below none in the state.

"I am very happy to share that Shoolini University is now among the top five private

universities of the northern region including states of Himachal Pradesh, Punjab, Haryana, Delhi, Uttar Pradesh, Uttarakhand and Jammu and Kashmir", shared Prof. P. K. Khosla, the Vice-Chancellor of Shoolini University. "The research achievements of Shoolini are already hence than the average of the top best universities of the country. I feel extremely proud that we are competing with some of the leading Private Universities in the region which have been long

established even before the inception of Shoolini." The only University from the state that has been ranked higher than the Shoolini University is Dr. K.S. Parmar University of Horticulture and Forestry (Naini University), Solan which has been placed at the 71 rank among all Indian Universities.

NIRF rankings have emerged as the most authentic ranking system for the Indian Institutes which are released by MHRD every year since the last three years. The five parameters that are used to determine NIRF rankings are Teaching and Learning Resources (TLR),

continued on Page 2

MANSI GUPTA



St. Luke's Senior Secondary School, Solan won the Grand Finale BIZ Quiz 2018 and went away with the running trophy after their victory in the third consecutive year.

Around 25 schools from all over Himachal Pradesh actively took part in the quiz this year and 19 out of them participated in the semi-final round of the Quiz competition organised on October 12 in the campus and six teams further qualified for the final round.

St. Luke's also won a cash prize of Rs 11000 as they bagged the first position. D.A.V New Shimla and SVN Kunihar emerged as the 1st and 2nd

runner up respectively. The other teams to make it to the Top 6 included JVN Kunihar, BL Public School, Shamir and St. Edward Shimla.

Each school team was accompanied with their respective teachers, played really well and brought glory to their respective schools. Prof PK Khosla, Vice Chancellor, Shoolini University and Prof Atul Khosla also congratulated the winners and all the participants for their enthusiasm and efforts.

BIZ QUIZ was initiated in the year 2011 with an objective of reaching out to the students to make them aware about the competitive world.

VAISHNAVI SOOD

Taking small risks, overcoming fears and trusting yourself is all that it takes to utilise your true potential", said Alakshi Tomar, youngest speaker at the Shoolini Guru Talk Series.

Alakshi, a social entrepreneur and co-founder of TruCup, shared her story of transforming from a shy introvert girl to a selectively extrovert social entrepreneur. She said, "I was shy and introvert as a student but eventually I realised that I need to overcome my inhibitions and self worth issues as the world often favours the extroverts."

She shared three important life lessons with the Shoolini students : Moving beyond the fear of failure, being ambitious and of discovering one's IKIGAI.

IKIGAI is a Japanese concept used to understand one's sense of being by exploring what you love to do, what you are good at, what you can be paid for and what the world needs and thus combining passion, profession, vocation and mission.

She encouraged the students to follow their passion and to overcome their fears. She stated that all of us know to some extent that what is it that we love to do but often choose something easier or more comfortable due to our fear of fail-



ure. She added, "We are conditioned from our childhood that failure is not an option but we fail to understand that every failure has a deep learning and being in our safe zones and not taking the risks to follow our passion often leads to unhappiness." She shared that she took Commerce in school as she was good in Mathematics while she actually wanted to opt for Humanities; in college she wanted to study Psychology but rather did her graduation in English. She then went ahead to join the corporate world and worked with Accenture for around two and half years but felt unhappy. In a CSR activity, while interacting with a group of specially abled children, she realised that she enjoyed teaching. She went ahead to join Gandhi fellowship.

raised the importance of menstrual health and tried to address various stigmas surrounding the issue of menstrual cycle.

She shared that while working with schools in the slums of Mumbai during Gandhian fellowship, she saw the massive neglect of the problems around menstrual health and hygiene and various myths that made periods a taboo in the families and society.

Trucup is also a social enterprise that sells menstrual pads as well as try to break the myths and taboos prevalent about periods through their various workshops. She also emphasized on the need to break the silence surrounding periods and to ensure access to sanitary napkins and right to menstrual health for every woman as an important step towards the goal of women empowerment.

Participation in inter-institute events by students of the program of study (10)

(Provide a table indicating those publications, which received awards in the events/conferences organized by other institutes)

Participation in inter-institute events by students

S. No	Year	Program Type	Name of Event	Organizer	Level of Event	Number of Participants
1	2015-16	Conference	National Conference on Advancements, Opportunities and Future Vision of Indian Scenario of Pharmaceutical Education and Research	Bahra Institute of Pharmacy	National	4
2	2015-16	Conference	Annual National Convention on 'Emerging Scenario in Human Resource Development for Pharmacy Profession	APTI (Association of Pharmaceutical Teachers of India) and Govt. Polytechnic College for	National	45

				girls, Patiala		
3	2015-16	Conference	IUPHAR world Conference on Pharmacology of Natural and traditional medicine	National University of Singapore	International	1
4	2015-16	Conference	National conference on 'Drug safety and Pharmacovigilance	Guru Gobind Singh College of Pharmacy, Yamunanagar	National	3
5	2015-16	Conference	International conference on 'Improving Quality of life using Nanotechnology potential role of polymers	Panjab University, Chandigarh	International	2
6	2015-16	Training	Two weeks training on animal handling and welfare	National Institute of Animal welfare	National	30
7	2015-16	Conference	World conference on regenerative medicine	Institute for cell therapy and immunology, Germany	International	1
8	2015-16	Conference	The Lancet neurology conference, London UK	Elsevier Ltd.	International	1
9	2015-16	Training	One-week UGC networking training course on 'Research Techniques in Pharmaceutical sciences	Panjab University, Chandigarh	National	1
10	2015-16	Conference	Indian Science Congress	Indian Science Congress Association, University of Mysore	National	
11	2016-17	Conference	Skill India: Emerging Horizons for Pharma Professionals	IPA and ISF college of Pharmacy, Moga	National	

12	2016-17	Conference	Recent advances in green Nanotechnology	Bahra University	National	
13	2016-17	Conference	Role of Intellectual property in encouraging innovation and creativity	Bahra University	National	1
14	2016-17	Conference	APSA 2016	University of Sydney	International	1
15	2016-17	Workshop/ Training	Continuing pharmacy education program	H.P. State pharmacy Council	National	5
16	2016-17	Conference	Medicinal Chemistry and Drug Discovery & Development	ACS and Biocon Academy	International	4
17	2016-17	Workshop/ Training/	FDP on augmentation of effective teaching skills	Bahra University	National	1
18	2016-17	Training/Seminar/	Patent Filing and Geographical Indication	JP University of Information Technology	National	1
19	2016-17	Conference	IPR-Creative India Innovative India	Bahra University	National	1
20	2017-18	Conference	5th Annual International Conference on 'Bioinformatics and Proteomics Driven Biomarker Developments	ICMR and Chitkara University	International	
21	2017-18	Conference	Annual convention of APTI Punjab State branch and national conference	Rayat Bahra University, Mohali	National	
22	2017-18	Conference	China South Asia Communication under BRI: The VIth China South Asia Cultural Forum.	Sichuan University and Chinese Peoples Association for Friendship with Foreign	International	1

				Countries, China		
23	2017-18	Conference	Sustainable Mountain Mountain Development Summit-VI,	Indian Mountain Initiative (IMI), Mizoram	National	1
24	2017-18	Conference	World Congress of Neurology	World Federation of Neurology, Kyoto, Japan	International	1
25	2017-18	Workshop/ Training/	Recent developments and future trends in pharmaceutical education and research	UGC networking resource center, Panjab University, Chandigarh	National	1
26	2017-18	Seminar/Conference	Pathways to Institutional Advancement through Research	AICTE and Clarivate Analytics, New Delhi	National	1
27	2017-18	Conference	BPDBD 2017	Chitkara University, Punjab	International	1
28	2017-18	Conference	2nd International Conference on Innovations in Pharmaceutical Sciences	Indian Hospital Pharmacists Association, GNI Technical Campus, Hyderabad	International	1
29	2017-18	Conference	IASTAM -2018	Delhi Pharmaceutical Research University (DPSRU), New Delhi	International	1
30	2017-18	Conference	2nd Himachal Pradesh Science Congress	HIMCOSTE, Shimla	National	2

Awards in the events/conferences organized by other institutes

S. No.	Year	Program Type	Name of Event	Organizing Agency / Institute Name	Level of Event	Award Type
1	2015-16	Conference	Indian Science Congress	Indian Science Congress Association, University of Mysore	National	Best poster award
2	2016-17	Conference	Skill India: Emerging Horizons for Pharma Professionals	IPA and ISF college of Pharmacy, Moga	National	Second prize dance competition
3	2016-17	Conference	Recent advances in green Nanotechnology	Bahra University	National	First and second prize oral presentation
4	2017-18	Conference	5th Annual International Conference on 'Bioinformatics and Proteomics Driven Biomarker Developments	ICMR and Chitkara University	International	First prize in oral presentation
5	2017-18	Conference	Annual convention of APTI Punjab State branch and national conference	Rayat Bahra University, Mohali	National	First prize debate, first prize quiz, second prize western dance, third prize folk dance

Criterion - 5

CRITERION 5	Faculty Information and Contributions	175
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5. Faculty Information and Contributions (175)

Name of the Faculty Member		Qualification		Association with the Institution		Designation		Date of Joining the Institution		Department		Specialization		Academic Research		Sponsored Research (Funded Research)		Consultancy and Product Development	
Dr. Uma Ranjan Lal	Dr. Vijay Kumar Kapoor	Dr. Rohit Goyal	Dr. Neeraj Mahndroo	Dr. Saurabh Kulshrestha	Dr. Deepak N. Kapoor	PhD	PhD	PhD	PhD	PhD	PhD	PhD	PhD	PhD	PhD	PhD	PhD	PhD	PhD
PhD	PhD	PhD	PhD	PhD	PhD	Degree (highest degree)	University	Year of Graduation	Permanent	Contractual	Permanent	Permanent	Permanent	Permanent	Permanent	Associate Professor	03.08.17	School of Pharmaceutical Sciences	Pharmacognosy
NIPER, Mohali, Panjab	Panjab University	PTU	Panjab University	Jamia Milia Islamia	Panjab University	University	Panjab University	2011	2011	1974	2011	2001	2005	2012	2012	Professor	15.11.2016	School of Pharmaceutical Sciences	Pharmaceutical Chemistry
2011	1974	2011	2001	2005	2012	Year of Graduation	Panjab University	2011	2011	1974	2011	2001	2005	2012	2012	Professor	15.11.2016	School of Pharmaceutical Sciences	Pharmaceutical Chemistry
Permanent	Contractual	Permanent	Permanent	Permanent	Permanent	Association with the Institution	Professor	16.01.2012	01.07.2013	08.12.2015	19.01.2015	03.08.17	15.11.2016	16.01.2012	01.07.2013	08.12.2015	19.01.2015	03.08.17	15.11.2016
Associate Professor	Professor	Professor	Professor	Professor	Professor & Dean	Designation	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences
03.08.17	15.11.2016	16.01.2012	01.07.2013	08.12.2015	19.01.2015	Date of Joining the Institution	Department	Specialization	Pharmacognosy	Pharmaceutical Chemistry	Pharmacology	Pharmaceutical Chemistry	Biotechnology	Pharmaceutics	Pharmaceutics	Pharmaceutics	Pharmaceutics	Pharmaceutics	Pharmaceutics
Pharmacognosy	Pharmaceutical Chemistry	Pharmacology	Pharmaceutical Chemistry	Biotechnology	Pharmaceutics	Specialization	Department	Specialization	03	0	09	08	10	04	04	04	04	04	04
03	0	09	08	10	04	Research Paper Publications (2016, 2017, 2018)	Department	Specialization	0	0	2+2	3+2	5+5	1+5	1+5	1+5	1+5	1+5	1+5
0	0	2+2	3+2	5+5	1+5	Ph.D. Guidance (Guided + Guiding)	Department	Specialization	No	No	No	No	No	No	No	No	No	No	No
No	No	No	No	No	No	Faculty Receiving Ph.D. during the Assessment Years	Department	Specialization	0	0	0	03	01	01	01	01	01	01	01
0	0	0	03	01	01	Sponsored Research (Funded Research)	Department	Specialization	0	0	0	03	01	01	01	01	01	01	01
0	0	0	1	01	01	Consultancy and Product Development	Department	Specialization	0	0	0	1	01	01	01	01	01	01	01

Dr. Gaurav Sharma	Dr. R. Ramajayan	Dr. Gurjot Kaur	Dr. Raman Preet Singh	Dr. Poonam Negi	Dr. Umar Farooq	Dr. Kamal Dev	Dr. Kaushik Das Sharma
Ph. D	Ph. D	Post Doc, PhD	PhD	PhD	PhD	PhD	PhD
Shoolini University	Panjab University	NIPER, Mohali,	NIPER, Mohali,	Panjab University	PGI Chandigarh	IISC, Bangalore	IISc, Bangalore
2014	2007	2010	2011	2015	2010	2004	2000
Permanent	Permanent	Permanent	Permanent	Permanent	Permanent	Permanent	Permanent
Associate Professor	Associate Professor	Associate Professor	Associate Professor	Associate Professor	Professor	Professor	Professor
25.08.2014	07.02.2018	11.02.2019	05.05.2016	14.10.2014	01.04.2010	08.12.2015	01.05.17
School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences
Pharmaceutical Chemistry	Pharmaceutical Chemistry	Pharmacology & Toxicology	Pharmacology	Pharmaceutics	Microbiology	Biotechnology	Pharmaceutical Chemistry
53	0	0	0	08	09	11	0
0	0	0	0	2+2	05	10+2	0
No	No	No	No	No	No	No	No
0	0	0	0	0	0	01	0
0	0	0	0	01	0	0	0

Dr. Afzoze Alam	Mr. Gaurav Sharma	Ms. Hemlata Kaurav	Dr. Ashutosh K. Dash	Dr. Deepak Kumar	Dr. Navneet Kumar Upadhyay	Dr. Sandeep Sundaroyal	Dr. Reena Vohra Saini
M-Pharmacy	M-Pharmacy	M-Pharmacy	Ph.D	Ph.D	Ph.D	Ph. D	Ph. D
Shoolini University	Shoolini University	Rayat Bahra University	CSIR, Jammu	Changwon National University	Shoolini University	NIPER, Mohali	Institute of Genomics and Integrative biology, Delhi
2015	2009	2010	2009-10	2009	2019	2008	2006
Permanent	Permanent	Permanent	Permanent	Permanent	Permanent	Permanent	Permanent
Assistant Professor	Assistant Professor	Assistant Professor	Assistant Professor	Assistant Professor	Assistant Professor	Associate Professor	Associate Professor
01.09.2006	03.09.2012	03.08.2015	01.01.2019	03.05.2017	14.03.2011	04.02.2016	01.07.2013
School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences
Pharmaceutical Chemistry	Pharmacology	Pharmaceutics	Pharmaceutical Chemistry	Pharmaceutical Chemistry	Quality Assurance	Pharmaceutical Chemistry	Biotechnology
04	01	02	0	0	07	0	13
0	0	0	0	1	0	0	3+3
Yes	No	No	No	No	Yes	No	No
	0	0	0	0	01	0	0
0	0	0	0	0	0	0	0

Mr. Lalit Sharma	Ms. Sneha Shree	Ms. Aditi Sharma	Dr. Azhar Khan	Dr. Subham Benerjee	Ms. Devika Rana	Dr. Tanurvir Kaur	Dr. Swati Pundir
M-Pharmacy	M-Pharmacy	M-Pharmacy	Ph.D.	Ph.D.	M-Pharmacy	PhD	PhD
Shoolini University	PTU	Shoolini University	AMU	BIT, Mersa	Jaypee University	Shoolini University	Shoolini University
2010	2015	2012	2011	2014	2011	2018	2019
Permanent	Permanent	Permanent	Permanent	Permanent	Permanent	Permanent	Permanent
Assistant Professor	Assistant Professor	Assistant Professor	Assistant Professor	Assistant Professor	Assistant Professor	Assistant Professor	Assistant Professor
01.08.2017	30.04.2017	30.04.2016	30.08.2016	20.08.2017	30.08.2015	31.09.2014	03.09.2012
School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences
Pharmacology	Pharmacognosy	Pharmacology	Biochemistry	Pharmaceutics	Pharmaceutical Chemistry	Pharmaceutics	Pharmacognosy
01	0	05	05	0	0	03	0
0	0	0	1+4	0	0	0	0
No	No	No	No	No	No	Yes	Yes
0	0	0	0	0	0	0	01
0	0	0	0	0	0	0	0

Ms. Gunjan Goel	Mr. Charul Rathore	Ms. Akshita Jindal	Mr. Aditya Shiven	Ms. Babita	Dr. Raveen	Ms. Chetna	Mr. Abhishek
MBBS	M-Pharmacy	M-Pharmacy	M-Pharmacy	M-Pharmacy	Pharm D	M-Pharmacy	M-Pharmacy
Meerut Unversity	Shoolini University	Panjab University	Shoolini University	PTU, Rayat Bahra Mohali	RGUHS Bangalore	Shoolini University	Shoolini University
2015	2014	2017	2014	2012	2014	2011	2015
Permanent	Permanent	Permanent	Permanent	Permanent	Permanent	Permanent	Permanent
Assistant Professor	Assistant Professor	Assistant Professor	Assistant Professor	Assistant Professor	Assistant Professor	Assistant Professor	Assistant Professor
04.06.2015	08.08.2016	04.08.2017	27.08.2015	16.08.2018	24.04.2018	04.07.2018	17.01.2018
School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutic al Sciences	School of Pharmaceutical Sciences
Medicine	Pharmaceutics	Pharmaceutical chemistry	Pharmaceutics	Pharmaceutical Chemistry	Pharma Practice	Pharmaceutics	Pharmaceutics
0	03	0	0	0	0	0	0
0	0	0	0	0	0	0	0
No	No	No	No	No	No	No	No
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0

Dr. Bharat Divedee	Ms. Poonam Devi	Dr. Sameer Sapra	Mr. Ravi Kumar	Ms. Shaila Khah	Ms. Nidhi Thakur	Ms. Pratibha Sharma	Dr. Varun Jaiswal
Ph. D	M. Pharmacy	Ph. D	M-Pharmacy	Ph.D	M-Pharmacy	M-Pharmacy	Ph.D.
NIPER, Mohali	PBDS, University of Health Sciences, Rohtak	PTU	PTU	Shoolini university	Shoolini University	PBDS, University of Health Sciences, Rohtak	Jaypee University
2018	2016	2013	2015	2017	2012	2016	2011
Permanent	Permanent	Permanent	Permanent	Permanent	Permanent	Permanent	Permanent
Assistant Professor	Assistant Professor	Associate Professor	Assistant Professor	Assistant Professor	Assistant Professor	Assistant Professor	Assistant Professor
01.08.2018	24.10.2017	31.03.2015	14.06.2016	3.07.2011	28.03.2016	18.04.2017	20.07.2015
School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences
Pharmaceutical Biotechnology	Pharmaceutics	Pharmaceutical Chemistry	Pharmacology	Pharmacology	Pharmacognosy	Pharmaceutics	Pharmaceutical Chemistry
0	0	02	0	01	0	0	12
0	0	0	0	0	0	0	0
Yes	No	No	No	Yes	No	No	No
0	0	01	0	0	0	0	0
0	0	0	0	0	0	0	0

Dr. Pankaj Thakur	Ms. Meenakshi Nayer	Mr. Gaurav Gupta	Mr. Ravinder Thakur	Mr. Chandar Mohan Gupta	Dr. Alok Darshan Kothial	Dr. Astha Tripathi	Ms. Radha Agarwal
PhD	M-Tech	M-Tech	M. Sc.	MBA	Ph.D.	Ph.D.	M-Pharmacy
GND University, Amritsar	Baddi University	Shoolini University	HPU	S.I.L.B.	HNB Grahwal central University, Uttarakhand	Directorate of Mushroom Research, Solan	PBDS, University of Health Sciences, Rohtak
2010	2014	2011	2008	2005	2011	2011	2016
Permanent	Permanent	Permanent	Permanent	Permanent	Permanent	Permanent	Permanent
Assistant Professor	Assistant Professor	Assistant Professor	Assistant Professor	Assistant Professor	Assistant Professor	Assistant Professor	Assistant Professor
01.07.2017	01.07.2017	01.07.2017	15.11.2016	15.07.2013	21.11.2012	18.08.2011	01.08.2018
School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutical Sciences	School of Pharmaceutica l Sciences	School of Pharmaceutical Sciences
Chemistry	Computer Science	Computer Science	Mathematics	Pharmaceutical Management	Mathematics	Microbiology	Pharmaceutics
15	02	01	0	0	0	03	0
1+2	0	0	0	0	0	0	0
No	No	No	No	No	No	No	No
0	0	0	0	0	0	0	0
01	0	0	0	0	0	0	0

Ms. Dhriti Verma	M. Pharm	Shoolini University	2018	Permanent	Assistant Professor	01.004.2019	School of Pharmaceutical Sciences	Pharmaceutics	0	0	No	0	0
Mr. Sunil Kumar	M. Pharm	Shoolini University	2017	Permanent	Assistant Professor	01.03.2019	School of Pharmaceutical Sciences	Pharmaceutical Chemistry	0	0	No	0	0
Ms. Monika Prakash Singh	M.S	NIPER, Mohali	2016	Permanent	Assistant Professor	19.04.2019	School of Pharmaceutical Sciences	Pharmacognosy	0	0	No	0	0
Mr. Sharad	M. Sc. IT	University of Sunderland, UK	2010	Permanent	Assistant Professor	01.03.2016	School of Pharmaceutical Sciences	Pharmaceutical Management	0	0	No	0	0

Note: Please provide details for the faculty of the department, cumulative information for all the shifts for all academic years starting from current year in above format in Annexure - II.

Student-Faculty Ratio (SFR) (20)

No. of UG Programs in the Department(n): _____

No. of PG Programs in the Department (m): _____

No. of Students in UG 1stYear= **u1**

No. of Students in UG 2rdYear= **u2**

No. of Students in UG 3rdYear= **u3**

No. of Students in UG 4thYear= **u4**

No. of Students in PG 1stYear= **p1**

No. of Students in PG 2ndYear= **p2**

No. of Students = Sanctioned Intake + Actual admitted lateral entry

(The above data to be provided considering all the UG and PG programs of the department)

S = Number of Students in the Department = UG1 + PG1 + PG2 ++ PGm

F = Total Number of Regular Faculty Members in the Department

Student Faculty Ratio (SFR) = S/F

Year	CAY	CAYm1	CAYm2
u1.1	100	100	100
u1.2	103	104	61
u1.3	104	61	61
u1.4	61	61	60
UG1	u1.1+u1.2+u1.3+u1.4=368	u1.1+u1.2+u1.3+u1.4= 326	u1.1+u1.2+u1.3+u1.4= 282
p1.1	36	30	30
p1.2	30	35	35
PG1	p1.1+p1.2=66	p1.1+p1.2=65	p1.1+p1.2=65
PhD 1	8	4	6
PhD 2	4	6	4
PGm	PhD1+PhD 2= 12	PhD1+PhD 2=10	PhD1+PhD 2=10
Total No. of Students in the Department (S)	368+66+12=446	326+ 65+10 = 401	282+65+10= 352
No. of Faculty in the Department (F)	42F1	38F2	35F3
Student Faculty Ratio (SFR)	SFR1=446/42 =10.61	SFR2= 401/38=10.55	SFR3= 352/35=10.05
Average SFR	SFR=(SFR1+SFR2+SFR3)/3= 10.61+10.55+10.05/3= 10.41		

Table B.5.1

Marks to be given proportionally from a maximum of 20 to a minimum of 10 for average SFR between 15:1 to 20:1, and zero for average SFR higher than 20:1. Marks distribution is given as below:

15.00 - 15.50	-	20marks
15.51 - 16.50	-	18 marks
16.51 - 17.50	-	16marks
17.51 - 18.50	-	14marks
18.51 - 19.50	-	12marks
19.51 - 20.00	-	10marks

Note:

Minimum 75% should be Regular/ full time faculty and the remaining shall be Contractual Faculty/Adjunct Faculty/Resource persons from industry as per AICTE norms and standards.

The contractual faculty will be considered for assessment only if a faculty is drawing a salary as prescribed by the concerned State Government for the contractual faculty in the respective cadre *and who have taught over consecutive 4 semesters.*

Faculty Cadre Proportion (20)

The reference Faculty cadre proportion is 1(F1):2(F2):6(F3)

F1: Number of Professors required = $1/9 \times$ Number of Faculty required to comply with 15:1 Student-Faculty ratio.

F2: Number of Associate Professors required = $2/9 \times$ Number of Faculty required to comply with 15:1 Student-Faculty ratio.

F3: Number of Assistant Professors required = $6/9 \times$ Number of Faculty required to comply with 15:1 Student-Faculty ratio

Year	Professors		Associate Professors		Assistant Professors	
	Required F1	Available	Required F2	Available	Required F3	Available
CAY	4	8	8	5	24	31
CAY_{m1}	3	5	6	7	20	27
CAY_{m2}	3	6	6	5	18	23
Average Numbers	RF1=3	AF1=6	RF2=7	AF2=6	RF3=21	AF3=27

- Maximum marks to be limited if it exceeds the allocated marks
- If AF1 = AF2= 0 then zero marks

Example: Intake = 180; Required number of Faculty: 12; RF1= 1, RF2=2 and Rf3=9 Case 1: AF1/RF1= 1; AF2/RF2 = 1; AF3/RF3 = 1 Cadre proportion marks = $(1+0.6+0.4) \times 10 = 20$ Case 2: AF1/RF1= 1; AF2/RF2 = $3/2$; AF3/RF3 = $8/9$ Cadre proportion marks = $(1+0.9+0.3) \times 10 =$ limited to 20.

Calculation for Cadre proportion marks:

$$\text{Cadre Ratio Marks} = [(AF1/RF1) + (AF2/RF2 \times 0.6) + (AF3/RF3 \times 0.4)] \times 10$$

$$= [(6/3) + (6/7 \times 0.6) + (27/21 \times 0.4)] \times 10$$

$$= (2 + 0.51 + 0.51) \times 10$$

$$= \mathbf{30.24}$$

$$= \mathbf{20 \text{ (maximum 20)}}$$

Faculty Qualification (20)

$FQ = 2*(10X+4Y)/F$ where X is no. of faculty with Ph.D., Y is no. of faculty with M.Pharm., F is no. of faculty required to comply 1:15 Faculty Student ratio (no. of faculty and no. of students required to be calculated as per 5.1)

	X	Y	F	FQ=2*[(10X+ 4Y)/F]
CAY	23	21	29.73	21.12
CAY _{m1}	19	20	26.73	20.20
CAY _{m2}	18	18	23.47	21.47
Average Assessment:			26.64	20.93

Faculty Retention (20)

Item	Marks
>= 90% of required Faculty members retained during the period of assessment keeping CAY _{m3} as base year	20
>= 75% of required Faculty members retained during the period of assessment keeping CAY _{m3} as base year	16
>= 60% of required Faculty members retained during the period of assessment keeping CAY _{m3} as base year	12
>= 50% of required Faculty members retained during the period of assessment keeping CAY _{m3} as base year	8
<50% of required Faculty members retained during the period of assessment keeping CAY _{m3} as base year	0

Item	CAY	CAY-1	CAY-2
Number of faculty members with experience of less than 1 year	3	3	2
-Number of faculty members with 1 to 2 years of experience	6	1	3
Number of faculty members with 2 to 3 years of experience	4	4	4
Number of faculty members with 3 to 4 years of experience	3	4	3
Number of faculty members with 4 to 5 years of experience	5	2	1
Number of faculty members with more than 5 years of experience	23	25	23
N	44	39	36
Average Assessment	39.66		

Faculty retention is greater than 90% keeping CAYm2 as base year.

Note:

Minimum 75% should be Regular/ full time faculty and the remaining shall be Contractual Faculty/Adjunct Faculty/Resource persons from industry as per AICTE norms and standards.

The contractual faculty will be considered for assessment only if a faculty is drawing a salary as prescribed by the concerned State Government for the contractual faculty in the respective cadre *and who have taught over* consecutive 4 semesters.

Innovations by the Faculty in Teaching and Learning (15)

Innovations by the Faculty in teaching and learning shall be summarized as per the following description.

Contributions to teaching and learning are activities that contribute to the improvement of student learning. These activities may include innovations including, however not limited to, use of ICT, in instruction delivery, instructional methods, assessment, evaluation and inclusive class rooms that lead to effective, efficient and engaging instruction. Any contributions to teaching and learning should satisfy the criteria:

- *The work must be made available on Institute website*
- *The work must be available for peer review and critique*
- *The work must be able to be reproduced and built on by other scholars*

The institution may set up appropriate processes for making the contributions available to the public, getting them reviewed and for rewarding. These may typically include statement of clear goals, adequate preparation, use of appropriate methods, significance of results, effective presentation and reflective critique.

Initiatives taken up by the School of Pharmaceutical Sciences on teaching and learning are summarized in the following description. Faculty has been rigorously using contemporary pedagogy to make the teaching process an interesting process effective and keeping students engaged.

Some of the initiatives that are taken to have significant results are as follows:

1. **eUniv Platform:** The School of Business Management and Liberal Arts is strengthening supplementary learning through inbuilt online Learning Management System (LMS) called eUniv and is making 100% use of e-learning and online resources through eUniv initiative and LMS (Learning Management System). Every faculty member uses laptop with Wi-Fi connection for appropriate execution of the academic as well as research activities via eUniv platform. Students have access to the study material on eUniv and take assignments/quizzes/examinations online.
2. **myShoolini app:** Attendance of the students is taken online in the class on myShoolini app, which immediately updates the student with the percentage attendance score.

3. **SPRINT program:** For functional and soft skills, the SPRINT workshops are a regular and continuous activity in the campus. SPRINT has the potential to be a role model for functional and soft skills training. The details of SPRINT program has been given in Criterion I.
4. **Program booklet:** Detailed lecture schedule for all the courses in the program are made available in form of a book. Each course lecture schedule includes lecture wise details including course outcomes, pedagogy, topic to be covered, assignments, cases to be done and references. Lecture schedules are uploaded on eUniv before the commencement of regular classes.
5. **Teaching Pedagogy:** All the lectures are executed using power point presentations supplemented by cases and uploading video lectures and OER (Open Educational Resources) study material on eUniv. Emergent initiatives taken to enable the students to think cross disciplinary boundaries and / or to make connections between what they learn inside as well as outside the classroom.
6. **Discussion forums:** Online discussion forums allow to have anytime and anywhere dialogue between faculty members and students, the facility is available on eUniv. It is a platform where students can exchange their views on any relevant topic.
7. **Faculty learning initiatives:** The faculty members are encouraged to participate in short term courses, webinar, staff development programs and workshops to keep pace with the advanced level of knowledge and skills. The faculties have been participating/presenting papers in national/international conferences and publish their articles in national and international journals to enrich their knowledge.
8. The teaching faculty is also involved in development of laboratory manuals, which facilitates the learning by students. It is hardware development.
9. The faculty encourages the students to get experience in answering MCQ type of questions. This is beyond the curriculum and being implemented, so as to train the students for competitive exams, GPAT etc. This is at assessment and evaluation level.
10. Tutorials are made more interactive and student - centric which facilitates the learning process. Assignments on subject topics are being introduced and are self- learning exercises for the students, where in the teacher acts as a facilitator. It includes instructional methods.

Faculty as participants in Faculty Development/Training Activities (15)

- A Faculty scores maximum five points for participation

- Participant in 2 to 5 days Workshop/Faculty Development Program: 3Points
- Participant >5 days Workshop/Faculty Development Program: 5points

S. No	Name of the Faculty	Max. 5 per Faculty		
		CAY (2018-19)	CAY-1(2017-18)	CAY-2(2016-17)
1	Abhishek Sharma			
2	Aditi Sharma		3	3
3	Afroze Alam			3
4	Akshita Jindal			
5	Alok Darshan Kothiyal			
6	Arun			
7	Ashutosh Kumar Dash	3		
8	Astha Tripathi	3	3	3
9	Azhar Khan	3	5	3
10	Babita Patial			
11	Bharat Diwedee	3		
12	Chander Mohan Gupta		3	
13	Charul Rathore			
14	Chetna Kumari			
15	Deepak Kumar	3	3	
16	Deepak N. Kapoor	3	5	5
17	Deepika	3		
18	Devika Rana	3		
19	Dhriti Verma			
20	Gaurav Gupta			
21	Gaurav Sharma			
22	Gunjan Goel			
23	Gurjot Kaur	5		
24	Hemlata Kaurav		3	
25	Jagattaran Das			
26	Kamal Dev	3	3	3
27	Kaushik Das Sharma			3
28	Lalit Sharma	3	5	3
29	Meenakshi Nayyar			
30	Monika			
31	Navneet Upadhyay	3	3	3
32	Neeraj Mahindroo	3	5	5
33	Nidhi			
34	Pankaj Thakur	3		
35	Poonam Devi			
36	Poonam Negi	3	3	5

37	Pratibha Sharma			
38	Radha			
39	Ramajayam			
40	Ramanpreet Singh			3
41	Raveen Chauhan		3	
42	Ravi Kumar			
43	Ravinder Thakur			
44	Reena Vohra Saini			
45	Rohit Goyal	3	5	3
46	Sameer Sapra			
47	Sandeep Sundriyal			
48	Saurabh Kulshreshtha	3	3	3
49	Shaila Khah			
50	Shard			
51	Shubham Banerjee			
52	Sneha Shree			
53	Sunil Kumar	5		
54	Swati Pundir			
55	Tanurajvir Kaur			3
56	Uma Ranjan Lal			
57	Umar Farooq			
58	Varun Jaiswal	3		3
59	VK Kapoor			
Sum		61	55	54
RF = Number of Faculty required to comply with 15:1 (Student-Faculty ratio as per 5.1)		29.73	26.73	23.47
Assessment = $3 \times \text{Sum} / (0.5 \text{ RF})$		12.31	12.35	13.80
Average assessment over three years (Marks limited to 15) =		12.82		

Research and Development (40)

Academic Research (10)

Major Publications from School of Pharmaceutical Sciences

Publications: Faculty of Pharmaceutical Sciences								
Data source: Scopus								
Year Range: 2016-2018								

Dev, Kamal								
Title	Authors	Year	Scopus Source title	Volume	Issue	Pages	DOI	Publication

								type
Controlled release of antibiotic amoxicillin drug using carboxymethyl cellulose-cl-poly(lactic acid-co-itaconic acid) hydrogel	Sood, S., Gupta, V.K., Agarwal, S., Dev, K., Pathania, D.	2017	International Journal of Biological Macromolecule	101	-	612-620	10.1016/j.ijbiomac.2017.03.103	Article
Functions of polo-like Kinases: A journey from yeast to humans	Vaid, R., Sharma, N., Chauhan, S., Deshta, A., Dev, K., Sourirajan, A.	2016	Protein and Peptide Letters	23	2	185-197	10.2174/092986652302160105143348	Article
Halophilic Bacteria of Lunsu Produce an Array of Industrially Important Enzymes with Salt Tolerant Activity	Gupta, S., Sharma, P., Dev, K., Sourirajan, A.	2016	Biochemistry Research International	2016	-	-	10.1155/2016/9237418	Article
Comparative evaluation of antimicrobial and antioxidant potential of ethanolic extract and its fractions of bark and leaves of Terminalia arjuna from north-western Himalayas, India	Kumar, V., Sharma, N., Sourirajan, A., Khosla, P.K., Dev, K.	2018	Journal of Traditional and Complementary Medicine	8	1	100-106	10.1016/j.jtcm.2017.04.002	
Distinct Osmoadaptation Strategies in the Strict Halophilic and Halotolerant Bacteria Isolated	Vaidya, S., Dev, K., Sourirajan, A.	2018	Current Microbiology	75	7	888-895	10.1007/s00284-018-1462-8	Article

from Lunsu Salt Water Body of North West Himalayas								
Comparative antioxidant potential of leaves and fruit extracts of <i>Terminalia bellerica</i> Roxb from Himachal Pradesh	Chandel, S.R., Dev, K., Khosla, P.K.	2016	International Journal of Pharmaceutical Sciences Review and Research	38	1	216-222	-	Article
Generation of an inducible system to express polo-like kinase, Cdc5 as TAP fusion protein during meiosis in <i>Saccharomyces cerevisiae</i>	Vaid, R., Dev, K., Lichten, M., Sourirajan, A.	2016	3 Biotech	6	2	-	10.1007/s13205-016-0503-x	Article
Subcellular localization based comparative study on radioresistant bacteria: A novel approach to mine proteins involve in radio resistance	Vishambra, D., Srivastava, M., Dev, K., Jaiswal, V.	2017	Computational Biology and Chemistry	69	-	01-Sep	10.1016/j.compbiochem.2017.05.002	Article
Role of <i>Saccharomyces cerevisiae</i> TAN1 (tRNA acetyltransferase) in eukaryotic initiation factor 2B (eIF2B)-mediated translation control and stress response	Sharma, S., Sourirajan, A., Dev, K.	2017	3 Biotech	7	3	-	10.1007/s13205-017-0857-8	Article
Isolation and characterization of extracellular lipase producing bacterial isolates from effluent waste of paint industry	Hangloo, S., Sourirajan, A., Raina, C., Chaubey,	2016	Current Trends in Biotechnology and Pharmacy	10	3	261-273	-	Article

	A., Dev, K.							
16S rRNA gene amplicon data set-based bacterial diversity in a water-soil sample from pangong tso lake, a high-altitude grassland lake of the northwest himalayas	Bisht, G., Sourirajan, A., Baumler, D.J., Dev, K.	2018	Microbiology Resource Announcements	7	17	-	10.1128/MRA.01192-18	Article

Goyal, Rohit								
Title	Authors	Year	Scopus Source title	Volume	Issue	Pages	DOI	Publication type
Potential biological efficacy of Pinus plant species against oxidative, inflammatory and microbial disorders	Sharma, A., Goyal, R., Sharma, L.	2016	BMC Complementary and Alternative Medicine	16	1	-	10.1186/s12906-016-1011-6	Article
GABAergic effect of valeric acid from <i>Valeriana wallichii</i> in amelioration of ICV STZ induced dementia in rats	Vishwakarma, S., Goyal, R., Gupta, V., Dhar, K.L.	2016	Brazilian Journal of Pharmacognosy	26	4	484-489	10.1016/j.bjpp.2016.02.008	Article
Amyloid beta plaque: a culprit for neurodegeneration	Gupta, A., Goyal, R.	2016	Acta Neurological Belgica	116	4	445-450	10.1007/s13760-016-0639-9	Article
Experimental brain ischemic preconditioning: A concept to putative targets	Sharma, A., Goyal, R.	2016	CNS and Neurological Disorders - Drug Targets	15	4	489-495	10.2174/1871527314666150821112228	Article
A review on Himalayan pine species: Ethnopharmacological, phytochemical	Sharma, A., Sharma, L., Goyal, R.	2018	Pharmacognosy Journal	10	4	611-619	10.5530/pj.2018.4.100	Review

and pharmacological aspects								
Certain 4-iminoflavones derivatives: Synthesis, docking studies, antiasthmatic and antimicrobial agents	Khah, S., Goyal, R., Chabba, A., Jaiswal, V., Sharma, G., Naushad, Mu.	2016	Asian Journal of Chemistry	28	8	1687-1696	10.14233/ajchem.2016.19789	Article
Cross tolerance: A tread to decipher the code of endogenous global cerebral resistance	Sharma, A., Goyal, R.	2016	Neural Regeneration Research	11	5	719-720	10.4103/1673-5374.182688	Note
Do Circadian Rhythms Draw the Patterns of Sustained Mental Vigor and Ailment?	Sharma, A., Goyal, R.	2016	Drug Development Research	77	8	469-473	10.1002/ddr.21342	Note
In-vitro osteoblast proliferation and in-vivo anti-osteoporotic activity of Bombax ceiba with quantification of Lupeol, gallic acid and β -sitosterol by HPTLC and HPLC	Chauhan, S., Sharma, A., Upadhyay, N.K., Singh, G., Lal, U.R., Goyal, R.	2018	BMC Complementary and Alternative Medicine	18	1	-	10.1186/s12906-018-2299-1	Article

Jaiswal, Varun								
Title	Authors	Year	Scopus Source title	Volume	Issue	Pages	DOI	Publication-type
An efficient data mining classification approach for	Chauhan, D., Jaiswal, V.	2016	Proceedings of the International Conference	-	-	-	10.1109/CE-SYS.2016.7889872	Conference Paper

detecting lung cancer disease Prediction and analysis of promiscuous T cell-epitopes derived from the vaccine candidate antigens of Leishmania donovani binding to MHC class-II alleles using in silico approach			on Communication and Electronics Systems, ICCES 2016					
	Kashyap, M., Jaiswal, V., Farooq, U.	2017	Infection, Genetics and Evolution	53	-	107-115	10.1016/j.meegid.2017.05.022	Article
Comparative whole-transcriptome analysis in Podophyllum species identifies key transcription factors contributing to biosynthesis of podophyllotoxin in <i>P. hexandrum</i>	Kumar, P., Jaiswal, V., Pal, T., Singh, J., Chauhan, R.S.	2017	Protoplasma	254	1	217-228	10.1007/s00709-015-0938-7	Article
A first attempt to develop a diabetes prediction method based on different global datasets	Negi, A., Jaiswal, V.	2016	4th International Conference on Parallel, Distributed and Grid Computing, PDGC 2016	-	-	237-241	10.1109/PDGC.2016.7913152	Conference Paper
Homology modelling of frequent HLA class-II alleles: A perspective to improve prediction of HLA binding peptide and	Kashyap, M., Farooq, U., Jaiswal, V.	2016	Infection, Genetics and Evolution	44	-	234-244	10.1016/j.meegid.2016.07.007	Article

understand the HLA associated disease susceptibility								
Certain 4- iminoflavones derivatives: Synthesis, docking studies, antiasthmatic and antimicrobial agents	Khah, S., Goyal, R., Chabba, A., Jaiswal, V., Sharma, G., Naushad, Mu.	2016	Asian Journal of Chemistry	28	8	1687-1696	10.14233/ajchem.2016.19789	Article
Isolation of isoflavones from <i>Iris kashmiriana</i> Baker as potential anti-proliferative agents targeting NF-kappaB	Alam, A., Jaiswal, V., Akhtar, S., Jayashree, B.S., Dhar, K.L.	2017	Phytochemistry	136	-	70-80	10.1016/j.phytochem.2017.01.002	Article
Classification and development of tool for heart diseases (MRI images) using machine learning	Sharma, L., Gupta, G., Jaiswal, V.	2016	2016 4th International Conference on Parallel, Distributed and Grid Computing, PDGC 2016	-	-	219-224	10.1109/PDGC.2016.7913149	Conference Paper
Subcellular localization based comparative study on radioresistant bacteria: A novel approach to mine proteins involve in radio resistance	Vishambra, D., Srivastava, M., Dev, K., Jaiswal, V.	2017	Computational Biology and Chemistry	69	-	01-Sep	10.1016/j.compbiochem.2017.05.002	Article
Functional redundancy in Echinocandin B in-cluster transcription	Kumar, A., Jaiswal, V.,	2018	Biotechnology Reports	19	-	-	10.1016/j.btre.2018.e00264	Article

factor ecdB of <i>Emericella rugulosa</i> NRRL 11440	Kumar, V., Dey, A., Kumar, A.							
Larvicidal activity of methanol and chloroform extract of <i>Swertia celiata</i> against three mosquito vectors	Kumar, A., Jaiswal, V., Gupta, A., Verma, G.	2018	Journal of Communicat e Diseases	50	2	17-24	10.24321/00 19.5138.201 809	Articl e
Benzothiazole- Based- Bioconjugates with Improved Antimicrobial, Anticancer and Antioxidant Potential	Kumari, B., Chauhan, K., Trivedi, J., Jaiswal, V., Kanwar, S.S., Pokharel, Y.R.	2018	Chemistry Select	3	40	1132 6- 1133 2	10.1002/slct. 201801936	Articl e

Kapoor, Deepak N.								
Title	Authors	Year	Scopus Source title	volu me	Iss ue	Pages	DOI	Publi catio n- type
Implantable systems for drug delivery to the brain	Kaurav, H., Kapoor, D.N.	2017	Therapeutic Delivery	8	12	1097-1107	10.4155/tde-2017-0082	Revie w
Development and optimization of in-situ forming microparticles for long term controlled delivery of deslorelin acetate	Kapoor, D.N., Katare, O.P., Kaurav, H., Dhawan, S.	2018	Journal of Applied Pharmaceuti cal Science	8	1	059-072	10.7324/JA PS.2018.811 0	Articl e
Development and optimization of	Kaur, G., Kaur, T.,	2018	Journal of Chinese	27	1	31-39	10.5246/jcps .2018.01.00	Articl e

nanoemulsion gel for topical delivery of imiquimod	Kapoor, D.N.		Pharmaceutical Sciences				4	
A review on pharmacognostic, phytochemical and pharmacological data of various species of Hippophae (Sea buckthorn)	Kaur, T., Singh, G., Kapoor, D.N.	2017	International Journal of Green Pharmacy	11	1	S62-S75	-	Review

Kaurav, Hemlata

Title	Authors	Year	Scopus Source title	Volume	Issue	Pages	DOI	Publication type
Implantable systems for drug delivery to the brain	Kaurav, H., Kapoor, D.N.	2017	Therapeutic Delivery	8	12	1097-1107	10.4155/tde-2017-0082	Review
Development and optimization of in-situ forming microparticles for long term-controlled delivery of deslorelin acetate	Kapoor, D.N., Katare, O.P., Kaurav, H., Dhawan, S.	2018	Journal of Applied Pharmaceutical Science	8	1	059-072	10.7324/JAPS.2018.8110	Article

Khan, Azhar

Title	Authors	Year	Scopus Source title	Volume	Issue	Pages	DOI	Publication type
Isolation and analysis of genetic diversity amongst <i>Sclerotinia sclerotiorum</i> isolates infecting cauliflower and pea	Kapatia, A., Gupta, T., Sharma, M., Khan, A., Kulshrestha, S.	2016	Indian Journal of Biotechnology	15	4	589-595	-	Article

A study of molecular characterization of the trimethoprim resistant Salmonella typhi strains prevalent in Himachal Pradesh	Neha, Azhar Khan, M., Farooq, U.	2016	International Journal of Bio-Science and Bio-Technology	8	3	101-108	10.14257/ijbsbt.2016.8.3.10	Article
Efficacy of medicinal plants against human pathogens isolated from western Himalayas of Himachal Pradesh	Chauhan, N., Farooq, U., Khan, M.A.	2017	Asian Journal of Pharmaceutical and Clinical Research	10	9	353-357	10.22159/ajpcr.2017.v10i9.19708	Article
Medicinal plants as alternative treatments for oral health problems	Khan, I., Khan, A.	2018	Asian Journal of Pharmaceutical and Clinical Research	11	9	58-64	10.22159/ajpcr.2018.v11i9.24918	Review
Essential oil nanoemulsions and their antimicrobial and food applications	Pathania, R., Khan, H., Kaushik, R., Khan, M.A.	2018	Current Research in Nutrition and Food Science	6	3	626-643	10.12944/CRNFSJ.6.3.05	Review

Kulshrestha, Saurabh

Title	Authors	Year	Scopus Source title	Volume	Issue	Pages	DOI	Publication-type
Molecular characterization of tospoviruses associated with ring spot disease in bell pepper from different districts of Himachal Pradesh	Sharma, A., Kulshrestha, S.	2016	Virus Disease	27	2	188-192	10.1007/s1337-016-0315-y	Article
Diacylglycerol acyl transferase: A	Sharma, M.,	2016	Journal of Basic	56	11	1308-1315	10.1002/jobm.20150066	Article

pathogenicity related gene in Colletotrichum gloeosporioides	Guleria, S., Kulshrestha, S.		Microbiology				3	
Isolation and analysis of genetic diversity amongst Sclerotinia sclerotiorum isolates infecting cauliflower and pea	Kapatia, A., Gupta, T., Sharma, M., Khan, A., Kulshrestha, S.	2016	Indian Journal of Biotechnology	15	4	589-595	-	Article
A Nano-Au/C-MWCNT based label free amperometric immunosensor for the detection of capsicum chlorosis virus in bell pepper	Sharma, A., Kaushal, A., Kulshrestha, S.	2017	Archives of Virology	162	7	2047-2052	10.1007/s00705-017-3293-5	Article
Mycovirus associated hypovirulence, a potential method for biological control of Fusarium species	Sharma, M., Guleria, S., Singh, K., Chauhan, A., Kulshrestha, S.	2018	VirusDisease	29	2	134-140	10.1007/s13337-018-0438-4	Review
Metagenomics of fermented foods: Implications on probiotic development	Guleria, S., Kumar, A., Sharma, S., Kulshrestha, S., Chauhan, A.	2017	Mining of Microbial Wealth and MetaGenomics	-	-	333-355	10.1007/978-981-10-5708-3_19	Chapter
Characterization of a bioactive compound from	Gupta, P., Kulshrestha	2016	Journal of Pure and Applied	10	1	701-711	-	Article

<i>Tinospora cordifolia</i> having activity against wide range of bacteria and fungi	tha, S.		Microbiology					
Analysis of genetic diversity amongst <i>Fusarium</i> spp. Associated with root rot of apple	Sharma, M., Kapatia, A., Kulshrestha, S.	2016	Biosciences Biotechnology Research Asia	13	1	463-468	10.13005/bbra/2055	Article
Restriction enzyme-mediated insertional mutagenesis: an efficient method of <i>Rosellinia necatrix</i> transformation	Attri, C., Swati, Kulshrestha, S.	2018	Archives of Microbiology	200	1	189-194	10.1007/s00203-017-1466-y	Article
<i>Moringa oleifera</i> -a never die tree: An overview	Swati, Virk, A.K., Kumari, C., Ali, A., Garg, P., Thakur, P., Attri, C., Kulshrestha, S.	2018	Asian Journal of Pharmaceutical and Clinical Research	11	12	57-65	10.22159/ajpcr.2018.v11i12.28049	Review

Lal, Uma Ranjan								
Title	Authors	Year	Scopus Source title	Volume	Issue	Pages	DOI	Publication-type
Effect of fermentation on chemical changes in <i>Vitis vinifera</i> fruits used in alcoholic ayurvedic formulation	Gill, G.K., Singh, A., Lal, U.R., Kaur, H., Mehta, M., Satija,	2018	International Journal of Green Pharmacy	12	2	29-34	-	Article

	S., Mahajan, S.							
In-vitro osteoblast proliferation and in-vivo anti-osteoporotic activity of Bombax ceiba with quantification of Lupeol, gallic acid and β -sitosterol by HPTLC and HPLC	Chauhan, S., Sharma, A., Upadhya y, N.K., Singh, G., Lal, U.R., Goyal, R.	2018	BMC complementary and Alternative Medicine	18	1	-	10.1186/s12906-018-2299-1	Article
In vitro-in vivo-in silico simulation of experimental design based optimized curcumin loaded multiparticulates system	Singh, S., Hussain, A., Lal, U.R., Sayyad, N., Karpoo math, R., Nlooto, M.-B.	2018	Current Pharmaceutical Design	24	30	3576-3586	10.2174/1381612824666181022120252	Article

Nayer, Meenakshi								
Title	Authors	Year	Scopus Source title	Volume	Issue	Pages	DOI	Publication-type
Review on energy efficient protocol based on LEACH, PEGASIS and TEEN	Chauhan, T., Nayer, M.	2017	2016 International Conference on Emerging Trends in Communication Technologies ETCT 2016	-	-	-	10.1109/ETCT.2016.7882929	Conference Paper

Comparative study of hierarchy energy protocol in wireless sensor network	Chauhan, T., Nayer, M.	2016	Proceedings of the International Conference on Communication and Electronics Systems, ICCES 2016	-	-	-	10.1109/CE-SYS.2016.7889822	Conference Paper
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Negi, Poonam								
Title	Authors	Year	Scopus Source title	Volume	Issue	Pages	DOI	Publication-type
Delivery of Thermoresponsive-Tailored Mixed Micellar Nanogel of Lidocaine and Prilocaine with Improved Dermatokinetic Profile and Therapeutic Efficacy in Topical Anesthesia	Sharma, G., Kamboj, S., Thakur, K., Negi, P., Raza, K., Katare, O.P.	2017	AAPS Pharm SciTech	18	3	790-802	10.1208/s12249-016-0561-8	Article
Niosome-based hydrogel of resveratrol for topical applications: An effective therapy for pain related disorder(s)	Negi, P., Aggarwal, M., Sharma, G., Rathore, C., Sharma, G., Singh, B., Katare, O.P.	2017	Biomedicine and Pharmacotherapy	88	-	480-487	10.1016/j.biopha.2017.01.083	Article
Novel nanohydrogel based on itaconic acid grafted	Pathania, D., Verma, C., Negi,	2018	Carbohydrate Polymers	196	-	262-271	10.1016/j.carbpol.2018.05.040	Article

tragacanth gum for controlled release of ampicillin	P., Tyagi, I., Asif, M., Kumar, N.S., Al-Ghurabi, E.H., Agarwal, S., Gupta, V.K.							
Thymoquinone a potential therapeutic molecule from the plant Nigella sativa: Role of colloidal carriers in its effective delivery	Negi, P., Rathore, C., Sharma, G., Singh, B., Katare, O.P.	2018	Recent Patents on Drug Delivery and Formulation	12	1	Mar-22	10.2174/1872211311666171129121128	Review
Sodium dodecyl sulphate-supported nanocomposite as drug carrier system for controlled delivery of ondansetron	Sharma, G., Naushad, M., Thakur, B., Kumar, A., Negi, P., Saini, R., Chahal, A., Kumar, A., Stadler, F.J., Aqil, U.M.H.	2018	International Journal of Environmental Research and Public Health	15	3	-	10.3390/ijerph15030414	Article
Novel RP-HPLC method development and validation for the simultaneous estimation of saxagliptin and glimepiride	Upadhyay, N.K., Rathore, C., Sapra, S., Negi, P.	2018	International Journal of Applied pharmaceuticals	10	3	151-156	10.22159/ijap.2018v10i3.25261	Article

Therapeutic applications of polymeric hydrogels	Negi, P., Verma, C., Kumari, S.	2018	Advances in Polymers for Biomedical Applications	-	-	331-350	-	Chapter
Recent advances in polymeric drug delivery carrier systems	Sharma, P., Negi, P., Mahindroo, N.	2018	Advances in Polymers for Biomedical Applications	-	-	369-388	-	Chapter

Saini, Reena V.								
Title	Authors	Year	Scopus Source title	Volume	Issue	Pages	DOI	Publication-type
Sustainable nano-hybrids of magnetic biochar supported g-C ₃ N ₄ /FeVO ₄ for solar powered degradation of noxious pollutants- Synergism of adsorption, photocatalysis & photo-ozonation	Kumar, A., Kumar, A., Sharma, G., Naushad, M., Stadler, F.J., Ghfar, A.A., Dhiman, P., Saini, R.V.	2017	Journal of Cleaner Production	165	-	431-451	10.1016/j.jclepro.2017.07.117	Article
Analysis of plant growth promoting potential of endophytes isolated from Echinacea purpurea and Lonicera japonica	Gupta, H., Saini, R.V., Pagadala, V., Kumar, N., Sharma, D.K., Saini, A.K.	2016	Journal of Soil Science and Plant Nutrition	16	3	558-577	-	Article

Bioactive fraction from datura stramonium linn. Promotes human immune cells mediated cytotoxicity towards lung and breast cancer cells	Gupta, A., Kumar, S., Mahindroo, N., Saini, R.V.	2016	Pharmacognosy Journal	8	5	435-439	10.5530/pj.2016.5.4	Article
Natural antioxidants as defense system against cancer	Chahal, A., Saini, A.K., Chhillar, A.K., Saini, R.V.	2018	Asian Journal of Pharmaceutical and Clinical Research	11	5	38-44	10.22159/ajpcr.2018.v11i5.24119	Review
Recent advances in cancer immunology and immunology-based anticancer therapies	Kumar, S., Saini, R.V., Mahindroo, N.	2017	Biomedicine and Pharmacotherapy	96	-	1491-1500	10.1016/j.biopha.2017.11.126	Review
Pectin-guar gum-zinc oxide nanocomposite enhances human lymphocytes cytotoxicity towards lung and breast carcinomas	Hira, I., Kumar, A., Kumari, R., Saini, A.K., Saini, R.V.	2018	Materials Science and Engineering C	90	-	494-503	10.1016/j.msec.2018.04.085	Article
Sodium dodecyl sulphate-supported nanocomposite as drug carrier system for controlled delivery of ondansetron	Sharma, G., Naushad, M., Thakur, B., Kumar, A., Negi, P., Saini, R., Chahal, A., Kumar, A., Stadler, F.J.,	2018	International Journal of Environmental Research and Public Health	15	3	-	10.3390/ijerph15030414	Article

	Aqil, U.M.H.							
Nanomaterial-enabled immunotherapeutic applications	Saini, R.V., Kumari, R.	2017	Metabolic Engineering for Bioactive Compounds: Strategies and Processes	-	-	319-329	10.1007/978-981-10-5511-9_15	Chapter
Green chemistry approach towards nanoparticle synthesis	Phougat, N., Kumar, M., Saini, R.V., Chhillar, A.K.	2017	Metabolic Engineering for Bioactive Compounds: Strategies and Processes	-	-	249-268	10.1007/978-981-10-5511-9_12	Chapter
Molecular farming approach towards bioactive compounds	Khatri, S., Saini, R.V., Chhillar, A.K.	2017	Metabolic Engineering for Bioactive Compounds: Strategies and Processes	-	-	49-72	10.1007/978-981-10-5511-9_3	Chapter
Biological traits of nanocomposites: Nanofertilizers, nanopesticides, anticancer and antimicrobials	Saini, A.K., Gupta, H., Poswal, A.M., Kumari, R., Kumar, R., Saini, R.V.	2017	Modified Biopolymers: Challenges and Opportunities	-	-	189-206	-	Chapter
Inspection and remedy of cervical cancer using nanoparticles	Hira, I., Saini, R.V., Kumari, R., Kandwal	2018	Nanoscience and Nanotechnology – Asia	8	2	186-192	10.2174/2210681207666170323155831	Review

	, P., Raj, U.L.							
Neuroprotective role of ascorbic acid: Antioxidant and non-antioxidant functions	Kumar, A., Saini, R.V., Saini, A.K.	2018	Asian Journal of Pharmaceutical and Clinical Research	11	10	30-33	10.22159/ajpcr.2018.v11i10.27318	Article

Sharma, Aditi								
Title	Authors	Year	Scopus Source title	Volume	Issue	Pages	DOI	Publication-type
Potential biological efficacy of Pinus plant species against oxidative, inflammatory and microbial disorders	Sharma, A., Goyal, R., Sharma, L.	2016	BMC Complementary and Alternative Medicine	16	1	-	10.1186/s12906-016-1011-6	Article
Standardization of a polyherbal preparation for treatment of oxidative, inflammatory and immune disorders	Sharma, L., Sharma, A., Gupta, G.L.	2016	International Journal of Pharmacy and Pharmaceutical Sciences	8	4	129-134	-	Article
A review on Himalayan pine species: Ethnopharmacological, phytochemical and pharmacological aspects	Sharma, A., Sharma, L., Goyal, R.	2018	Pharmacognosy Journal	10	4	611-619	10.5530/pj.2018.4.100	Review
In-vitro osteoblast proliferation and in-vivo anti-osteoporotic activity of Bombax ceiba with quantification of Lupeol, gallic acid	Chauhan, S., Sharma, A., Upadhyay, N.K., Singh, G., Lal, U.R.,	2018	BMC Complementary and Alternative Medicine	18	1	-	10.1186/s12906-018-2299-1	Article

and β -sitosterol by HPTLC and HPLC	Goyal, R.							
Pharmacological evaluation of <i>Bacopa monnieri</i> extract against depressive like behavior induced by ethanol withdrawal in rats	Sharma, L., Sharma, A., Gupta, G.L., Bisht, G.S.	2018	Pharmacognosy Journal	10	6	S48-S53	10.5530/pj.2018.6s.9	Article

Pundir, Swati								
Title	Authors	Year	Scopus Source title	Volume	Issue	Pages	DOI	Publication-type
<i>Roylea cinerea</i> (D.Don) Baillon: Ethnomedicinal uses, phytochemistry and pharmacology: A review.	Swati Pundir , Neeraj Mahindroo	2019	Journal of Ethnopharmacology	232	-	193-200	https://doi.org/10.1016/j.jep.2018.12.042	Review

Khah, Shaila								
Title	Authors	Year	Scopus Source title	Volume	Issue	Pages	DOI	Publication-type
Certain 4-iminoflavones derivatives: Synthesis, docking studies, antiasthmatic and antimicrobial agents	Khah, S., Goyal, R., Chabba, A., Jaiswal, V., Sharma, G., Naushad, Mu.	2016	Asian Journal of Chemistry	28	8	1687-1696	10.14233/ajchem.2016.19789	Article

Sharma, Gaurav								
Title	Authors	Year	Scopus Source title	Volume	Issue	Pages	DOI	Publication-type
Synthesis and characterization of a new starch/SnO ₂	Naushad, M., Ahamad,	2016	Chemical Engineering	300	-	306-316	10.1016/j.cej.2016.04.	Article

nanocomposite for efficient adsorption of toxic Hg ²⁺ metal ion	T., Sharma, G., Al-Muhtaseb, A.H., Albadarin		Journal				084	
Fabrication and characterization of chitosan-crosslinked-poly(alginate) nanohydrogel for adsorptive removal of Cr(VI) metal ion from aqueous medium	Sharma, G., Naushad, M., Al-Muhtaseb, A.H., Kumar, A., Khan, M.R., Kalia, S., Shweta, , Bala, M., Sharma, A.	2017	International Journal of Biological Macromolecules	95	-	484-493	10.1016/j.ijbiomac.2016.11.072	Article

Magnetically recoverable ZrO ₂ /Fe ₃ O ₄ /chitosan nanomaterials for enhanced sunlight driven photoreduction of carcinogenic Cr(VI) and dechlorination & mineralization of 4-chlorophenol from simulated waste water	Kumar, A., Guo, C., Sharma, G., Pathania, D., Naushad, M., Kalia, S., Dhiman, P.	2016	RSC Advances	6	16	13251-13263	10.1039/c5ra23372k	Article
Facile hetero-assembly of superparamagnetic Fe ₃ O ₄ /BiVO ₄ stacked on biochar for solar photo-degradation of methyl paraben and	Kumar, A., Shalini, , Sharma, G., Naushad, M., Kumar,	2017	Journal of Photochemistry and Photobiology A: Chemistry	337	-	118-131	10.1016/j.jphtochem.2017.01.010	Article

pesticide removal from soil	A., Kalia, S., Guo, C., Mola, G.T.							
Photocatalytic degradation of highly toxic dyes using chitosan-g-poly(acrylamide)/ZnS in presence of solar irradiation	Pathania, D., Gupta, D., Al-Muhtaseb, A.H., Sharma, G., Kumar, A., Naushad, M., Ahamad, T., Alshehri, S.M.	2016	Journal of Photochemistry and Photobiology A: Chemistry	329	-	61-68	10.1016/j.jphtochem.2016.06.019	Article
Efficient removal of coomassie brilliant blue R-250 dye using starch/poly(alginate-chitosan) nanohydrogel	Sharma, G., Naushad, M., Kumar, A., Rana, S., Sharma, S., Bhatnagar, A., J. Stadler, F., Ghfar, A.A., Khan, M.R.	2017	Process Safety and Environmental Protection	109	-	301-310	10.1016/j.prosep.2017.04.011	Article
Fabrication of MWCNTs/ThO ₂ nanocomposite and its adsorption behavior for the removal of Pb(II) metal from aqueous medium	Mittal, A., Naushad, M., Sharma, G., Alothman, Z.A., Wabaidu	2016	Desalination and Water Treatment	57	46	21863-21869	10.1080/19443994.2015.1125805	Article

	r, S.M., Alam, M.							
Novel guar gum/Al ₂ O ₃ nanocomposite as an effective photocatalyst for the degradation of malachite green dye	Pathania, D., Katwal, R., Sharma, G., Naushad, M., Khan, M.R., Al-Muhtaseb, A.H.	2016	International Journal of Biological Macromolecules	87	-	366-374	10.1016/j.ijbiomac.2016.02.073	Article
Adsorption kinetics, isotherms, and thermodynamic studies for Hg ²⁺ adsorption from aqueous medium using alizarin red-S-loaded amberlite IRA-400 resin	Naushad, M., Vasudevan, S., Sharma, G., Kumar, A., Alothman, Z.A.	2016	Desalination and Water Treatment	57	39	1855-1859	10.1080/19443994.2015.1090914	Article
Polyacrylamide@Zr(IV) vanadophosphate nanocomposite: Ion exchange properties, antibacterial activity, and photocatalytic behavior	Sharma, G., Kumar, A., Naushad, M., Pathania, D., Sillanpää, M.	2016	Journal of Industrial and Engineering Chemistry	33	-	201-208	10.1016/j.jiec.2015.10.011	Article
Quaternary magnetic BiOCl/g-C ₃ N ₄ /Cu ₂ O/Fe ₃ O ₄ nano-junction for visible light and solar powered degradation of sulfamethoxazole	Kumar, A., Kumar, A., Sharma, G., Al-Muhtaseb, A.H.,	2018	Chemical Engineering Journal	334	-	462-478	10.1016/j.cej.2017.10.049	Article

from aqueous environment	Naushad, M., Ghfar, A.A., Stadler, F.J.							
Revolution from monometallic to trimetallic nanoparticle composites, various synthesis methods and their applications: A review	Sharma, G., Kumar, D., Kumar, A., Al-Muhtaseb, A.H., Pathania, D., Naushad, M., Mola, G.T.	2017	Materials Science and Engineering C	71	-	1216-1230	10.1016/j.msec.2016.11.002	Review
ZnSe-WO ₃ nano-hetero-assembly stacked on Gum ghatti for photo-degradative removal of Bisphenol A: Symbiose of adsorption and photocatalysis	Kumar, A., Naushad, M., Rana, A., Inamuddin, , Preeti, , Sharma, G., Ghfar, A.A., Stadler, F.J., Khan, M.R.	2017	International Journal of Biological Macromolecules	104	-	1172-1184	10.1016/j.ijbiomac.2017.06.116	Article
Sustainable nano-hybrids of magnetic biochar supported g-C ₃ N ₄ /FeVO ₄ for solar powered degradation of noxious pollutants- Synergism of	Kumar, A., Kumar, A., Sharma, G., Naushad, M., Stadler,	2017	Journal of Cleaner Production	165	-	431-451	10.1016/j.jclepro.2017.07.117	Article

adsorption, photocatalysis & photo-ozonation	F.J., Ghfar, A.A., Dhiman, P., Saini, R.V.							
Preparation of a novel chitosan-g-poly(acrylamide)/Zn nanocomposite hydrogel and its applications for controlled drug delivery of ofloxacin	Pathania, D., Gupta, D., Kothiyal, N.C., sharma, G., Eldesoky, G.E., Naushad, M.	2016	International Journal of Biological Macromolecules	84	-	340-348	10.1016/j.ijbiomac.2015.12.041	Article
Fabrication and characterization of sodium dodecyl sulphate@ironsilicophosphate nanocomposite: Ion exchange properties and selectivity for binary metal ions	Sharma, G., Thakur, B., Naushad, M., Al-Muhtaseb, A.H., Kumar, A., Sillanpaa, M., Mola, G.T.	2017	Materials Chemistry and Physics	193	-	129-139	10.1016/j.matchemphys.2017.02.010	Article
Nano emulsion as a tuneable and efficient photocatalyst for solar powered degradation of bisphenol A from aqueous environment	Dhiman, P., Naushad, M., Batoo, K.M., Kumar, A., Sharma, G., Ghfar, A.A., Kumar,	2017	Journal of Cleaner Production	165	-	1542-1556	10.1016/j.jclepro.2017.07.245	Article

	G., Singh, M.							
Fabrication and characterization of Fe@MoPO nanoparticles: Ion exchange behavior and photocatalytic activity against malachite green	Sharma, G., Gupta, V.K., Agarwal, S., Kumar, A., Thakur, S., Pathania, D	2016	Journal of Molecular Liquids	219	-	1137-1143	10.1016/j.molliq.2016.04.046	Article
Efficient photocatalytic degradation of toxic dyes from aqueous environment using gelatin-Zr(IV) phosphate nanocomposite and its antimicrobial activity	Thakur, M., Sharma, G., Ahamad, T., Ghfar, A.A., Pathania, D., Naushad, M.	2017	Colloids and Surfaces B: Bio interface	157	-	456-463	10.1016/j.colsurfb.2017.06.018	Article
Novel development of nanoparticles to bimetallic nanoparticles and their composites: A review	Sharma, G., Kumar, A., Sharma, S., Naushad, M., Prakash Dwivedi, R., ALothman, Z.A., Mola, G.T.	2017	Journal of King Saud University - Science	-	-	-	10.1016/j.jksus.2017.06.012	Article in Press
Efficient removal of toxic phosphate anions from	Naushad, M., Sharma,	2018	International Journal of Biological	106	-	01-Oct	10.1016/j.ijbiomac.2017.07.169	Article

aqueous environment using pectin based quaternary amino anion exchanger	G., Kumar, A., Sharma, S., Ghfar, A.A., Bhatnagar, A., Stadler, F.J., Khan, M.R.		Macromolecules					
Phytoremediation of toxic dye from aqueous environment using monometallic and bimetallic quantum dots based nanocomposites	Sharma, G., Kumar, A., Naushad, M., Kumar, A., Al- Muhtaseb, A.H., Dhiman, P., Ghfar, A.A., Stadler, F.J., Khan, M.R.	2016	Journal of Cleaner Production	172	-	2919-2930	10.1016/j.jclepro.2017.11.122	Article
Microwave assisted fabrication of La/Cu/Zr/carbon dots trimetallic nanocomposites with their adsorptional vs photocatalytic efficiency for remediation of persistent organic pollutants	Sharma, G., Bhogal, S., Naushad, M., Inamuddin, , Kumar, A., Stadler, F.J.	2017	Journal of Photochemistry and Photobiology A: Chemistry	347	-	235-243	10.1016/j.jpotochem.2017.07.001	Article
Solar-driven photodegradation	Kumar, A.,	2017	New Journal of	41	18	10208-	10.1039/c7nj01580a	Article

of 17- β -estradiol and ciprofloxacin from waste water and CO ₂ conversion using sustainable coal-char/polymeric-g-C ₃ N ₄ /RGO metal-free nano-hybrids	Kumar, A., Sharma, G., Naushad, M., Veses, R.C., Ghfar, A.A., Stadler, F.J., Khan, M.R		Chemistry			1022 4		
Biochar-templated g-C ₃ N ₄ /Bi ₂ O ₂ CO ₃ /CoFe ₂ O ₄ nano-assembly for visible and solar assisted photo-degradation of paraquat, nitrophenol reduction and CO ₂ conversion	Kumar, A., Kumar, A., Sharma, G., Al-Muhtaseb, A.H., Naushad, M., Ghfar, A.A., Guo, C., Stadler, F.J.	2018	Chemical Engineering Journal	339	-	393-410	10.1016/j.cej.2018.01.105	Article
A biopolymer-based hybrid cation exchanger pectin cerium(IV) iodate: synthesis, characterization, and analytical applications	Pathania, D., Sharma, G., Naushad, M., Priya, V.	2016	Desalination and Water Treatment	57	1	468-475	10.1080/19443994.2014.967731	Article
A multifunctional nanocomposite pectin thorium(IV) tungstomolybdate for heavy metal separation and photoremediation of malachite green	Sharma, G., Naushad, M., Pathania, D., Kumar, A.	2016	Desalination and Water Treatment	57	41	19443-19455	10.1080/19443994.2015.1096834	Article
Applications of	Sharma,	2018	Environment	16	1	113-	10.1007/s10	Review

nanocomposite hydrogels for biomedical engineering and environmental protection	G., Thakur, B., Naushad, M., Kumar, A., Stadler, F.J., Alfadul, S.M., Mola, G.T.		al Chemistry Letters			146	311-017-0671-x	w
Guar gum-crosslinked-Soya lecithin nanohydrogel sheets as effective adsorbent for the removal of thiophanate methyl fungicide	Sharma, G., Kumar, A., Devi, K., Sharma, S., Naushad, M., Ghfar, A.A., Ahamad, T., Stadler, F.J.	2018	International Journal of Biological Macromolecules	114	-	295-305	10.1016/j.ijbiomac.2018.03.093	Article
Synthesis of polyaniline based composite material and its analytical applications for the removal of highly toxic Hg ²⁺ metal ion: Antibacterial activity against E. coli	Bushra, R., Naushad, M., Sharma, G., Azam, A., Alothman, Z.A.	2017	Korean Journal of Chemical Engineering	34	7	1970-1979	10.1007/s11814-017-0076-3	Article
Fabrication and characterization of trimetallic nanophotocatalyst for remediation of ampicillin antibiotic	Sharma, G., Gupta, V.K., Agarwal, S., Bhogal, S.,	2018	Journal of Molecular Liquids	260	-	342-350	10.1016/j.molliq.2018.03.059	Article

	Naushad, M., Kumar, A., Stadler, F.J.							
Remediation of anionic dye from aqueous system using bio-adsorbent prepared by microwave activation	Sharma, A., Sharma, G., Naushad, M., Ghfar, A.A., Pathania, D.	2018	Environmental Technology (United Kingdom)	39	7	917-930	10.1080/09593330.2017.1317293	Article
Fabrication and characterization of Gum arabic-cl-poly(acrylamide) nanohydrogel for effective adsorption of crystal violet dye	Sharma, G., Kumar, A., Naushad, M., GarcÃa-PeÃ±as, A., Al-Muhtaseb, A.H., Ghfar, A.A., Sharma, V., Ahamad, T., Stadler, F.J.	2018	Carbohydrate Polymers	202	-	444-453	10.1016/j.carbpol.2018.09.004	Article
Guar gum and its composites as potential materials for diverse applications: A review	Sharma, G., Sharma, S., Kumar, A., Al-Muhtaseb, A.H., Naushad, M.,	2018	Carbohydrate Polymers	199	-	534-545	10.1016/j.carbpol.2018.07.053	Review

	Ghfar, A.A., Mola, G.T., Stadler, F.J.							
Characterization of keratin microparticles from feather biomass with potent antioxidant and anticancer activities	Sharma, S., Gupta, A., Chik, S.M.S.T., Kee, C.G., Mistry, B.M., Kim, D.H., Sharma, G.	2017	International Journal of Biological Macromolecule	104	-	189-196	10.1016/j.ijbiomac.2017.06.015	Article
Niosome-based hydrogel of resveratrol for topical applications: An effective therapy for pain related disorder(s)	Negi, P., Aggarwal, M., Sharma, G., Rathore, C., Sharma, G., Singh, B., Katare, O.P.	2017	Biomedicine and Pharmacotherapy	88	-	480-487	10.1016/j.biopha.2017.01.083	Article
Exclusion of organic dye using neoteric activated carbon prepared from Cornulaca monacantha stem: Equilibrium and thermodynamics studies	Sharma, A., Sharma, G., Kumar, A., Siddiqi, Z.M., Pathania, D.	2016	Materials Science Forum	875	-	Jan-15	10.4028/www.scientific.net/MSF.875.1	Conference Paper
Pectin-crosslinked-guar gum/SPION nanocomposite	Sharma, G., Kumar,	2017	Sustainable Chemistry and	6	-	96-106	10.1016/j.scip.2017.10.003	Article

hydrogel for adsorption of m-cresol and o-chlorophenol	A., Chauhan, C., Okram, A., S., Pathania, D., Kalia, S.		Pharmacy					
Aerogels and metal-organic frameworks for environmental remediation and energy production	Kumar, A., Rana, A., Sharma, G., Sharma, S., Naushad, M., Mola, G.T., Dhiman, P., Stadler, F.J.	2018	Environmental Chemistry Letters	16	3	797-820	10.1007/s10311-018-0723-x	Review
Facile fabrication of Zr ₂ Ni ₁ Cu ₇ trimetallic nano-alloy and its composite with Si ₃ N ₄ for visible light assisted photodegradation of methylene blue	Sharma, G., Kumar, A., Sharma, S., Naushad, M., Ahamad, T., Al-Saeedi, S.I., Al-Senani, G.M., Al-kadhi, N.S., Stadler, F.J.	2018	Journal of Molecular Liquids	272	-	170-179	10.1016/j.molliq.2018.09.063	Article
Synthesis, Characterization and Environmental Applications of a	Thakur, M., Pathania, D.,	2018	Journal of Polymers and the Environment	26	4	1415-1424	10.1007/s10924-017-1043-0	Article

New Bio-Composite Gelatin-Zr(IV) Phosphate	Sharma, G., Naushad, M., Bhatnagar, A., Khan, M.R.		t					
Turmeric/polyvinyl alcohol Th(IV) phosphate electrospun fibers: Synthesis, characterization and antimicrobial studies	Ahamed, M.I., Inamuddin, , Lutfullah, , Sharma, G., Khan, A., Asiri, A.M.	2016	Journal of the Taiwan Institute of Chemical Engineers	68	-	407-414	10.1016/j.jtice.2016.08.024	Article
Tin (IV) phosphate/poly(gelatin-cl-alginate) nanocomposite: Photocatalysis and fabrication of potentiometric sensor forPb (II)	Pathania, D., Thakur, M., Sharma, G., Mishra, A.K.	2018	Materials Today Communications	14	-	282-293	10.1016/j.mtcomm.2018.01.005	Article
Impact of heavy metals and nanoparticles on aquatic biota	Kahlon, S.K., Sharma, G., Julka, J.M., Kumar, A., Sharma, S., Stadler, F.J.	2018	Environmental Chemistry Letters	16	3	919-946	10.1007/s10311-018-0737-4	Review

Fabrication, characterization and cytotoxicity of guar gum/copper oxide nanocomposite: Efficient removal of organic pollutant	Pathania, D., Katwal, R., Sharma, G.	2016	Materials Science Forum	842	-	88-102	10.4028/www.scientific.net/MSF.842.88	Article
Sodium dodecyl sulphate-supported nanocomposite as drug carrier system for controlled delivery of ondansetron	Sharma, G., Naushad, M., Thakur, B., Kumar, A., Negi, P., Saini, R., Chahal, A., Kumar, A., Stadler, F.J., Aqil, U.M.H.	2018	International Journal of Environmental Research and Public Health	15	3	-	10.3390/ijerph15030414	Article
Estimation of arsenic(III) in organic arsines and its complexes using potassium bromate and potassium iodate as oxidants	Sharma, A., Sharma, G., Naushad, Mu., Pathania, D.	2016	Journal of the Chilean Chemical Society	61	2	2940-2948	10.4067/S0717-97072016000200018	Article
Certain 4-iminoflavones derivatives: Synthesis, docking studies, antiasthmatic and antimicrobial agents	Khah, S., Goyal, R., Chabba, A., Jaiswal, V., Sharma, G., Naushad,	2016	Asian Journal of Chemistry	28	8	1687-1696	10.14233/ajchem.2016.19789	Article

	Mu.							
Dubinin-radushkevich (DR) isotherm studies of equilibrium sorption of metal ions onto phosphoric acid modified rice-husk	Naushad, M., Sharma, G., Al-Muhtaseb, A.H., Gaur, R.Z.	2016	Heavy Metals: Sources, Toxicity and Remediation Techniques	-	-	231-250	-	Chapter
Ionic liquid N-ethylpyridinium hydrogen sulfate as an efficient catalyst for designing indole scaffolds and their antimicrobial behaviour	Gupta, N., Bhardwaj, P., Sharma, G.	2017	Iranian Journal of Catalysis	7	3	243-248	-	Article
Modified biopolymers: Challenges and opportunities	Pathania, D., Sharma, G., Kumar, A.	2017	Modified Biopolymer s: Challenges and Opportunitie s	-	-	1-314	-	Book
Progress from composite materials to biocomposite materials and their applications	Naushad, M., Alfadul, S.M., Al-Muhtaseb, A.H., Sharma, G., Ponnusamy, S.K., ALOthm	2017	Modified Biopolymer s: Challenges and Opportunitie s	-	-	163-188	-	Chapter

	an, Z.A., Bushra, R.							
Biobased-nanocomposites for food packaging applications	Sharma, S., Sharma, G., Inamuddin, , Al-Romaizan, A.N., Asiri, A.M.	2017	Modified Biopolymer s: Challenges and Opportunities	-	-	207-	-	Chapter

Sharma, Gaurav

Title	Authors	Year	Scopus Source title	Volume	Issue	Pages	DOI	Publication-type
Anti-diabetic, anti-oxidant and anti-adipogenic potential of quercetin rich ethyl acetate fraction of prunus persica	Sharma, G., Kumar, S., Sharma, M., Upadhyay, N., Kumar, S., Ahmed, Z., Mahindroo, N.	2018	Pharmacognosy Journal	10	3	463-469	10.5530/pj.2018.3.76	Article

Sharma, Lalit

Title	Authors	Year	Scopus Source title	Volume	Issue	Pages	DOI	Publication-type
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A review on Himalayan pine species: Ethnopharmacological, phytochemical and pharmacological aspects	Sharma, A., Sharma, L., Goyal, R.	2018	Pharmacognosy Journal	10	4	611-619	10.5530/pj.2018.4.100	Review
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Thakur, Pankaj								
Title	Authors	Year	Scopus Source title	Volume	Issue	Pages	DOI	Publication-type
Adsorptional photocatalytic mineralization of oxytetracycline and ampicillin antibiotics using Bi ₂ O ₃ /BiOCl supported on graphene sand composite and chitosan	Priya, B., Raizada, P., Singh, N., Thakur, P., Singh, P.	2016	Journal of Colloid and Interface Science	479	-	271-283	10.1016/j.jcis.2016.06.067	Article
Photocatalytic mineralization and degradation kinetics of ampicillin and oxytetracycline antibiotics using graphene sand composite and chitosan supported BiOCl	Priya, B., Shandilya, P., Raizada, P., Thakur, P., Singh, N., Singh, P.	2016	Journal of Molecular Catalysis A: Chemical	423	-	400-413	10.1016/j.molcata.2016.07.043	Article
Solar light induced photodegradation of oxytetracycline using Zr doped TiO ₂ /CaO based nanocomposite	Raizada, P., Priya, B., Thakur, P., Singh, P.	2016	Indian Journal of Chemistry - Section A Inorganic, Physical, Theoretical and	55A	-	803-809	-	Article

			Analytical Chemistry					
The development of antibacterial and hydrophobic functionalities in natural fibers for fiber-reinforced composite materials	Thakur, K., Kalia, S., Kaith, B.S., Pathania, D., Kumar, A., Thakur, P., Knittel, C.E., Schauer, C.L., Totaro, G.	2016	Journal of Environmental Chemical Engineering	4	2	1743-1752	10.1016/j.jec.2016.02.032	Article
Visible light assisted photodegradation of 2,4-dinitrophenol using Ag ₂ CO ₃ loaded phosphorus and sulphur co-doped graphitic carbon nitride nanosheets in simulated wastewater	Raizada, P., Sudhaik, A., Singh, P., Shandilya, P., Thakur, P., Jung, H.	2018	Arabian Journal of Chemistry	-	-	-	10.1016/j.arabjc.2018.10.004	Article in Press
Array of bis-quaternary ammonium surfactant tailored Cu(2-x)Te quantum dots with amended functional assets	Jamwal, D., Rana, D., Pathak, D., Raizada, P., Thakur, P.	2016	RSC Advances	6	17	13981-13990	10.1039/c5ra24396c	Article
Enhanced photocatalytic activity and stability of AgBr/BiOBr/graph	Singh, P., Sonu, , Raizada, P.,	2018	Journal of Saudi Chemical Society	-	-	-	10.1016/j.jscs.2018.10.005	Article in Press

ene heterojunction for phenol degradation under visible light	Sudhaik, A., Shandilya, P., Thakur, P., Agarwal, S., Gupta, V.K.							
Ggum-poly(Itaconic Acid) Based Superabsorbents Via Two-Step Free-Radical Aqueous Polymerization for Environmental and Antibacterial Applications	Sharma, R., Kalia, S., Kaith, B.S., Kumar, A., Thakur, P., Pathania, D., Srivastava, M.K.	2017	Journal of Polymers and the Environment	25	2	176-191	10.1007/s10924-016-0796-1	Article
Well-defined quantum dots and broadening of optical phonon line from hydrothermal method	Jamwal, D., Rana, D., Singh, P., Pathak, D., Kalia, S., Thakur, P., Torino, E.	2016	RSC Advances	6	104	102010-102014	10.1039/c6ra19818j	Article
Eicosyl ammoniums elicited thermal reduction alleyway towards gold nanoparticles and their chemo-sensor aptitude	Rana, D., Jamwal, D., Katoch, A., Thakur, P., Kalia, S.	2016	Analyst	141	7	2208-2217	10.1039/c5an02061a	Article
Protein extraction and cytotoxicity abilities of	Tandon, L., Singh,	2018	Journal of Nanoparticle Research	20	4	-	10.1007/s11051-018-4208-4	Article

colloidal gold-coated silica hybrid nanoparticles	V., Mandial, D., Mahal, A., Khullar, P., Thakur, P.							
Bio-inspired polymer composites: Robust biomedical application podium	Torino, E., Jamwal, D., Sood, K., Singh, V.P., Singh, P., Thakur, P.	2017	Modified Biopolymers: Challenges and Opportunities	-	-	261-284	-	Chapter
Radical polymerization approach for ring opened oxanorbornene anhydride based macromonomers	Kollarigowda, R.H., Thakur, P.	2018	Designed Monomers and Polymers	21	1	01-Aug	10.1080/15685551.2017.1409475	Article
Ceramic materials: General introduction, properties, and fabrication methods	Pathania, D., Katwal, R., Thakur, P.	2018	Smart Ceramics: Preparation, Properties, and Applications	-	-	33-72	10.1201/9781315163598	Chapter
Carbon nitride, metal nitrides, phosphides, chalcogenides, perovskites and carbides nanophotocatalysts for environmental applications	Kumar, A., Thakur, P.R., Sharma, G., Naushad, M., Rana, A., Mola, G.T., Stadler, F.J.	2018	Environmental Chemistry Letters	-	-	-	10.1007/s10311-018-0814-8	Article in Press

Tripathi, Astha								
Title	Authors	Year	Scopus Source title	Volume	Issue	Pages	DOI	Publication-type
Evaluation of antioxidant and anti-inflammatory properties of aqueous extract of wild mushrooms collected from Himachal Pradesh	Bains, A., Tripathi, A.	2017	Asian Journal of Pharmaceutical and Clinical Research	10	3	467-472	10.22159/ajpcr.2017.v10i3.16547	Article
Collection, identification, molecular characterization, and antioxidant activity of non-gilled mushrooms collected from north western himalayas	Singh, S., Tripathi, A.	2018	Asian Journal of Pharmaceutical and Clinical Research	11	10	254-259	10.22159/ajpcr.2018.v11i10.27423	Article
Antimicrobial and phytochemical properties of methanol and hexane extract of non-gilled mushrooms collected from North-Western Himalayas	Singh, S., Tripathi, A.	2018	International Journal of Research in Pharmaceutical Sciences	9	4	1174-1182	10.26452/ijrps.v9i4.1651	Article

Upadhyay, Navneet K.								
Title	Authors	Year	Scopus Source title	Volume	Issue	Pages	DOI	Publication-type
Anti-diabetic, antioxidant and anti-adipogenic potential of quercetin rich ethyl acetate fraction of	Sharma, G., Kumar, S., Sharma, M.,	2018	Pharmacognosy Journal	10	3	463-469	10.5530/pj.2018.3.76	Article

prunus persica	Upadhya y, N., Kumar, S., Ahmed, Z., Mahindr oo, N.							
Novel RP-HPLC method development and validation for the simultaneous estimation of saxagliptin and glimepiride	Upadhya y, N.K., Rathore, C., Sapra, S., Negi, P.	2018	International Journal of Applied Pharmaceuti cs	10	3	151- 156	10.22159/ija p.2018v10i3. 25261	Articl e
Gender specific variation of two phenolic glycosides (Populin and salicin) in populus ciliata and identification of a new compound (cinnamoyl-salicin)	Kumari, A., Upadhya y, N.K., Khosla, P.K.	2016	International Journal of Pharmacy and Pharmaceuti cal Sciences	8	12	156- 162	10.22159/ijp ps.2016v8i1 2.14843	Articl e
Simple, efficient and economical methods for isolation and estimation of novel isoflavone using RP-HPLC	Alam, A., Naik, K.K., Upadhay a, N.K., Kumar, S., Dhar, K.L.	2017	MethodsX	4	-	128- 133	10.1016/j.me x.2017.02.00 1	Articl e
Stability-indicating HPLC method for determination of 7,8,9,10-tetrahydroazepino[2,1b]quinazolin-12(6H)-one, a potential anticancer agent	Sharma, M., Upadhya y, N.K., Mahindr oo, N.	2016	Indian Journal of Pharmaceuti cal Sciences	78	6	769- 774	10.4172/pha rmaceutical- sciences.100 0182	Articl e
Physicochemical and electrochemical	Rana, B., Kaushik, R.,	2018	Food Bioscience	21	-	117- 124	10.1016/j.fbi o.2017.12.00 8	Articl e

properties of zinc fortified milk	Kaushal, K., Arora, S., Kaushal, A., Gupta, S., Upadhyay, N., Rani, P., Kaushik, P.							
In-vitro osteoblast proliferation and in-vivo anti-osteoporotic activity of Bombax ceiba with quantification of Lupeol, gallic acid and β -sitosterol by HPTLC and HPLC	Chauhan, S., Sharma, A., Upadhyay, N.K., Singh, G., Lal, U.R., Goyal, R.	2018	BMC Complementary and Alternative Medicine	18	1	-	10.1186/s12906-018-2299-1	Article

Mahindroo, Neeraj								
Title	Authors	Year	Scopus Source title	Volume	Issue	Pages	DOI	Publication-type
Urtica dioica leaves modulates hippocampal smoothed-glioma associated oncogene-1 pathway and cognitive dysfunction in chronically stressed mice	Patel, S.S., Mahindroo, N., Udayabalanu, M.	2016	Biomedicine and Pharmacotherapy	83	-	676-686	10.1016/j.biopha.2016.07.020	Article
Targeting sonic hedgehog signaling in neurological disorders	Patel, S.S., Tomar, S., Sharma,	2017	Neuroscience and Biobehavioral Reviews	74	-	76-97	10.1016/j.neubiorev.2017.01.008	Review

	D., Mahindr oo, N., Udayaba nu, M.							
Bioactive fraction from datura stramonium linn. Promotes human immune cells mediated cytotoxicity towards lung and breast cancer cells	Gupta, A., Kumar, S., Mahindr oo, N., Saini, R.V.	2016	Pharmacognosy Journal	8	5	435-439	10.5530/pj.2016.5.4	Article
Development and validation of stability indicating RP-HPLC method for determination of \hat{P} -acetyldigoxin	Sharma, M., Mahindr oo, N.	2017	International Journal of Applied Pharmaceutics	9	1	54-59	10.22159/ijap.2017v9i1.16076	Article
Recent advances in cancer immunology and immunology-based anticancer therapies	Kumar, S., Saini, R.V., Mahindr oo, N.	2017	Biomedicine and Pharmacotherapy	96	-	1491-1500	10.1016/j.biopha.2017.11.126	Review
Anti-diabetic, antioxidant and anti-adipogenic potential of quercetin rich ethyl acetate fraction of <i>Prunus persica</i>	Sharma, G., Kumar, S., Sharma, M., Upadhya y, N., Kumar, S., Ahmed, Z., Mahindr oo, N.	2018	Pharmacognosy Journal	10	3	463-469	10.5530/pj.2018.3.76	Article
Stability-indicating HPLC method for determination of 7,8,9,10-Tetrahydroazepino [2,1b]quinazolin-12(6H)-one, a potential anticancer agent	Sharma, M., Upadhya y, N.K., Mahindr oo, N.	2016	Indian Journal of Pharmaceutical Sciences	78	6	769-774	10.4172/pharmaceutical-sciences.1000182	Article

Recent advances in polymeric drug delivery carrier systems	Sharma, P., Negi, P., Mahindroo, N.	2018	Advances in Polymers for Biomedical Applications	-	-	369-388	-	Chapter
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alam, Afroze								
Title	Authors	Year	Scopus Source title	Volume	Issue	Pages	DOI	Publication-type
Cytotoxicity and anti-inflammatory activity of flavonoid derivatives targeting NF-kappaB	Naik, K.K., Thangavel, S., Alam, A.	2016	Recent Patents on Inflammation and Allergy Drug Discovery	10	2	119-132	10.2174/1872213X10666161114231625	Article
Isolation of isoflavones from Iris kashmiriana Baker as potential anti proliferative agents targeting NF-kappaB	Alam, A., Jaiswal, V., Akhtar, S., Jayashree, B.S., Dhar, K.L.	2017	Phytochemistry	136	-	70-80	10.1016/j.phytochem.2017.01.002	Article
Simple, efficient and economical methods for isolation and estimation of novel isoflavone using RP-HPLC	Alam, A., Naik, K.K., Upadhaya, N.K., Kumar, S., Dhar, K.L.	2017	MethodsX	4	-	128-133	10.1016/j.methods.2017.02.001	Article
Flavone analogues as antimicrobial agents	Naik, K.K., Thangavel, S., Alam, A., Kumar, S.	2017	Recent Patents on Inflammation and Allergy Drug Discovery	11	1	53-63	10.2174/1872213X11666170119094702	Review

Farooq, Umar								
Title	Authors	Year	Scopus Source title	Volume	Issue	Pages	DOI	Publication-type
Prediction and analysis of promiscuous T cell-epitopes derived from the vaccine candidate antigens of Leishmania donovani binding to MHC class-II alleles using in silico approach	Kashyap, M., Jaiswal, V., Farooq, U.	2017	Infection, Genetics and Evolution	53	-	107-115	10.1016/j.meegid.2017.05.022	Article
In vitro assessment of antileishmanial activity of natamycin and nystatin	Sidana, A., Negi, A.K., Farooq, U.	2017	Brazilian Archives of Biology and Technology	60	-	-	10.1590/1678-4324-2017160368	Article
Homology modelling of frequent HLA class-II alleles: A perspective to improve prediction of HLA binding peptide and understand the HLA associated disease susceptibility	Kashyap, M., Farooq, U., Jaiswal, V.	2016	Infection, Genetics and Evolution	44	-	234-244	10.1016/j.meegid.2016.07.007	Article
An immunoinformatics approach to promiscuous peptide design for the Plasmodium falciparum erythrocyte membrane protein-1	Khan, N., Kumar, R., Chauhan, S., Farooq, U.	2017	Molecular BioSystems	13	10	2160-2167	10.1039/c7mb00332c	Article

A study of molecular characterization of the trimethoprim resistant Salmonella typhi strains prevalent in Himachal Pradesh	Neha , Azhar Khan, M., Farooq, U.	2016	International Journal of Bio-Science and Bio-Technology	8	3	101-108	10.14257/ijbsbt.2016.8.3.10	Article
Evaluation of antileishmanial potential of Gentiana kurroo royle by in vitro and in silico methods	Sidana, A., Kaushal, S., Farooq, U.	2018	Journal of Applied Pharmaceutical Science	8	2	143-149	10.7324/JAPS.2018.8222	Article
Soy protein isolate: A substitute of fetal bovine serum for the in vitro cultivation of leishmania donovani	Sidana, A., Alam, A., Farooq, U.	2018	Legume Research	41	2	218-221	10.18805/LR-3730	Article
Antiechinococcal assessment of atovaquone's in silico and in vitro analysis	Chauhan, V., Chauhan, N., Farooq, U.	2017	Comparative Clinical Pathology	26	6	1289-1292	10.1007/s00580-017-2525-0	Article
Efficacy of medicinal plants against human pathogens isolated from western Himalayas of Himachal Pradesh	Chauhan, N., Farooq, U., Khan, M.A.	2017	Asian Journal of Pharmaceutical and Clinical Research	10	9	353-357	10.22159/ajpcr.2017.v10i9.19708	Article

Gupta, Gaurav								
Title	Authors	Year	Scopus Source title	Volume	Issue	Pages	DOI	Publication-type
Classification and development of tool for heart diseases (MRI images) using machine learning	Sharma, L., Gupta, G., Jaiswal, V.	2016	2016 4th International Conference on Parallel, Distributed and Grid Computing, PDGC 2016	-	-	219-224	10.1109/PDGC.2016.7913149	Conference Paper

Kaur, Tanurajvir								
Title	Authors	Year	Scopus Source title	Volume	Issue	Pages	DOI	Publication-type
A review on pharmacognostic, phytochemical and pharmacological data of various species of Hippophae (Sea buckthorn)	Kaur, T., Singh, G., Kapoor, D.N.	2017	International Journal of Green Pharmacy	11	1	S62-S75	-	Review
Development and optimization of nanoemulsion gel for topical delivery of imiquimod	Kaur, G., Kaur, T., Kapoor, D.N.	2018	Journal of Chinese Pharmaceutical Sciences	27	1	31-39	10.5246/jcps.2018.01.004	Article
Development and evaluation of sea buckthorn (hippophae rhamnoides l.) seed oil nanoemulsion gel for wound healing	Kaur, T., Kapoor, D.N.	2018	Pharmacognosy Magazine	14	58	647-658	10.4103/pm.pm_375_18	Article

Rathore, Charul								
Title	Authors	Year	Scopus Source title	Volume	Issue	Pages	DOI	Publication-type
Niosome-based hydrogel of resveratrol for topical applications: An effective therapy for pain related disorder(s)	Negi, P., Aggarwal, M., Sharma, G., Rathore, C., Sharma, G., Singh, B., Katare, O.P.	2017	Biomedicine and Pharmacotherapy	88	-	480-487	10.1016/j.biopha.2017.01.083	Article
Thymoquinone a potential therapeutic molecule from the plant Nigella sativa: Role of colloidal carriers in its effective Delivery	Negi, P., Rathore, C., Sharma, G., Singh, B., Katare, O.P.	2018	Recent Patents on Drug Delivery and Formulation	12	1	Mar-22	10.2174/1872211311666171129121128	Review
Novel RP-HPLC method development and validation for the simultaneous estimation of saxagliptin and glimepiride	Upadhyay, N.K., Rathore, C., Sapra, S., Negi, P.	2018	International Journal of Applied Pharmaceutics	10	3	151-156	Article	

Sapra, Sameer								
Title	Authors	Year	Scopus Source title	Volume	Issue	Pages	DOI	Publication-type
Quinazolines as apoptosis inducers and inhibitors: A review of patent literature	Mehndiratta, S., Sapra, S., Singh, G., Singh, M., Nepali, K.	2016	Recent Patents on Anti-Cancer Drug Discovery	11	1	60-66	10.2174/1574892811666151218151506	Review
Novel RP-HPLC method development and validation for the simultaneous estimation of saxagliptin and glimepiride	Upadhyay, N.K., Rathore, C., Sapra, S., Negi, P.	2018	International Journal of Applied Pharmaceutics	10	3	151-156	10.22159/ijap.2018v10i3.25261	Article

Sponsored Research (10)

S. No	Title	PI	Duration	Agency	Funding amount received
1	Quality Standards of Indian Medicinal Plants and Preparation of Monographs Thereon	Dr. Neeraj Mahindroo (Pi), Dr. Sameer Sapra (Co-PI), Ms. Swati Pundir (Co-PI)	2016-2019	ICMR	₹ 11,30,706
2	Establishment of Advanced Biological Research Facility	Dr Kamal Dev	2016-2021	DST FIST	₹ 30,00,000
3	Characterization of licensed biomedical products including hypochlorous acid, ointments for frost bite to enhance shelf life	Dr. Neeraj Mahindroo, Dr. Deepak N. Kapoor (Co-PI)	2017-2020	DRDO	₹ 6,00,000
4	Trade chain, trade pattern and value chain of 5 RET medicinal plant species namely Aconitum heterophyllum (Ateech), Saussurealappa (Kuth), Inula racemosa (Pushkarmool), Picrorhiza kurra (Kutaki) and <i>Pistacia integerrima</i> (Zebrawood, Kakkarsingi) ² - Reg.	Prof. Neeraj Mahindroo	Mar.2018- June 2018	HPSBB	₹ 1,25,000
5	Development of cheap and safe water purification strategy using <i>Moringa oleifera</i> seeds for the rural population of H.P.	Dr. Sourabh Kulshreshtha	2018-2020	HIMCO STE	₹ 3,40,000
Total					₹ 51,95,706

Total marks: 10 marks

Funded research:

(Provide a list with Project Title, Funding Agency, Amount and Duration)

Funding amount (Cumulative during last three academic years starting from CAYm1):

Amount > 25 Lacs – 10 Marks
 Amount >= 22 Lacs and <= 25 lacs-9Marks
 Amount >= 19 Lacs and < 22 lacs – 8Marks
 Amount >= 16 Lacs and < 19 lacs – 7Marks
 Amount >= 13 Lacs and < 16 lacs – 6
 Mark Amount >= 10 Lacs and < 13 lacs – 5Marks
 Amount >= 08 Lacs and < 10 lacs – 4
 Mark Amount >= 06 Lacs and < 08 lacs – 3
 Mark Amount >= 05 Lacs and < 06 lacs – 2Marks
 Amount >= 04 Lacs and < 05 lacs – 1
 Mark Amount <= 4 Lacs – 0 Mark

Consultancy (from Industry) (10)

S. No	Title	PI	Duration	Agency	Funding amount
1	UK-India Educational and Research Partnership to Develop Industrially Focused Curriculum in Advanced Manufacturing Technology	Dr. Pankaj Thakur	2016-2019	Royal Academy of Engineering	₹ 28,75,507
2	Standardization of growth and astaxanthin content by <i>Haematococcus</i> and Standardization of microalgae-based method for the improvement of air quality	Dr. Sourabh Kulshreshtha	2018-2020	Microalgae Development Energy India Pvt. Ltd.	₹ 2,80,000
3	Method development and validation for quetiapine	Dr. Poonam Negi, Mr. Navneet Upadhayay	2018-2019	L.R. Group of Institutes, Solan, HP.	₹ 50,000
4	Phytochemical and permeability studies of Kanak Taila	Dr. Rohit Goyal, Dr. Deepak Kapoor	Nov 2018-April 2019	Uttrakhand Government Ayurvedic University, Rishikul Campus	₹ 49,0000

5	Antidiabetic activity of Yashadh Bhasma	Dr. Rohit Goyal	Feb 2019-April, 2019	All India Institute of Ayurveda, Sarita Vihar, New Delhi.	₹ 52000
6	Adaptogenic activity of Ashwagandha Ghrita	Dr. Rohit Goyal	Feb 2019-April, 2019	All India Institute of Ayurveda, Sarita Vihar, New Delhi.	₹ 37,400
7	Phytochemical evaluation of some antidiabetic plants	Dr. Rohit Goyal	Oct, 2018-March, 2019	Panjab Technical University	₹ 28,000
8	Development of multivitamin gummies & chewable tablets.	Prof. Neeraj Mahindroo, Dr. Deepak Kapoor & Dr. Poonam Negi	2015-2016	Meridian, Solan, HP.	₹ 50,000
TOTAL					₹ 3862907

Total Marks: 10 marks

(Provide a list with Project Title, Funding Agency, Amount and Duration)

Funding Amount (Cumulative during last three academic years starting from CAYm1):

- Amount > 25 Lacs – 10 Marks
- Amount >= 22 Lacs and <= 25 lacs - 9Marks
- Amount >= 19 Lacs and < 22 lacs – 8Marks
- Amount >= 16 Lacs and < 19 lacs – 7Marks
- Amount >= 13 Lacs and < 16 lacs – 6 Mark
- Amount >= 10 Lacs and < 13 lacs – 5Marks
- Amount >= 08 Lacs and < 10 lacs – 4 Mark
- Amount >= 06 Lacs and < 08 lacs – 3 Mark
- Amount >= 05 Lacs and < 06 lacs – 2 Marks
- Amount >= 04 Lacs and <05 lacs – 1 Mark
- Amount <= 4 Lacs – 0 Mark

Honorary Consultancy from Central/State/Local Government Organizations (5)

S. No	Title	PI	Duration	Agency	Funding amount
1	UK-India Educational and Research Partnership to Develop Industrially Focused Curriculum in Advanced Manufacturing Technology	Dr. Pankaj Thakur	2016-2019	Royal Academy of Engineering	₹ 28,75,507

Development activities (5)

Various Development activities are being conducted on routine basis which are as follows:

Product Development

- Developmental projects for industry and other academic organizations.

Working Models

- Instrumental models for testing of animal activities

Research laboratories

- Having sophisticated instrument laboratory with HPLC, HPTLC, FTIR, GLC
- Microscope, Dissolution Test Apparatus, Brookfield viscometer, Cooling Centrifuge Lyophilizer etc.

Instructional Materials:

- University Question Papers are being provided.
- Links of websites with Instructional materials for each unit are provided.
- Lab Manuals: Sample lab manuals are available.

CHARTS:

- T.S of various medicinal Crude Drugs.
- 3D anatomical structures of different systems of body like circulatory system, excretory system, respiratory system, digestive system etc.

Faculty Performance Appraisal and Development System (FPADS)(20)

Faculty members of Higher Educational Institutions today have to perform a variety of tasks pertaining to diverse roles. In addition to instruction, Faculty members need to innovate and conduct research for their self-renewal, keep abreast with changes in technology, and develop expertise for effective implementation of curricula. They are also expected to provide services to the industry and community for understanding and contributing to the solution of real-life problems in industry. Another role relates to the shouldering of administrative responsibilities and cooperation with other Faculty, Head of School and the Head of Institute. An effective performance appraisal system for Faculty is vital for optimizing the contribution of individual Faculty to institutional performance.

The performance appraisal at Shoolini University is based on a well-defined system undertaken year:

- (i) Faculty Self-Assessment** – A format is provided which the faculty has to fill every year.
- (ii) School Assessment Committee** – It assesses results after every end semester examination.
- (iii) Feedback from Students** – Student feedback is taken on teaching and for each course taught by the faculty members.

Faculty performance: In order to keep a measure of our teaching performance, we conduct a comprehensive feedback at the end of each semester. We take it online on the Shoolini LMS (Learning Management System) **eUniv** in order to understand the students' perception of a faculty's pedagogy, knowledge of the subject and other traits like punctuality, handling the class, language/gesture, clarity of words etc. To maintain the credit-worthiness of feedback, we use the following techniques/ characteristics:

1. **Anonymity:** We keep the feedback anonymous so that no one can know the identity of the student giving the feedback. eUniv team goes to the classes and updates the students about the anonymity of the feedback through live demonstrations. We practice this in order to make students comfortable and to encourage them to give true feedback without any fear.
2. **Secrecy/ Surprise:** We take the students feedback surprisingly so that no faculty member can influence the students' opinion before filling up the feedback.

3. **Transparency:** In our bid to maintain 100% transparency, we take feedback online on eUniv and open the feedback to the faculty members once the result of that particular semester has been declared. Faculty members, then can see the student's comments and can improve themselves wherever required.
4. **Analysis and submission for review:** Once the feedback is closed, we perform an analysis of the feedback and share compiled data with the respective Head of schools / Deans and the Registrar office so that the corrective action is taken, wherever required.

Manthan: It is generic feedback which we take annually from the students and faculty/ staff members separately to know about their views and suggestion for overall improvement in the facilities available at the University Campus. We keep this feedback as anonymous to encourage students, faculty, and staff to write fearlessly and honestly so that management can get true feedback and they can take necessary steps to correct them. To maintain the credit-worthiness of Manthan feedback we use the following techniques/ characteristics:

1. **Anonymity:** We keep the feedback status as anonymous so that students, faculty and the staff members can give their suggestions fearlessly and we can get true feedback.
2. **Promotion of the event:** We promote this event more and more through emails, SMS and in the class rooms so that a good strength participates in this event and we can get a genuine and the majority of comments on the things which are required to be corrected.
3. **Faculty appraisals:** Faculty appraisal at Shoolini University is an annual process which is done at the end of every year. Using the appraisal form a face to face interaction is then done with the individual faculty with the top management of the university. Therefore, the process is the 720-degree appraisal where multi rater evaluation and the student feedback is taken into consideration for any kind of increment decisions, developmental programs and other administrative decisions. The appraisal process is completely transparent and effective.

SHOOLINI UNIVERSITY, SOLAN
APPRAISAL OF TEACHING FACULTY
(January 2018 to December 2018)

INSTRUCTIONS FOR FILLING APPRAISAL FORMS

1. Please fill the form electronically – no hand written form will be considered.
2. For Research; Please attach copy of full research papers. Score for research will only be considered if research papers attached.
3. Please attach certificate for course completion for all courses undertaken in January 01, 2018 to December 31, 2018. Score for teaching category will only be considered if course completion certificate is attached.
4. Last date to receive the filled form (hard copy) is March 08, 2019.
5. Please attach separate sheet for any additional information, wherever required.

Name		Faculty and School	
Designation		Date of Joining University	
Qualification (Last degree and date of completion)		Area of specialization	

SUMMARY OF KEY ACHIEVEMENTS IN YEAR (January 01, 2018 to December 31,2018)
(Please only state IMPACT and not ACTIVITIES)

<u>Teaching:</u>	
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Research:

Contribution to University:

Personal Development/Leadership:

CATEGORY I: TEACHING (Please give details in separate sheet, if any)

Sr. No	Nature of Activity	Score Allotted	Self-Score	HoS Score	Dean Score	Details
1.	Use of eUniv, uploading lectures, uploading video lectures, timely delivery of lectures and meeting the expected load, timely submission of results etc.	15				
2.	Creativity/Innovation	15				
3.	Quality of Teaching, Student Feedback	20				
Total Score		50				

CATEGORY II: RESEARCH / INNOVATION CONTRIBUTION DETAILS (Total Score 50)

(Please give details in separate sheet, if any)

Nature of Activity	Score Allotted	Self-Score	HoS Score	Dean Score	Details
1. Details of Inputs / Efforts towards Research & Development * Projects Submitted, Papers Submitted in Thompson/ Reuters/ Scopus etc , No. of Phd Students guided/guiding etc	15				
2. Details of Output/ Achievements out of Research * Scival FCI, H factor * No. and cost of sanctioned projects, No. of Patents etc	35				
Total Score	50				

CATEGORY III: CONTRIBUTION TO UNIVERSITY

Sr. No	Nature of Activity	Score Allotted	Self-Score	HoS Score	Dean Score	Details
1.	Leadership / Participation in activities beyond teaching and research,					
2.	Leadership / Participation in Conferences / Workshops etc. (Internal & External)					

3.	Leadership / Participation in Student related activities	50				
4.	Other Activities like Placement, Sprint, Admissions etc.					
Total Score		50				

CATEGORY IV: PERSONAL DEVELOPMENT / LEADERSHIP

Sr. No	Nature of Activity	Score Allotted	Self-Score	HoS Score	Dean Score	Details
1.	Key note & invited Speeches in Conferences/ Workshops etc	50				
2.	Contribution as Editor/Writer in renowned Journals					
3.	Publishing Papers with top Scientists of Nobel Laurette					
4	Member of any Association					
Total		50				

Signature of Faculty

OVERALL COMMENTS / ASSESSMENT

HOS	Signatures of HOS
DEAN	Signatures of DEAN
EVALUATION COMMITTEE	

Visiting/Adjunct Faculty (5)

Adjunct faculty also includes experts from Industry, Research Organizations/Universities and other Government Organizations. Provide details of participation and contributions in teaching and learning and /or research by visiting/adjunct faculty for all the assessment years.

- Provision of visiting/adjunct faculty (2)
- Minimum 50 hours interaction in a year will result in 1 mark for that year; 1 marks x 3 years = 3marks.

Sr. No.	Name of Faculty	Designation	No. of hours per year	Years
1	Prof. V.K. Kapoor	Adjunct Professor	100	3
2	Dr. Jagat Taran Das	Adjunct Professor	100	1
2	Dr. Kamal Dua	Visiting Faculty	10	3

Criterion 6

CRITERION 6	Facilities	120
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6. Facilities (120)

Availability of adequate, well-equipped classrooms to meet the curriculum requirements (20)

Availability of quality infrastructure and access to quality learning resources are essential for any institution striving for global excellence. As the School of Pharmaceutical sciences is the part of Shoolini University so, in the initial years, the emphasis of the University was on creation of the required infrastructure and develop facilities. Having achieved the targets set out, the current phase of development focuses on consolidation, bridge gaps; emphasis being on providing a wider basket of learning resources and enhancing the outreach of the University.

Sr. No.	Description	Number	Shared/ Exclusive	Capacity	Room No.	Rooms/Labs Equipped with
Teaching and administrative area						
1.	Class Room	8	Exclusive	3 of 100 5 of 60	D105, D203, PDH, D106, D304,D306, E301, E303	Movable projector with sound system and Wi-Fi
2.	Seminar hall/Conference Room	1	Exclusive	50	E102	Moveable projector with sound system, Wi-Fi & Fire Extinguisher
3.	Auditorium	1	Shared	400	RTH	Projector with sound system, Wi-Fi, PC with internet connection, visualizer, mike and audio system (speakers installed), White Board, LCD Projector with screen
4.	Principal Chamber	1	Exclusive	-	D101/01	Furnished cabin with Wi-Fi connection & personal laptop
5.	Office	1	Exclusive	-	D101/03	Wi-Fi, 2 PC with internet

						connection, Scanner, Photo Copy Machine, printer, Fire Extinguisher & First Aid Box
6.	Faculty Room/Cabin	3	Exclusive	30	D101/02, D204/A, D405	Furnished cabin with Wi-Fi connection & personal laptop
7.	Girls" common room	1	Exclusive	30	D204	Chairs, Table, Attached Bathroom & First Aid Box.
8.	Exam Control Room	1	Exclusive	-	D103	Furnished cabin with Wi-Fi connection & PC
9.	Library	2	1 Exclusive/ 1 Shared	300	Library	Wi-Fi PC with internet connection, Photo Copy Machine, printer, Fire Extinguisher& News Paper
10.	Boys Toilet	1	Exclusive	-	-	Detergents & Toilet Paper.
11.	Girls Toilet	1	Exclusive	-	-	Detergents & Toilet Paper.
12.	Toilet for disabled person	1	Exclusive	-	-	Detergents & Toilet Paper
13.	Staff Toilet	1	Exclusive	-	-	Detergents & Toilet Paper
14.	First cum Sick Room with Medical Facility	1	Shared	-	-	First Aid Box with Medical Facility
15.	Maintenance & House Keeping Room	1	Exclusive	-	-	
16.	Training & Placement office	1	Shared	-	-	Furnished cabin with Wi-Fi connection & PC
17.	Pantry Room	1	Exclusive	-	-	Tea Maker & Snacks
Laboratory & Stores						
18.	Pharmaceutics	3	Exclusive	30 Each	D201, D205, D207	All required equipments & Glassware, Chemicals, Preparation room, Fire-Extinguisher, Water supply, Gas supply, Racks, First Aid Box

19.	Pharmaceutical Chemistry/ Analysis	4	Exclusive	30 Each	D401, D402, D403, E406	All required Equipments & Glassware, Chemicals, Preparation Room, Fire Extinguisher, Water Supply, Gas Supply, Fuming Chamber, exhaust fan, refrigerator, Balance Room, First Aid Box
20.	Anatomy & Physiology	1	Exclusive	30 Each	D301	All required Equipments & Glass Ware, Chemicals, Preparation Room, Fire Extinguisher, Water Supply, Human, Skeletal System Chart & Dummy, Charts related to Human Body system and 3D Models, working platform, First Aid Box
21.	Pharmacology	2	Exclusive	30 Each	D305, D404	All Required, Equipments & Glass Ware, Chemicals, Preparation Room, Fire Extinguisher, Water, Supply, Human, Skeletal System Chart & Dummy, Charts Related to Human Body System And 3D Models, Working, Platform, First Aid Box
22.	Pharmacognosy	1	Exclusive	30	D 301	All Required equipments & Glass Ware, Chemicals, Preparation Room, Fire Extinguisher, Water Supply, Gas Supply, Racks, Charts Related To Medicinal Plants, Crude Drugs, First Aid.

23	Pharmaceutical Biotechnology	1	Exclusive	30	E402	All Required equipments & Glass Ware, Chemicals, Preparation Room, Fire Extinguisher, Water Supply and First Aid Box.
24.	Machine Room	1	Exclusive	30	D 102	All Required equipments & Glass Ware, Chemicals, Preparation Room, Fire Extinguisher, Water Supply and First Aid Box.
25.	Central Instrument Facility	1	Exclusive	-	D 104	AC, all required equipments & glass ware, chemicals, fire extinguisher, water supply, racks, first aid box.
26.	Computer Lab	1	Shared	60	E101	Computer with internet, chair, projector, fire extinguisher.
27.	Museum	1	Exclusive	-	-	Crude drugs, Dosage form (solid, Liquid, semi-solid, Sterile Products)
28.	Central Store Room	2	Exclusive	-	D206, D402	All Required, Chemicals, Reagents, Glass Ware, Fire Extinguisher, Separate, Chamber For Concentrated, Chemicals, First Aid Box.
29.	Animal House	1	Exclusive		Animal House	Air Conditioner, Preparation Room, Washing Facilities

Description- As per norms of Pharmacy Council of India.

- Sufficient numbers of class rooms are available for conducting lectures.
- Separate room is available for conducting seminar.
- Each class room is provided with white board.
- Projectors are available in each classroom.
- High speed Wi-Fi is available in each class room.
- Size of Class room is sufficient for proper and comfortable sitting of 60 - 100 students.
- Sufficient numbers of furniture are available in class room for proper sitting.

- Each class room is well ventilated and accessible to natural light.

Faculty rooms (10) (Conducive sitting place)

Sr. No	Room Description	Number	Shared/Exclusive	Capacity	Rooms/Labs Equipped with
1.	Faculty Room/Cabin	3	Exclusive	30	Furnished cabin with Wi-Fi connection & personal laptop

Description- As per norms of Pharmacy Council of India.

- There are shared rooms /cabins are available for faculties with all facilities.
- Each faculty rooms/cabin is provided with sufficient number of chairs & high-speed Wi-Fi.
- All the rooms are well ventilated.

Laboratories including preparation room (wherever applicable), instrument/machine room and computer labs along with equipment and relevant facilities (60)

(Scientific Experiments Conducting/Computing facilities; availability, adequacy & effectiveness)

Note: Give a separate table for Instrument room and Machine room listing all the instruments/equipment present with their make and model, existence of SOPs and Log Books for individual equipment.

Sr. No.	Lab Description	Space/student Ratio (Batch Size)	Availability of Manuals	Quality of instruments	Instruments
1	Pharmaceutics-II	30	Yes	Good	
2	Pharmaceutics-III	30	Yes	Good	
3.	Pharmaceutical Biotechnology	30	Yes	Good	
4.	Pharmaceutical Chemistry-I	30	Yes	Good	
5.	Pharmaceutical Chemistry-II	30	Yes	Good	
6.	Pharmaceutical Chemistry-III	30	Yes	Good	
7.	Pharmaceutical Chemistry-IV/ Analysis	30	Yes	Good	
8.	Anatomy & Physiology	30	Yes	Good	
9.	Pharmacology-I	30	Yes	Good	
10.	Pharmacology-II	30	Yes	Good	
11.	Pharmacognosy	30	Yes	Good	
12.	Machine Room	30	Yes	Good	
13.	Central Instrument facility	20	Yes	Good	
14.	Computer lab	60	Yes	Good	

6.3.2. Equipment & Instruments

9	8	7	6	5	4	3	2	1	Sr.no
Propeller type Agitator	Mechanical Stirrer 1Ltr.	Lab Stirrer	Hot Plate	Auto pH meter	pH meter	Melting point Apparatus	CPR-24 Plus High Speed Cooling Centrifuge	Centrifuge	Name of Equipments
INCO	INCO	Remi	INCO	Systronics	INCO	INCO	Remi	INCO	Company Name
21-08-2010	21-08-2010	29-04-2013	26-12-2009	29-03-2018	15-10-2010	26-12-2009	24-04-2014	04-04-2013	Procured in (Date, Month & Year)
4275,	4275,	7394,	1045	5000	2500	1615	2,60,000	1100	Price Per Each
2	4	2	3	1	7	5	1	4	Total
2(201)	3(207)	1(201)	1(201)		1(207),1(201)	1(201),1(205)		1(205),1(207)	P'ceutics Lab
	1(403)	1(401)	2(401)		4(403)	2(401)		1(401)	P'chemistry Lab
									P'cology Lab
									P'cognosy Lab
									Machine Room
				1(404)		1(404)	1(404)	1(404)	Cif Lab-Ii
					1(102)				Cif Lab- I
									Chemical Store

21	20	19	18	17	16	15	14	13	12	11	10
U.V cabinet	Vortex Shaker	Digital Magnetic Stirrer with heating	Magnetic Stirrer with Hot Plate (2Ltr.)	Magnetic Stirrer with Hot Plate (1Ltr.)	Heating Mantle 5000ml	Heating Mantle 3000ml	Heating Mantle 2000ml	Heating Mantle 1000ml	Heating Mantle 500ml	Heating Mantle 250ml	Tissue homogenizer
INCO	INCO	PERFIT		INCO						INCO	INCO
21-08-2010	12-06-2009	12-09-2018	15-10-2010	21-08-2010	24-04-2012	04-04-2013	24-04-2012	04-04-2013	08-02-1902	21-08-2010	21-08-2010
7600,	3467,	16000,	1300	2232	1600	1155	925	962,	770	902	4845,
1	2	1	4	4	1	1	2	7	5	5	3
	1(201)	1(207)		2(207)					1(201),1(207)	2(201),1(207)	2(207)
1(401)	1(401)		3(401)	2(401)				2(401),1(403)	1(401)	2(401)	
									1(305)		1(303)
			1(301)		1(301)	1(301)	2(301)	4(301)	1(301)		

33	32	31	30	29	28	27	26	25	24	23	22
Distillation Unit	Plethysmograph	Pole clamping apparatus	perfusion of excised mammalian heart with	ECG machine	Organ bath assembly	Water bath Incubator Shaker	Water bath serological	Water bath	Mixer cum Grinder	Polarimeter with Sodium lamp	U.V chamber
INCO		INCO	INCO		INCO		INCO	INCO			
21-08-2010		21-08-2010	09-06-2012	22-04-2009	09-06-2012	26-12-2009	15-10-2010	21-08-2010	04-11-2008		31-01-2012
3325,		16625,	14500,		7100,	5035,	2800,	10165,			
3	1	1	1	1	23	1	1	3	1	1	1
1(207)						1(207)					
1(403)								2(403)		1(401)	1(403)
1(303)	1(303)	1(303)	1(303)	1(303)	17(303),6(305)		1(303)				
								1(301)	1(301)		

45	44	43	42	41	40	39	38	37	36	35	34
	Student Microscope with Mechanical Stage	Compound Microscope RM-2A	StereoBinocular Microscope model RSM-1A.4	Spirometer	Student Stimulator	Vacuum Pump	Rota Rod apparatus	Rotary vacuum evaporator	Osmotic nebulizer	Analgesimeter, Radiant heat (Eddy's hot Plate)	Electroconvulsimeter
				INCO	INCO	INCO	INCO	PERFIT		INCO	INCO
	24-09-2011	09-04-2008	09-04-2008	19-04-2008	21-08-2010	21-08-2010	21-08-2010	24-02-2014		15-10-2010	21-08-2010
				6935,	4608,	6460,	12255,			3200,	15105,
	4	16	2	1	2	3	1	3	1	2	1
		4(201)									
						1(403)		1(401),1(403)			
				1(303)	2(303)	1(305)	1(305)	1(305)	1(305)	2(305)	1(305)
	4(301)	16(301)	2(301)								
						1(104)					

57	56	55	54	53	52	51	50	49	48	47	46
Double cone blander 2kg	Ball Mill SS Jar 1kg	Orbital Incubator shaker	BOD incubator	Colony counter	Laminar Air Flow	Histamine Chamber for Guinea pig large chamber	Air curtain	Microscope Model RXL-5T with procam 3mp colour	Refrigerator	Sphygnometer	Simple Microscope
INCO	INCO	INCO	Max. Electronics	INCO				Radical	Godraj,LG		
26-12-2009	26-12-2009	26-12-2009	21-08-2010	21-08-2010		09-06-2012	16-01-2013	26-04-2014	10-03-2018		
12587	11400,	66310	65390,	3420	25025,	11900,	16500,	66334,	19800,		
1	1	1	1	1	1		1	1	3	3	11
		1(205)	1(205)		1(205)						
									1(401),1(407)		
						1(305)				3(301)	11(301)
1(102)	1(102)										
							1(404)	1(404)			
				1(206)					1(206)		

69	68	67	66	65	64	63	62	61	60	59	58
Acetophoto meter 4 digit	Tablet punching machine(Single Punch)	Tablet punching machine (8 Station)	Disintegrator test app.	Dissolution test app. 8Basket	Dissolution test app. Single Basket	Bottle sealing machine	Capsule filling machine	Bottle washing machine	Incubator 18'x18'x18'	Autoclave double drum 12'x20' (2)	Flame photometer
INCO	INCO	INCO	INCO	Electrolab	INCO(205,102)	INCO	INCO	INCO	INCO	Inco	INCO
21-08-2010	21-08-2010	16-02-2013	21-08-2010	24-04-2012	09-06-2012	21-08-2010	21-08-2010	21-08-2010	21-08-2010	26-12-2009	26-12-2009
12255,	15675	3,49,214	11875,	2nos(4,02,878)	11500,	10165	11400,	13585,	17860		25935,
1	1	1	1	2	3	1	1	1	1	2	1
			1(205)	1(207)	1(207),1(205)					1(201),1(207)	
1(303)									1(305)		
	1(102)	1(102)	1(102)	1(102)	1(102)	1(102)	1(102)	1(102)			
											1(104)

81	80	79	78	77	76	75	74	73	72	71	70
Crimping Machine	Ampoule filling & sealing Machine	Ampoule Washing Machine	Monsanto hardness Tester	Pfizer type hardness tester	Clarity Test apparatus	Bulk density apparatus	Biosafety Cabinet 4x2 x2	Incubator 18'x18'x18'	Hot air oven	Fume hood (6x2.5x2.5ft .)	Convulsiom eter
INCO	INCO	INCO	INCO	INCO	INCO	INCO	Viometra	INCO	INCO	Scientific tech.(Viome)	INCO
21-08-2010	21-08-2010	21-08-2010	21-08-2010	21-08-2010	21-08-2010	21-08-2010	27-11-2014	21-08-2010	21-08-2010	29-11-2014	21-08-2010
1710,	8075	1710,	1283,	3325,	1710,	7410	Combind Bill	17860	17670	Combind Bill	15105,
1	1	1	1	1	1	1	1		5	1	1
				1(207)	1(205)				1(205)		
									1(401),1(403),1(407)	1(401)	
								1(305)			1(305)
						1(102)					
1(102)	1(102)	1(102)	1(102)						1(102)		
							1(404)				

93	92	91	90	89	88	87	86	85	84	83	82
Citizen Balance MP 300	Citizen weighing Balance(digital)model CY 120	Analytical balance	Digital Balance	Evolution 201 UV-VIS Spectrophotometer	UV Spectrophotometer	Frost Freeze dryer	Oil Bath	Camera Lucida	Stethoscope	Ointment Filling Machine	Friability test apparatus
09-06-2012	Citizen	INCO/SEN TWIN		Thermo Scientific	Systronics	Celfrost	INCO		INCO	INCO	INCO
22-09-2014	30-04-2013	09-06-2012	15-10-2010	24-02-2014	04-08-2010		21-08-2010	03-12-2008	19-04-2008	21-08-2010	21-08-2010
5775,	22000,	14500,	3500	3,65,000	2,20,500		9025	620	380,	5938,	5700,
1	1	4	4		2	1	1	20	3	1	1
		4(403)	4(401)			1(404)	1(403)				
									2(303)		
	1(301)							20(301)			
										1(102)	1(102)
				1(404)							
1(104)					1(104)						

105	104	103	102	101	100	99	98	97	96	95	94
Muffle Furnace	Percolator	Sonicator	FTIR	HPTLC	GLC	HPLC	Electronics Balance	Triple Beam Balance	Digital Balance 150 gm x 0.01 gm	Shimadzu Analytical Balance Model CY 224	Digital Balance (Model CY 220)
Rolex	INCO		Agilent Tech.	CAMAG	Nucon	Agilent Tech.	Aczet/CG-302 0.01 to 300g			Shimadzu	Citizen
15-10-2010	21-08-2010		17-10-2012	19-09-2016		13-08-2010	29-03-2018	21-04-2014		26-12-2017	27-11-2014
5775	522		5,75,500	5,10,750			11880	1820	7950	68500,	Combind Bill
1	2	1	1	1	1	2	2	1	1	1	1
	2(201)						1(207)				
							1(404)				
1(301)											
		1(104)	1(104)	1(104)	1(104)	2(104)			1(104)	1(104)	1(104)

106	Digital Melting Point Apparatus	INCO	21-08-2010	32110,	1							1(403)	
107	Lyophilizer	Allied Frost	07-01-2014	2,50,000	1					1(102)			
108	Bacteriological Incubator										1(404)		

Note: Give a separate table for Instrument room and Machine room listing all the instruments/equipment present with their make and model, existence of SOPs and Log Books for individual equipment.

Safety Measures: -

- Instrument room is equipped with A.C.
- All the equipment present in this room are equipped with stabilizer.
- Fire extinguishers are available.
- The cleanliness of this room is regularly maintained.
- There is regular Water supply in the lab.

Drug Museum (5)

(Type & quality of collection in the museum with proper labeling and display) The School has a Drug Museum which is used for the information to UG students. It is comprised of samples of different pharmaceutical dosage forms like tablet, capsules, syrups, injectables, cream/ointment, lotion etc and raw, dried plant drugs like Pepper, Mulethi, Ashwagandha, Senna, Ginger etc with labels.

Medicinal Plant Garden (5)

(Area, demarcation, temporary/permanent arrangement, planting of plants under the shade in demarcated areas, adequacy of the plants)

The School is having a permanent terrace medicinal garden with ground area 1500 sq. ft. comprising around 80 medicinal plants. Out of which some are native to Himalayan region. It also includes two poly houses for keeping the plants requiring shelter.

Plant name	Family	Plant name	Family	Plant name	Family
<i>Achillea millefolium</i>	Asteraceae	<i>Dioscorea villosa</i>	Dioscoreaceae	<i>Ocimum tenuiflorum</i>	Lamiaceae
<i>Achyranthes aspera</i>	Amaranthaceae	<i>Duranta repens</i>	Verbenaceae	<i>Origanum vulgare</i>	Lamiaceae
<i>Acorus calamus</i>	Acoraceae	<i>Eclipta alba</i>	Asteraceae	<i>Phyllanthus emblica</i>	Phyllanthaceae
<i>Adhatoda vasica</i>	Acanthaceae	<i>Ficus pumila</i>	Moraceae	<i>Pinus roxburghii</i>	Pinaceae
<i>Aegle marmelos</i>	Rutaceae	<i>Geranium cinerum</i>	Geraniaceae	<i>Psidium guajava</i>	Myrtaceae
<i>Allium tuberosum</i>	Alliaceae	<i>Ginkgo biloba</i>	Ginkgoaceae	<i>Psoralea corylifolia</i>	Fabaceae
<i>Aloe barbadensis</i>	Liliaceae	<i>Iris germanica</i>	Iridaceae	<i>Punica granatum</i>	Punicaceae
<i>Artemisia absinthium</i>	Compositae	<i>Jasminum officinale</i>	Oleaceae	<i>Putranjiva roxburghii</i>	Putranjivaceae
<i>Asparagus racemosus</i>	Asparagaceae	<i>Jasminum sambac</i>	Oleaceae	<i>Rauwolfia serpentina</i>	Apocynaceae
<i>Bambusa vulgaris</i>	Poaceae	<i>Jatropha curcas</i>	Euphorbiaceae	<i>Rhus cotinus</i>	Anacardiaceae
<i>Berberis aristata</i>	Berberidaceae	<i>Juniperus communis</i>	Cupressaceae	<i>Rosemarinus officinalis</i>	Lamiaceae
<i>Brugmansia suaveolens</i>	Solanaceae	<i>Lavandula angustifolia</i>	Lamiaceae	<i>Stevia rebaudiana</i>	Asteraceae
<i>Bryophyllum pinnatum</i>	Crassulaceae	<i>Malus domestica</i>	Rosaceae	<i>Syzygium cumini</i>	Myrtaceae
<i>Cassia fistula</i>	Fabaceae	<i>Malus tydeman</i>	Rosaceae	<i>Tamarindus indica</i>	Fabaceae
<i>Catharanthus roseus</i>	Apocynaceae	<i>Melissa officinalis</i>	Lamiaceae	<i>Thuja orientalis</i>	Cupressaceae
<i>Centratherum anthelminticum</i>	Malvaceae	<i>Mentha officinalis</i>	Lamiaceae	<i>Thymus vulgaris</i>	Lamiaceae
<i>Chicorium intybus</i>	Asteraceae	<i>Mentha spicata</i>	Lamiaceae	<i>Tecoma stans</i>	Bignoniaceae
<i>Cinnamomum camphora</i>	Lauraceae	<i>Mimosa pudica</i>	Fabaceae	<i>Tylophora indica</i>	Asclepiadaceae
<i>Citrus lemon</i>	Rutaceae	<i>Mucuna pruriens</i>	Fabaceae	<i>Valeriana wallichii</i>	Valerianaceae
<i>Clitoria ternatea</i>	Fabaceae	<i>Musa acuminata</i>	Musaceae	<i>Vitis venifera</i>	Vitaceae
<i>Costus speciosus</i>	Zingiberaceae	<i>Ocimum basilicum</i>	Lamiaceae	<i>Withania somnifera</i>	Solanaceae
<i>Curcuma longa</i>	Zingiberaceae	<i>Ocimum canum</i>	Lamiaceae	<i>Woodfordia fruticosa</i>	Lythraceae
<i>Cymbopogon citratus</i>	Poaceae	<i>Ocimum sanctum</i>	Lamiaceae	<i>Zanthoxylum armatum</i>	Rutaceae

School of Pharmaceutical Sciences

Non-Teaching Support (20)

Availability of adequate and qualified technical supporting staff for program specific laboratories (10)

(Assessment based on the information provided in the preceding table)

Name of the technical staff	Designation	Date of Joining	Qualification		Other Technical Skills Gained	Responsibility
			At Joining	Now		
Kamlesh Kumar	Office Assistant	11/09/2010	B.A.	B.A.	N/A	All the documentation in office
Renu Sharma	Lab Technician	15/07/2010	D. Pharm	Pursuing B. Pharmacy Practice	N/A	Pharmaceutics Lab/ Central Store
Kalpna Kashyap	Lab Technician	25/07/2011	D. Pharm	D.Pharm	Handling of UV, FT-IR	Pharmacognosy Lab, Examination
Manju Sharma	Office Assistant	03/09/2012	12 th	12 th	N/A	All the documentation in office
Kriti	Lab Technician	03/09/2012	D. Pharm	Pursuing B. Pharmacy	N/A	Chemistry Lab, Glassware Store

				Practice		
Meenakshi Sharma	Lab Technician	02/07/2013	D. Pharm	Pursuing B. Pharmacy Practice	Handling of UV, FT-IR	Pharmacology Lab, Central Instrumentation Lab
Amit Kumar	Animal House Keeper	21/08/2012	12 th	12 th	Handling of animals and experimentation related skills	Animal House
Vikas Panwar	Lab Attendant	01/05/2012	12 th	12 th	Laboratory related skills	Pharmacology Lab
Kanwar Singh	Lab Attendant	05/09/2012	12 th	12 th	Laboratory related skills	P'Ceutical Chemistry Lab
Vikram Singh	Lab Attendant	25/06/2010	12 th	12 th	Laboratory related skills	Pharmacognosy Lab
Harnam Singh	Lab Attendant	12/03/2013	12 th	12 th	Laboratory related skills	Machine Room
Geeta Devi	Lab Attendant	01/03/2013	12 th	12 th	Laboratory related skills	Pharmaceutics Lab
Rama Devi	Peon	12/10/2010	8 th	8 th	N/A	Cleaning
Soma Devi	Peon	15/02/2010	8 th	8 th	N/A	Cleaning
Kiran Devi	Peon	5/2/2013	8 th	8 th	N/A	Cleaning
Ranjeet Kumar	Accountant	7/7/2012	B.A	B.A	N/A	Account office
Rajan	Transport Officer	1/03/2011	B.A	B.A	N/A	Transportation
Suresh Kumar	Landscaping Incharge	1/03/2012	12 th	12 th	N/A	Landscaping
Sunil Kumar	Attendant	5/01/2011	12 th	12 th	N/A	Attendant

Arti Chanta	Librarian	1/05/2015	M.Lib	M.Lib	N/A	Library
Neha	Assistant Librarian	2/06/2015	M.Lib	M.Lib	N/A	Library

Incentives, skill upgrade, and professional advancement (10)

(Assessment based on the information provided in the preceding table)

Technical training sessions/ workshops are organized for the technical staff. Induction sessions for new equipment/ instrument are arranged. Incentives are provided as per the University Appraisal System.

Criterion 7

CRITERION 7	Continuous Improvement	75
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7. Continuous Improvement (75)

7.1 Improvement in Success Index of Students without the backlog (15)

Items	LYG (2017-18)	LYGm1 (2017-18)	LYGm2 (2016-17)
Success index (from 4.2.1)	0.55	0.46	0.45

SI= (Number of students who graduated from the program without backlog)/(Number of students admitted in the first year of that batch and admitted in 2nd year via lateral entry)

Assessment shall be based on improvement trends in success indices. Marks are awarded accordingly.

Improvement in Placement and Higher Studies (15)

Assessment is based on improvement in:

- *Placement: number, quality placement, core industry, pay packages etc.*
- *Higher studies: performance in GPAT etc., and admissions in premier institutions*

Items	LYG	LYGm1	LYGm2
Placement index (from 4.7)	0.87	0.79	0.86

Improvement in the API of the Final Year Students (10)

Academic Performance Index = ((Mean of Final Year Grade Point Average of all successful Students on a 10 point scale) or (Mean of the percentage of marks of all successful students in Final Year/10)) x (successful students/number of students appeared in the examination)

Successful students are those who passed in all the final year courses

Academic Performance Index	CAYm 1	CAYm2	CAYm3
Mean of CGPA or Percentage of all successful the students (X)	5.80	6.62	6.08
Total no. of successful students (Y)	59	48	47
Total no. of students appeared in the examination (Z)	59	48	47
API = X*Y/Z [Average API = (AP1 + AP2 + AP3)/3]	6.16		

Improvement in the quality of students admitted to the program (15)

Assessment is based on improvement in terms of ranks/score in qualifying state level/national level entrances tests, percentage marks in Physics, Chemistry and Mathematics in 12th Standard and percentage marks of the lateral entry students.

Item		CAYm1	CAYm2	CAYm3
National Level Entrance Examination (Name of the Entrance Examination)	No. of Students admitted	9	14	31
	Opening Score/Rank	42 (NEET/JEE)	47 (NEET/JEE)	57 (AIPMT/JEE)
	Closing Score/Rank	332 (NEET/JEE)	207 (NEET/JEE)	216 (AIPMT/JEE)
State/University/Level Entrance Examination/Others (Name of the Entrance Examination)	No. of Students admitted	79	67	18
	Opening Score/Rank	30 (HPCET)	27 (HPCET)	31 (HPCET)
	Closing Score/Rank	141.5 (HPCET)	89.5 (HPCET)	62.5 (HPCET)
Name of the Entrance Examination for Lateral Entry or lateral entry details	No. of Students admitted	3	4	1
	Opening Score/Rank	-	-	-
	Closing Score/Rank	-	-	-
Average CBSE/Any other Board Result of admitted students (Physics, Chemistry & Maths)		64.52%	65.59%	64.39%

Actions taken based on the results of evaluation of each of the POs (20)

Identify the areas of weaknesses in the program based on the analysis of evaluation of POs attainment levels. Measures identified and implemented to improve POs attainment levels for the assessment years.

Actions taken to be mentioned here.

The analysis of the PO attainment level has opened new dimensions towards improvement for the pharmacy program where introspection has been facilitated and precise areas of improvement have surfaced towards continuous improvement. Among the eleven Programs outcomes established, the attainment levels have ranged from 1.46 to 2.28 (2017-18), 1.2 to 2.3 (2016-17) and 1.4 to 2.2 (2015-16) where most of the program outcomes have been attained between medium towards high level, Some of the PO's required adequate intervention to increase the attainment level.

The detailed analysis has revealed that on one hand the attainment levels have been primarily influenced by alignment of courses of the programs & their contents and on the other hand they have been influenced by the attainment of the course outcomes targeted by the program. Therefore, an effective strategy after in-depth debate and consultation has been chalked out to improve the overall attainment of program outcomes in future. Among the main interventions proposed are:

Student Counselling & Interactions

Analysis expose that attainment of program outcomes are dependent on student performance in mid-term and end term examinations, however the interactions with the student reveal that their performance is further dependent on various other factors like their background of medium of instruction in their previous institution, personal issues, level of their IT literacy and cognitive abilities. With a view to tackle these impediments following corrective actions are being taken.

- More discussions among faculty and students in small groups in form of tutorials will be organized for enabling added discussions and better clarity of concepts.
- One on one sessions with students are proposed in order to comprehend their challenges to understand, implement and leverage the learnings in practical life. This will also provide valuable insights into barriers and possible solutions for achieving course outcomes.

- Since the medium of instructions followed in School of Pharmaceutical Sciences is English, therefore special coaching will be given to students who come with a Hindi background of education. This will help them in better understanding in class and effective writing in examinations.

Pedagogy

The effectiveness of class and understanding of the student needs more focus as course outcomes under direct assessment must be further strengthened. As an endeavour towards this, following interventions are proposed.

- Some case studies and project will be introduced to encourage the experiential and collaborative learning in the students. It is believed that such initiatives will increase the student engagement and also their interest in learning while working in groups which ultimately will improve their performance in planning ability, problem analysis and also in end term examinations.
- It has been resolved that since students of medical and non-medical background join School of Pharmaceutical Sciences and not having strong foundation of pharmacy courses, therefore the students will be required to take remedial course.
- Collaborative learning will be initiated where students who need extra support will be divided into groups and each group will be mentored by a student with excellent grades. The group mentors will counsel, support and mentor members of the group in a way that it leads to better performance of weak students in direct and indirect assessment. Further each of these mentors of groups will be mentored by faculty member.

Evaluation

While, the School of Pharmaceutical Sciences is following the continuous evaluation system according to PCI, following corrective measures will be taken to improve the evaluation system:

1. The number of quizzes and test will be increased. Quiz/test on every topic will be taken to assess the understanding of students and to identify the gap, if any and corrective measures like mentoring or special tutorial can be taken immediately.
2. In continuation to the initiatives on collaborative and experiential learning, PCI Guidelines will be introduced as an evaluation criterion to see the level of attainment by every student. Question papers will be prepared as per the PCI Guidelines so that

the proportion of students achieving the desired levels such as understanding of the concept, acquiring knowledge, applying knowledge in pharmaceutical problems etc.

Examples of analysis and proposed action

Sample 1-Course outcomes for a laboratory course in Pharmaceutical analysis did not measure up, as some of the laboratory instruments are not calibrated, standardized and not optimally used, as there was no laboratory work involving the use of HPLC and UV-visible spectrophotometer.

Action taken-The practical work in Pharmaceutical analysis has been upgraded by inclusion of analytical experiments involving the use of HPLC and UV-visible spectrophotometer with the help of SOPs generated.

Sample 2-In a course on Pharmaceutics theory, student performance has been consistently low with respect to some COs as analysis of answer scripts and discussions with the students revealed that this could be attributed to a weaker course and its delivery on GMP, GLP and Drug Regulatory Affairs.

Action taken-The theory course in Pharmaceutics and its delivery has been strengthened by including specific topics on quality control and quality assurance taught by experts drawn from Industry, Academia and Drug Regulatory Authorities.

Sample 3-In a course of Bio-pharmaceutics theory and practical, the students' performance has been low with respect to attainment of some COs as it was revealed that theory and practical component in physical pharmacy is weak and contributed to poor basic concepts and their applications in higher classes.

Action taken- Extra classes were arranged for the students on the emphasis of the basic concepts in physico-chemical properties like PKA, Partition Coefficient, Biopharmaceutical Classification System (BCS) and other terms.

POs Attainment Levels and Actions for improvement – CAY (2017-18)

POs	Target Level	Attainment Level	Observations
			<p>PO1: Pharmacy Knowledge: Possess knowledge and comprehension of the core and basic knowledge associated with the profession of pharmacy, including biomedical sciences; pharmaceutical sciences; behavioral, social, and administrative pharmacy</p>

sciences; and manufacturing practices.			
PO1	2.5	2.28	Attainment level partially achieved.
Action 1: Guest Lectures, tutorials and Guru talk were proposed and organized for the improvement in the pharmacy related knowledge of students of School of pharmaceutical Sciences.			
PO2: Planning Abilities: Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines.			
PO2	2.0	1.69	Attainment level partially achieved.
Action 1: SPRINT session were planned and organized.			
Action 2: Group discussion were planned and organized for the students.			
Action 3: Debates were planned and organized for the students.			
Action 4: CV writing based on pharmacy background were planned and organized for the students			
PO3: Problem analysis: Utilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Find, analyze, evaluate and apply information systematically and shall make defensible decisions.			
PO3	2.5	2.01	Attainment level partially achieved.
Action 1: More quizzes, class test, presentation and GD were arranged for the students to emphasize on the basic concepts of pharmaceutical Sciences.			
Action 2: Regular tutorials involving problem solving session were conducted.			
PO4: Modern tool usage: Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of the limitations.			
PO4	2.5	1.89	Attainment level partially achieved.
Action 1: Emphasize on training of modern instrumentation techniques used in Pharmaceutical Sciences such as HPLC, UV, GC and FTIR etc.			
Action 2: Introduce a new modern instrumentation technique HPTLC in pharmaceutical			

Sciences.			
Action 3: Introduce a new modern instrumentation technique in pharmaceutical Sciences.			
PO5: Leadership skills: Understand and consider the human reaction to change, motivation issues, leadership and team-building when planning changes required for fulfillment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizens or leadership roles when appropriate to facilitate improvement in health and well-being.			
PO5	2.5	1.93	Attainment level partially achieved.
Action 1: A project allotted to the group of students under the supervision of a faculty. During the project the students will have to find out the problem and plan to solve the problem.			
Action 2: SPRINT program, group discussion and debates were planned and organized.			
PO6: Professional Identity: Understand, analyze and communicate the value of their professional roles in society (e.g. health care professionals, promoters of health, educators, managers, employers, employees).			
PO6	2.5	2.12	Attainment level partially achieved.
Action 1: Drugs and disease awareness camps organized in nearby villages.			
Action 2: Poster presentation competition planned and organized.			
Action 3: Health care professionals and social workers were invited for guest lecture in the institute.			
Action 4: Assigning society survey-based projects to students.			
PO7: Pharmaceutical Ethics: Honor personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.			
PO7	2.0	1.54	Attainment level partially achieved.
Action 1: Special teaching on pharmaceutical ethics and role of pharmacist in society were organized.			

Action 2: Special teaching on GLP, GMP guidelines and their role in pharmacy were organized.			
PO8: Communication: Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and write effective reports, make effective presentations and documentation, and give and receive clear instructions.			
PO8	2.5	1.77	Attainment level partially achieved.
Action 1: Assignments and project report writing tasks are given to the students.			
Action 2: Writing seminars are organized			
Action 3: Lectures on improvement of communication skills are organized.			
Action 4: Group discussion and debates are organized			
PO9: The Pharmacist and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice.			
PO9	2.5	1.86	Attainment level partially achieved.
Action 1: Students are encouraged to attend conferences/workshops/seminars on health, safety and legal issues related to Pharmacy.			
Action 2: Students are encouraged to visit hospital and retail pharmacies			
PO10: Environment and sustainability: Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.			
PO10	2.0	1.46	Attainment level partially achieved.
Action 1: Student visit to regional hospital were organized to demonstrate the disposal of biomedical waste.			
Action 2: Every year students of School of pharmaceutical Sciences visit the nearby villages on World Pharmacist Day to understand the societal and environmental contexts of Pharmacy.			
PO11: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of			

technological change. Self- assess and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis.			
PO11	2.0	1.78	Attainment level partially achieved.
<p>Action 1: Pharmaceutical industrial visit was arranged for the students to emphasize on the basic concepts and technological advancement in pharmaceutical industry.</p> <p>Action 2: Students are also provided regular feedback on the courses studied by them in the respective semesters.</p> <p>Action 3: Stress on attending national and international conferences/ workshops/ Seminars related to Pharmaceutical Sciences.</p>			

POs Attainment Levels and Actions for improvement – CAY (2016-17)

POs	Target Level	Attainment Level	Observations
PO1: Pharmacy Knowledge: Possess knowledge and comprehension of the core and basic knowledge associated with the profession of pharmacy, including biomedical sciences; pharmaceutical sciences; behavioral, social, and administrative pharmacy sciences; and manufacturing practices.			
PO1	2.5	2.3	Attainment level achieved.
Action 1: Guest Lectures and tutorials were proposed and organized for the improvement in the pharmacy related knowledge of students of School of pharmaceutical Sciences.			
PO2: Planning Abilities: Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines.			
PO2	2.0	1.6	Attainment level partially achieved.
<p>Action 1: SPRINT session were planned and organized.</p> <p>Action 2: Group discussion were planned and organized for the students.</p> <p>Action 3: debates were planned and organized for the students.</p>			
PO3: Problem analysis: Utilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice.			

Find, analyze, evaluate and apply information systematically and shall make defensible decisions.			
PO3	2.0	2.0	Attainment level achieved successfully.
<p>Action 1: More quizzes, class test, presentation and GD were arranged for the students to emphasize on the basic concepts of pharmaceutical Sciences.</p> <p>Action 2: Regular tutorials involving problem solving session were conducted.</p>			
PO4: Modern tool usage: Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of the limitations.			
PO4	2.0	1.8	Attainment level partially achieved.
<p>Action 1: Emphasize on training of modern instrumentation techniques used in Pharmaceutical Sciences such as HPLC, GC and FTIR etc.</p> <p>Action 2: Introduce a new modern instrumentation technique HPTLC in pharmaceutical Sciences.</p>			
PO5: Leadership skills: Understand and consider the human reaction to change, motivation issues, leadership and team-building when planning changes required for fulfillment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizens or leadership roles when appropriate to facilitate improvement in health and well-being.			
PO5	2.0	1.7	Attainment level partially achieved.
<p>Action 1: A project allotted to the group of students under the supervision of a faculty. During the project the students were asked to identify the problem and plan to solve the problem.</p> <p>Action 2: SPRINT program, group discussion and debates were planned and organized.</p>			
PO6: Professional Identity: Understand, analyze and communicate the value of their professional roles in society (e.g. health care professionals, promoters of health, educators, managers, employers, employees).			
PO6	2.0	1.8	Attainment level partially achieved.
Action 1: Drugs and disease awareness camps organized in nearby villages.			

Action 2: Poster presentation competition planned and organized.			
Action 3: Health care professionals and social workers were invited for guest lecture in the institute.			
PO7: Pharmaceutical Ethics: Honor personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.			
PO7	2.0	1.5	Attainment level partially achieved.
Action 1: Special teaching on pharmaceutical ethics and role of pharmacist in society were organized.			
PO8: Communication: Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and write effective reports, make effective presentations and documentation, and give and receive clear instructions.			
PO8	2.0	1.8	Attainment level partially achieved.
Action 1: Assignments and project report writing tasks are given to the students.			
Action 2: Writing seminars are organized			
Action 3: Lectures on improvement of communication skills are organized.			
PO9: The Pharmacist and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice.			
PO9	2.0	1.9	Attainment level achieved.
Action 1: Students are encouraged to attend conferences/workshops/seminars on health, safety and legal issues related to Pharmacy.			
Action 2: Students are encouraged to visits hospital and retail pharmacies			
PO10: Environment and sustainability: Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge			

of, and need for sustainable development.			
PO10	2.0	1.2	Attainment level partially achieved.
Action 1: Every year students of School of pharmaceutical Sciences visit the nearby villages at on World Pharmacist Day to understand the societal and environmental contexts of Pharmacy.			
PO11: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self- assess and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis.			
PO11	2.0	1.7	Attainment level partially achieved.
Action 1: Pharmaceutical industrial visit was arranged for the students to emphasize on the basic concepts and technological advancement in pharmaceutical industry.			
Action 2: Students are also provided regular feedback on the courses studied by them in the respective semesters.			

POs Attainment Levels and Actions for improvement – CAY (2015-16)

POs	Target Level	Attainment Level	Observations
PO1: Pharmacy Knowledge: Possess knowledge and comprehension of the core and basic knowledge associated with the profession of pharmacy, including biomedical sciences; pharmaceutical sciences; behavioral, social, and administrative pharmacy sciences; and manufacturing practices.			
PO1	2.0	2.2	Attainment level achieved successfully.
Action 1: Guest Lectures were proposed and organized for the improvement in the pharmacy related knowledge of students of School of pharmaceutical Sciences.			
PO2: Planning Abilities: Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines.			

PO2	2.0	1.5	Attainment level partially achieved.
Action 1: SPRINT session were planned and organized.			
PO3: Problem analysis: Utilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Find, analyze, evaluate and apply information systematically and shall make defensible decisions.			
PO3	2.0	1.8	Attainment level partially achieved.
Action 1: More quizzes, class test, presentation and GD were arranged for the students to emphasize on the basic concepts of pharmaceutical Sciences.			
PO4: Modern tool usage: Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of the limitations.			
PO4	2.0	1.5	Attainment level partially achieved.
Action 1: Emphasize on training of modern instrumentation techniques used in Pharmaceutical Sciences such as HPLC, GC and FTIR etc.			
PO5: Leadership skills: Understand and consider the human reaction to change, motivation issues, leadership and team-building when planning changes required for fulfillment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizens or leadership roles when appropriate to facilitate improvement in health and well-being.			
PO5	2.0	1.7	Attainment level partially achieved.
Action 1: A project allotted to the group of students under the supervision of a faculty. During the project the students were asked to identify the problem and plan to solve the problem.			
PO6: Professional Identity: Understand, analyze and communicate the value of their professional roles in society (e.g. health care professionals, promoters of health, educators, managers, employers, employees).			
PO6	2.0	1.8	Attainment level partially achieved.

Action 1: Drugs and disease awareness camps organized in nearby villages.			
PO7: Pharmaceutical Ethics: Honor personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.			
PO7	2.0	1.7	Attainment level partially achieved.
Action 1: Special teaching on pharmaceutical ethics and role of pharmacist in society were organized.			
PO8: Communication: Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and write effective reports, make effective presentations and documentation, and give and receive clear instructions.			
PO8	2.0	1.6	Attainment level partially achieved.
Action 1: Assignments and project report writing tasks are given to the students.			
PO9: The Pharmacist and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice.			
PO9	2.0	1.9	Attainment level achieved.
Action 1: Students are encouraged to attend conferences/workshops/seminars on health, safety and legal issues related to Pharmacy.			
PO10: Environment and sustainability: Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.			
PO10	2.0	1.4	Attainment level partially achieved.
Action 1: Every year students of School of pharmaceutical Sciences visit the nearby villages at on World Pharmacist Day to understand the societal and environmental contexts of			

Pharmacy.			
PO11: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self- assess and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis.			
PO11	2.0	1.8	Attainment level partially achieved.
Action 1: Pharmaceutical industrial visit was arranged for the students to emphasize on the basic concepts and technological advancement in pharmaceutical industry.			

Criterion 8

CRITERION 8	Student Support Systems	50
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8. Student Support Systems (50)

Mentoring system to help at individual levels (5)

Type of mentoring: Professional guidance / career advancement / course work specific / laboratory specific / all-round development
 Number of faculty mentors:
 Number of students per mentor: Frequency of meeting:

(Details of the mentoring system that has been developed for the students for various purposes and also state the efficacy of such system)

Mentoring System	Yes
Type of mentoring	Total development
Number of faculty members	22
Number of students per mentor	10-12
Frequency of meeting	Every week

Details of the mentoring system

- A faculty mentor is assigned to a group of 4-5 students to deal with their problems
- The mentor maintains record of students.
- The mentor regularly meets and observes the overall growth of student and provides counselling whenever required.
- The mentor also makes sure to maintain a regular parent-teacher dialogue.

Efficiency of the system

- The system develops an interaction among the teachers, students and parents.
- The system helps to improve the academic performance of the students.
- The system provides scope for healthy, positive and stress-free state of mind.
- The mentors meet the students periodically and monitor their performance and their activities.

Guidance regarding the lagging issues is provided. Occasionally tutor meeting with the parents is conducted based on the requirement.

Feedback analysis and reward /corrective measures taken, if any (10)

Feedback collected for all courses: YES/NO Specify the feedback collection process: Percentage of students who participated: Specify the feedback analysis process: Basis of reward / corrective measures, if any: Number of corrective actions taken in the last three years:

(The institution needs to design an effective feedback questionnaire. It needs to justify that the feedback mechanism developed by the institution really helps to evaluate teaching, and finally, contributes to the quality of teaching and ensure attainment of set levels for each PO)

Program Assessment Committee regularly takes the feedback from the students (70-80 % participants) for all the Internship/Training program.

Feedback collection and analysis process:

Student feedback is taken on teaching and for each course taught by the faculty members.

Faculty performance: In order to keep a measure of our teaching performance, we conduct a comprehensive feedback at the end of each semester. We take it online on the Shoolini LMS (Learning Management System) **eUniv** in order to understand the students' perception of a faculty's pedagogy, knowledge of the subject and other traits like punctuality, handling the class, language/gesture, clarity of words etc. To maintain the credit-worthiness of feedback, we use the following techniques/ characteristics:

1. **Anonymity:** We keep the feedback anonymous so that no one can know the identity of the student giving the feedback. eUniv team goes to the classes and updates the students about the anonymity of the feedback through live demonstrations. We practice this in order to make students comfortable and to encourage them to give true feedback without any fear.
2. **Secrecy/ Surprise:** We take the students feedback surprisingly so that no faculty member can influence the students' opinion before filling up the feedback.
3. **Transparency:** In our bid to maintain 100% transparency, we take feedback online on eUniv and open the feedback to the faculty members once the result of that particular semester has been declared. Faculty members, then can see the student's comments and can improve themselves wherever required.

4. **Analysis and submission for review:** Once the feedback is closed, we perform an analysis of the feedback and share compiled data with the respective Head of schools / Deans and the Registrar office so that the corrective action is taken, wherever required.
5. **Manthan:** It is generic feedback which we take annually from the students and faculty/ staff members separately to know about their views and suggestion for overall improvement in the facilities available at the University Campus. We keep this feedback as anonymous to encourage students, faculty, and staff to write fearlessly and honestly so that management can get true feedback and they can take necessary steps to correct them. To maintain the credit-worthiness of Manthan feedback we use the following techniques/ characteristics:
6. **Promotion of the event:** We promote this event more and more through emails, SMS and in the class rooms so that a good strength participates in this event and we can get a genuine and the majority of comments on the things which are required to be corrected.

Sample Feedback

Mode: Anonymous

There are required fields in this form marked *

General

Regular and punctual in taking the classes. *

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Content

Has good subject matter knowledge/ command over the subject. *

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Subject of the topic is presented systematically, clearly & according to the lecture schedule. *

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Pedagogy

Encourage student participation and class discussions. *

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Use of PPT's/ audio-visual aids/ examples/ diagrams. *

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Communication/Control

Easily/ comfortably manages/ handles (any misconduct/ misbehavior) the students in class. *

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Language/ Words/ Gestures/ Sound is loud and clear & easily understood. *

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

eUniv

Course supplement on eUniv is regularly updated with sufficient content (Lecture Schedule, PPT, PDF, Student notes, Video Lectures) *

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Takes tests, assignments etc. on eUniv. *

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Overall Rating

Should he/she be teaching this course to the next set of students? *

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

What is your overall rating for the teacher with respect to this course? *

- 1 Star (Lowest)
- 2 Star
- 3 Star
- 4 Star
- 5 Star (Highest)

Any other suggestions or comments:

Submit your answers

Cancel

Feedback on facilities (5)

(Assessment is based on feedback collection, analysis and corrective action taken in respect of library, computing facilities, canteen, sports etc.)

Academic excellence is ensured through feedback from faculty, peers, students, recruiters, alumni and the same is incorporated for progressive improvement of the facilities provided. Students' feedback is collected through a well-structured questionnaire for improvement of the University's performance and is taken in each semester.

The questionnaire covers the following aspects:

- Feedback on teachers on teaching pedagogy, punctuality, timely completion of syllabus, evaluation etc.
- Curriculum improvement and skill development
- Infrastructure and hostel facilities
- Library and Knowledge Center
- Food and transportation
- ICT facilities, eUniv and LMS
- Sports facilities
- Campus life and extra-curricular activities
- Examinations & evaluation

Student feedback ensures that each faculty member is assessed for effectiveness of teaching and this is a key parameter in the appraisal. Regular meetings are also held by the Deans with the class representatives.

The feedback form is attached in point 8.2.

The University also gets feedback from national/ international faculty, potential employers, scientists, alumni and other eminent personalities who visit the campus during placement week, workshops, conferences, SPRINT program and Guru Series talks.

Stakeholders	Purpose of Interaction
Students and Parents	<ul style="list-style-type: none"> - Student's feedback on the School's functioning and academics is taken in each semester. - Feedback given consideration in performance appraisals. - Suggestions and feedback from parents is also sought during their visits to the campus and given due weightage.
Alumni	<ul style="list-style-type: none"> - Alumni support the School through feedback on curriculum and industrial visits/trainings - Formal and informal interactive sessions on various forums like SPRINT, Guru Series and Alumni Meets are organized to encourage and motivate students.
Society	<ul style="list-style-type: none"> - The University is highly cognizant of its civic responsibilities and encourages formal and informal interaction for community development through various extension activities.
Recruiters	<ul style="list-style-type: none"> - Recruiters' feedback incorporated for development of the outcome driven and skill-based curriculum to ensure better
Industry	<ul style="list-style-type: none"> - School encourages interactions and industry tie ups. - Industry experts have been included in Board of Studies. - Frequent visits of the industry experts to the campus for guest lectures are organized to update students with the dynamics of corporate world. - Industrial visits for students and faculty are encouraged to expose them to the practical work environment. - Impact of strong industry links can be witnessed through the University excellent placement record.

Employer feedback form

SHOOLINI UNIVERSITY EMPLOYER FEEDBACK FORM

Shoolini University values your association and wishes to establish a stronger relationship in a very pleasant and prolific way in future. Many graduates of our Department/College/Institute/University are already working in your organization. We are thankful to you for providing them employment with your prestigious Company/Organization. We shall very much appreciate and be grateful to you if you can spare some of your valuable time to fill up this feedback form. We wish to have your opinions and suggestions for further improving the quality of academics and enhancing the credibility of the university by giving you better employees in future.

Please spare your valuable time to fill in this feedback form, your opinion would be cherished!

S.No.	Employee Characteristics	Excellent (4)	Very Good (3)	Good (2)	Average (1)	Poor (0)
1	Verbal communication skills		✓			
2	Written communication skills		✓			
3	Adherence to organizational norms	✓				
4	Dependability, reliability.	✓				
5	Comfortable with IT tools	✓				
6	Cooperation and willingness to follow directions	✓				
7	Team player	✓				
8	Courtesy with staff and customers/clients	✓				
9	Completion of projects	✓				
10	Quality of work	✓				
11	Self-motivated and taking on appropriate level of responsibility	✓				
12	Ability to manage/leadership qualities	✓				
13	Innovativeness, creativity	✓				
14	Open to new ideas and learning new techniques	✓				
15	Ability to manage/leadership qualities	✓				
16	Ability to take up extra responsibility	✓				
17	Obligation to work beyond schedule if required	✓				

Will you continue to recruit students from Shoolini? Absolutely Yes No

Will you refer Shoolini University for recruitment to other organisations? Yes No

Attributes that attract you to hire from Shoolini:

Students are very professional in their approach.

Suggestions for Improvement:

The application knowledge among students is good
however, I felt they may further be reinforced
on knowledge as few of them lacked.

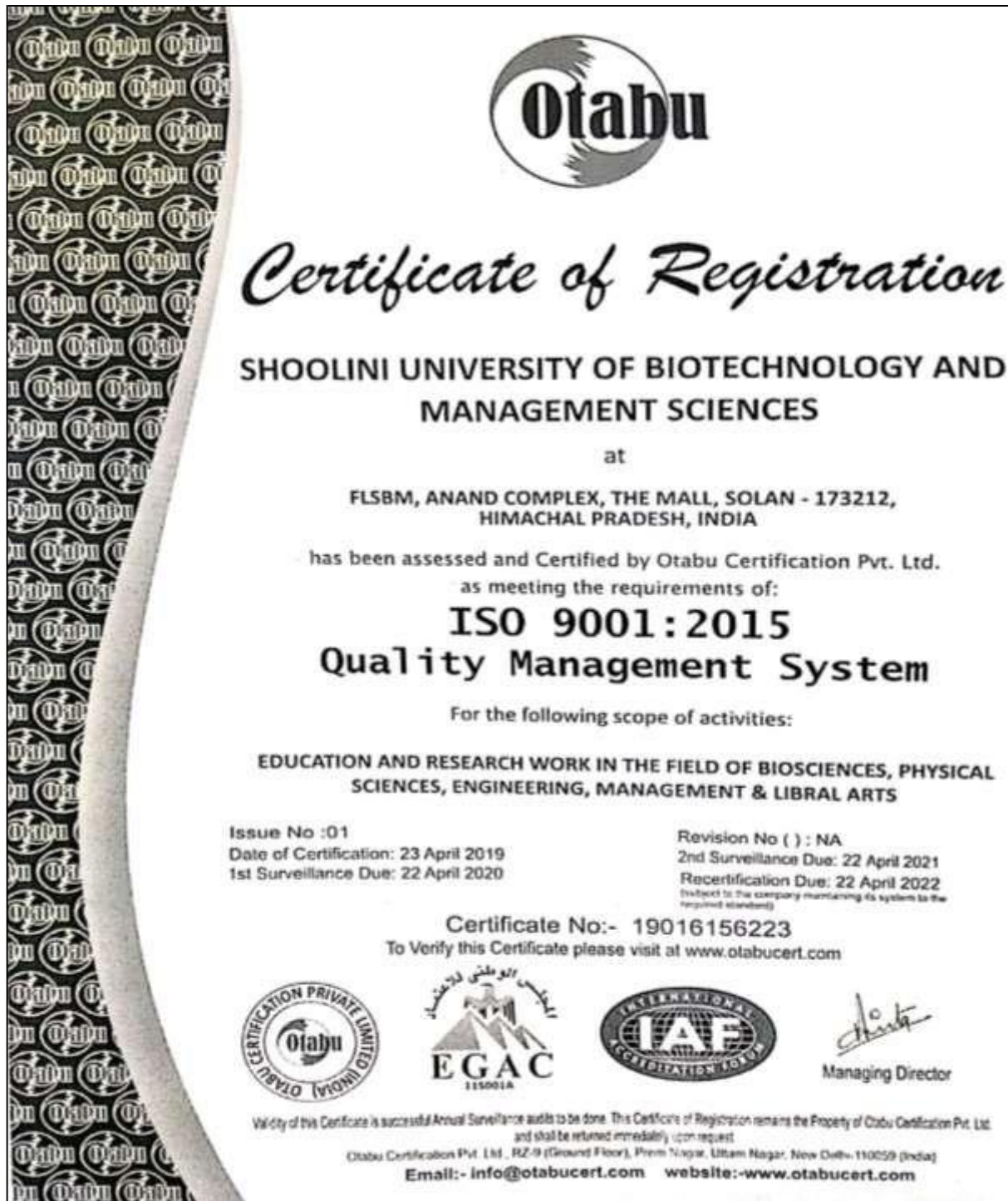
Name: DIPANKER SHARMA/ Position: Managing Director

Phone: SATYEN SHARMA email: _____
9818678249

Company/organization: TAXUS MEDITECH

Date: 24/04/2019

In order to obtain a dispassionate and objective assessment, the University has obtained ISO 9001:2015 certification.



Self-Learning (5)

(Specify the facilities, materials and scope for self-learning / learning beyond syllabus and creation of facilities for self-learning / learning beyond syllabus)

Scope for self-learning beyond the syllabus

1. The students are encouraged to undertake self-learning module. They utilize this mode for posters presentation and power points for oral presentation.
2. They are allowed to participate in intercollegiate competitions conducted as national events such as conferences and seminars.
3. The students carry out a minor research project spread over four years of their B-Pharmacy course that involves the collection of research materials from literature, research work, organizing, formatting and submitting the write-ups as a report and presentation at the end of every semester.
4. Students are encouraged to utilize facilities to promote synthesis of knowledge by research, while choosing the topic for seminars, industry oriented mini projects.
5. The students give oral presentation with the help of audiovisual aids. In the evaluation process, two teachers are involved for giving feedback and grade is awarded.
6. The computer laboratory is equipped with internet facility. It is opened to the students in self-learning module. Literature search is being attempted. Downloads are also permitted.
7. The library and information center have subscribed to EBESCO and DELNET and it is open to the students from where they can access thousands of reputed journals and books.
8. The library and information Centre have been contributing for last 12 yrs for hard bound journals of national and international repute. The back volumes are available.
9. The computer laboratory has scanning and printer facilities. The students are permitted to utilize the facilities.
10. The students are allowed to prepare their power-point material for oral and poster presentation
11. Apart from it, School also actively promotes Self learning through following ways:

S. No.	Resources
1	Group discussion, Brain storming sessions & Role play / peer discussion
2	Paper presentations in seminars
3	You-tube and Educational documentaries & Educational movies
4	Old question papers
5	Digital Library, ebooks

Career Guidance, Training, Placement (10)

(Specify the facility, its management and its effectiveness for career guidance including counseling for higher studies, campus placement support, industry interaction for training/internship/placement, etc.)

Focus on Placement

School of Pharmaceutical Sciences has a dedicated and student-driven proactive Placement and Career Development Cell, which looks after all activities related to career development, training and placement of students. The Placement and Career Development Cell, in coordination with different faculties and schools, conducts campus placements. During the placement season, a large number of MNCs and leading companies visit our campus for on spot placements.

The key points of placements are mentioned below:

- Active placement & career development cell, which frequently coordinates to give foothold to the students in the industry, higher education and entrepreneurship.
- Top placement for B. Pharmacy batches with excellent pay packages in reputed companies such as Sun Pharma, Abbott, Novo Nordisk, Torrent Pharmaceuticals, Cipla, Paraxel etc.
- Mission 130: Hundred percent employability for its students. This mission aims at providing 100 percent employability to students with 30 percent placed in world class companies.
Other aspects of 'Mission 130' include:
 - Summer placements
 - Placements opportunities to the alumni

Emphasis on Knowledge, Skills and Creative Abilities of students through' Add-on Modules'

Industry Module

The unique Module for Self-Improvement through“ meditation and yogic sciences is offered to B-Pharmacy students for building self-confidence and facing challenges in the corporate world.

Personality Development Modules

- The Communication Effectiveness Module offers best in class techniques on communications skill for interviews & managerial effectiveness.
- Module for computing skills focusing on data analytics and calculation

Skills Progression through Rapid Intensive and Innovative Training (SPRINT)

SPRINT was initiated to provide accelerated learning to rural and semi-urban youth – with the intent of raising their employable threshold.

This program was developed as a blend of Soft and Technical Skills and patterned on the lines of Stanford University’s Mini MBA. SPRINT has been phenomenally successful in creating employment as well as the personal and professional growth of students and has become one of our biggest strengths. Started as a pilot project for MBA students, the program has now been expanded to all Schools across the University. SPRINT has the potential to be extended beyond the campus – both as an extension and consultancy.

The success story of this program is a feather in the University’s cap. The pioneering program adopts a multi-pronged approach of adding, supplementing, updating, and reinforcing formal learning that students have acquired in their regular courses. **SPRINT** workshops are organized regularly on various themes for students of all streams.

Training:

Students of B-Pharmacy are required to undergo training at the end of sixth semester in any pharmaceutical industry or hospital for minimum period of 150 hours spread over 4 weeks.

Academic Year 2018-2019: Industry internship and summer training

S.No	Name	Company
1	Harpreet Kaur, Shivanjali, Sharma And Nishchay Pahiya	Aarge Healthcarft
2	Sumedha Joshi, Manish Kumar, Shubham Sharma, Ankit Sharma, Himanshi Sharma, Usha Kumari, payal, Shruti Thakur, Keshav Sharma, Sanjay Kumar and Sumanjali	Accent Pharmaceutical & Diagnostics
3	Abhilasha Sharma and Diksha Kashyap	Cadila
4	Pardeep Kumar	Chiros Pharma
5	Shubham, Manish Kumar and Ashish	Cipla
6	yashima patel and Riya Mehta	Copmed Pharmaceuticals Pvt Ltd
7	Sonia Rani, Sunidhi Bhardwaj, Laxmi Gharti and Mohammad Khalid Alam	Corona Remedies Pvt. Ltd
8	Chitesh Sharma, Anupam Thakur, Akhil Bhogal and Om Pal	Fermenta Biotech Limited
9	Akshay Kumar	Glenmark
10	Urvashi, Diksha Chauhan, Neha Sharma, and Sushant and Abhay Charak	Lenus Life Care Pvt. Ltd.
11	Satyan Sharma	Sun Pharma
12	Himanshu Bhaik and Ashish Sharma	Ultra Drugs Pvt Ltd
13	Vaishali Sharma and Sheetal Malta	Ultratech Pharmaceuticals
14	Aditya Negi, Nageshwar Sharma, Himanshu Kaushal and Praveen Thakur	Unichem laboratories Ltd
15	Ashish Thakur and Virender	Wockhardt Limited
16	Unnat Angrish and Samarth Sharma	Yester Pharma

Workshops attended by students

Conferences/training/workshops attended by students in last three years

Workshop/ Conference/ Seminar/	Venue and address	Date	Students	Faculty
Innovation and Entrepreneurship	UIPS, Panjab University, Chandigarh	9/4/19	40	Mr. Lalit Sharma and Dr. Poonam Negi
Bioinformatics and Proteomics Driven Biomarker Developments	Chitkara College of Pharmacy, Chitkara University, Chandigarh	7-8th April, 2017	6	Dr. Navneet Kumar Upadhyay and Dr. Rohit Goyal
Computer Aided Drug Design	Shoolini University, Solan	8/3/19	250	Dr. Deepak Kumar & Dr. Ashutosh Kar Das
Intellectual Property Rights (IPR) and Geographical Indications (GI)'	Shoolini University, Solan	16/3/17	10	Dr. Deepak N Kapoor and Dr. Rohit Goyal
New Horizons in Human Health and Nutrition	Shoolini University, Solan	2nd & 3rd March, 2017	10	Dr. Navneet Kumar Upadhyay
8th National IPA Student Congress	ISF college of Pharmacy, Moga, Punjab	3rd & 4th September, 2016	10	Dr. Deepak N Kapoor, Dr. Rohit Goyal and Mr. NK Upadhyay

Entrepreneurship Cell (5)

(Describe the facility, its management and its effectiveness in encouraging entrepreneurship and incubation)

Entrepreneurship cell and incubation facility: Entrepreneurship has assumed importance for accelerating economic growth in India. It promotes capital formation and creates wealth in country. It is a hope and dream of millions of individuals around the world. It reduces unemployment and poverty, and it is a pathway to prosper. Entrepreneurship is a process of exploring the opportunities in the market place and arranging resources required to exploit these opportunities for a long-term gain. It is a process of planning, and organizing opportunities and assuming. Thus, it is a risk of business enterprise. It may be distinguished as an ability to take risk independently to make utmost earnings in the market. It is a creative and innovative skill and adapting response to environment. Entrepreneurship development activities follows aim and general competencies:

Aim:

1. Developing entrepreneurial awareness and ability in students.
2. Creating a forum for potential entrepreneurs.

General Competencies:

1. Identifying facts, processes, and concepts specific to the field of pharmaceutical sciences.
2. Use of tools specific to the pharmaceutical sciences, so as to generally and specifically characterize a theoretical and a practical problem.
3. Interpreting the results of an analysis, or research, and the different approaches studied through the perspective of pharmaceutical sciences.
4. Realizing connections between knowledge acquired in the field of pharmaceutical sciences, by applying them for evaluating and optimizing solutions intended for critical situations.

The B-Pharmacy students of School of Pharmaceutical Sciences mostly opt for higher studies and jobs in pharmaceutical industries. Those interested in entrepreneurship are advised accordingly by the senior faculty members and industry experts.

Co-curricular and Extra-curricular Activities (10)

The University Campus is full of life with organized events and parties taking place throughout the year.

The campus provides opportunities to get involved in inter-faculty cultural programs, annual fest 'MOKSH', photography and painting contests, farewell and fresher's parties, and educational trips. It is home to multiple student clubs and societies, which connect students with a stronger sense of community, while providing opportunities for interpersonal and leadership development:

- Art & Photographic Club
- Bawale Bawarchi
- Blood Bank Society
- Dramatics Club
- Entrepreneurship Society
- Institute of Engineers Chapter
- Raagrang
- National Service Scheme (NSS)
- Satrangi Strokes
- Shoolini Mountaineering Society
- Speakers' Forum
- Saksham
- Inter department cultural competition at University level.
- State and national level participation in various competitions.
- Other co-curricular activities involve blood donation camp, plantation, health camp, health awareness for rural areas and career awareness for students of rural areas on Pharmacist day, flower fest and other occasions.
- Conferences/ Seminars: National level seminars are held in the institution premises for the benefits of teachers and student.
- Workshops: in-house workshops are held on practical skill development in pharmacy.

(ANNEXURE 3)

Criterion 9

CRITERION 9	Governance, Institutional Support and Financial Resources	100
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9. Governance, Institutional support and Financial Resources (100)

Organization, Governance and Transparency (50)

Governing body, administrative setup, functions of various bodies, service rules procedures, recruitment and promotional policies (10)

Shoolini University was set up by a reputed and well-known academician-India to Global standards is reflected in the institutional vision. The other promoters of the University are also leaders in their respective fields. The sponsors have strict principles when it comes to ensuring that the University is a true ‘not for profit’ institution. The sponsors of the University are also keen on contributing to the sustainability of the Himalayan region, upliftment of the rural youth of the region and their seamless merger with the national mainstream is accorded utmost priority by the University management. Shoolini University has evolved with research being the driving engine. The focus of the research, however, is biased on issues that pertain to the Himalayan region. The University’s distinctiveness arises out of this unyielding passion, shared by all its constituents, to address the needs of the mountain region and its people.

Shoolini University prides itself on its democratic, consensus-based and inclusive decision-making processes, which involve the participation of all the stakeholders; it is not a „one-way“ „top-down“ decision making process. On the contrary, the focus is on consensus building at various levels which allows members to partake, and in a way, this ensures their willing participation in its growth and progression.

Almost all the decision-making bodies like Academic council, Placement and Career Development Cell, Board of Management, Joint Research and Development Advisory Committee, Library Advisory Committee, Admission Committee, Sexual Harassment Prevention Committee, IQAC etc. have various stakeholders as members. The University ensures that all positions in various statutory bodies are filled in time.

The important academic and administrative bodies of the university are listed below:

1. Governing Body:

The Governing Council of the university is the supreme administrative body. Governance is the key activity that develops the relationship among the management, staff, students and the community, Shoolini University believes that it should be effective, efficient and economical and support modern governance and proper administration. University also believes that the duties of the governing body should be carried out in a way that actively acknowledges diversity.

The structure of governing body is given below:

S. No.	Governing Body Members	Designation
1	Shri Ramesh K. Mehan	Chancellor
2	Dr. P.K. Khosla	Vice Chancellor
3	Mrs. Saroj Khosla	President
4	Mr. Vishal Anand	Chief Finance & Accounts Officer, Trustee
5	Mr. Atul Khosla	Pro Vice Chancellor
6	Dr. R.S. Paroda	Former DG, ICAR
7.	Two persons nominated by the government	Nomination awaited
8	Two MLAs to be selected by state legislature	Nomination awaited
9.	Dr. Sunil Puri	Registrar

Total Meetings – 21, (In Last Academic Year 2017-18) - 4

The Governing Body have the following powers:

- to provide general superintendence, directions to control functioning of the University by using all such powers as are provided by this Act or the statutes, ordinances, regulations or rules made thereunder
- to review the decisions of other authorities of the University in case they are not in conformity with the provisions of this Act or the statutes, ordinances, regulations or rules made thereunder
- to approve the budget and annual report of the University

- d) to lay down the policies to be followed by the University
- e) to recommend to the sponsoring body about the voluntary liquidation of the University if a situation arises when smooth functioning of the University does not remain possible in spite of all efforts
- f) such other powers as may be prescribed by the Shoolini University Act

2. Academic Council:

The Academic Council being principal Academic Authority, supervises, directs and controls the standards of instructions, education and examinations and other matters connected with the obtaining of degrees and exercise such powers and perform such other duties as specified by the Shoolini Act.

The composition of Academic Council is as follows:

S. No.	Academic Council Members	Position
1	Vice Chancellor	Chairman
2	Dean, Faculty of Management Sciences & Liberal Arts	Member
3	Dean, Faculty of Pharmaceutical Sciences	Member
4	Dean, Faculty of Basic Sciences	Member
5	Dean, Faculty of Applied Sciences & Biotechnology	Member
6	Dean, Faculty of Engineering & Technology	Member
7	Dean of Academic Affairs	Member
8	Controller of Examination	Member
9	Dean of Student Welfare	Member
10	Head of Departments	Member
11	Dean of Planning & Placements	Member
12	Chief Knowledge Officer/Librarian	Member
13	Dr. Aniruddha Mitra	Member
14	Registrar	Member Secretary
15	Dr. Duni Chand	Member
16	Mr. Amit Khanna	Member

Total Meetings – 54, (In Last Academic Year 2017-18) – 8 The

Academic Council have the following powers and duties: -

- a) to exercise general supervision over the academic policies of the University, and to give directives regarding methods of instructions, combined teaching among Academic Units, evaluation of research or improvements in academic standards
- b) to bring about Inter-disciplinary, Inter-Faculty co-ordination to establish or appoint committees for taking up projects

- c) to consider matters of general academic interests either on its own initiative or referred to it by a Faculty or Board of Management and to take appropriate action thereon
- d) to frame regulations in consonance with the subsequent statutes and ordinances regarding the academic functioning of the University, discipline, residence, admissions, award of fellowships and studentships, fee concessions, attendance, internal assessment etc.
- e) to recommend to the Board of Management the draft of new ordinances or draft amendments to the existing ordinances relating to-
 - i. the qualifications of teacher
 - ii. student participation in Academic Units' affairs and governance
 - iii. management of Academic Units
 - iv. degrees, diplomas, certificates, and other academic distinctions to be awarded by the University, qualifications for the same, the duration of the courses of study and other essential features of such courses and the type and nature of examination for such degrees, diplomas or certificates and other academic distinctions
 - v. the conduct of examinations, including the terms of office and the manner of appointment and the duties of examining bodies, examiners and moderators
 - vi. the admission of the students of the University and their enrolment, the maintenance of discipline among the students; the conditions regarding the residence of students
 - vii. conditions for award of fellowships, scholarships, stipend, medals and prizes
 - viii. the fee to be charged for courses of study and for admission to the examinations, degrees and diplomas of the University
 - ix. remuneration to be paid to examiners, moderators and tabulators, etc.
 - x. creation, composition and functions of other bodies, committees, or boards necessary or desirable for improving the academic life of the University
 - xi. special arrangements, if any, for the residence, discipline and teaching of women students
 - xii. to recommend to the Chancellor introduction of new subject(s) or opening of new department(s) or Institute(s) or school(s) or center(s) of studies
 - xiii. to prescribe number, qualifications and other eligibility conditions for teachers and other academic staff subject to the qualifications specified by UGC and other regulatory bodies
 - xiv. to specify the manner of appointment to temporary vacancies of academic staff;
 - xv. to provide for the setting up of Chairs, appointment of visiting Professors, Emeritus Professors, Fellows, Artists, and Writers and determine the terms and conditions of such appointments

- xvi. to fix the remuneration payable to the course writers, counsellors, examiners & invigilators and travelling and other allowances payable, after consulting the Finance Committee
- xvii. to institute fellowships, scholarships, distinctions, studentships etc.

3. Anti-ragging Committee

The University has a well-defined anti-ragging committee. Since, the monitoring system is strong, no serious ragging case has been reported so far. Notwithstanding, the following initiatives have been taken to provide a congenial stay at the campus:

- Dean, Resident Students, who resides on the campus is deputed to keep a check on the students' activities and cater to their needs.
- Dean Student Welfare takes care of all the students welfare activities including prevention of ragging
- Frequent visits of the Vice-Chancellor and Deans to the hostels and campus rounds.
- Check on ragging activities by the hostel wardens.
- Check by the program coordinators at school level.
- Anti-Ragging campaigns by the students through videos/posters etc.
- Declaration by each student against indulging in ragging activities.
- Awareness about Anti-Ragging Committee and punishment rules for indulging in ragging, during the orientation program.

The anti –ragging committee was constituted to control ragging and provide relief to students who come under this shadow. The committee has the powers to take stringent action on students involving in such activities. The committee has the mechanism in place by means of which it ensures compliance with the UGC Regulations 2009 for curbing the menace of ragging at the institution level.

The Anti-ragging committee comprises of the following members: -

S. No.	Anti-ragging committee members	Position
1	Ms. Poonam Nanda, Dean Student Welfare	Convener
2	Dr. Adesh Saini, Professor	Co- Convener
3	Col. TPS Gill, Director Operations	Co- Convener
4	SDM: Solan nominee of District Administration	Member
5	Dr. Neeraj Gandotra, Chief Warden	Member

6	Mr. Lalit Sharma, Hostel Warden	Member
7	Dr. Mamta Sharma, HoS of Biological & Env. Sciences	Member
8	Ms. Rita Kumari, Hostel Superintendent	Member

Total Meetings – 9, (In Last Academic Year 2017-18) – 3

4. Board of Management

The Board of Management approves teaching and other academic posts which defines the functions and conditions of service of Professors, Associate Professors, Assistant Professors and other academic staff employed by the University as recommended by the Academic Council. It also manages and regulates the finances, accounts, investments, property of the University and all other affairs of the University and to appoint such agents as may be considered fit. It gives approval for the investment of money belonging to the University.

The composition of board of management is given below:

S. No.	Board of Management member	Designation
1	Dr. P.K. Khosla	Vice Chancellor
2	Prof. Atul Khosla	Dean, Faculty of Management Sciences & Liberal Arts
3	Dr. Y.S. Negi	Dean, Faculty of Agriculture
4	Mrs. Saroj Khosla	President
5	Mr. Vishal Anand	Chief Finance & Accounts Officer, Trustee
6	Dr. Saurabh Kulshrestha	Professor
7	Mr. Bhaskar Goel	Professor, Faculty of Engineering & Technology
8	Dr. Sunil Puri	Registrar

Total Meetings – 39, (In Last Academic Year 2017-18) – 8

5. Finance Committee

Finance committee is responsible for all the monetary activities in the institution. Students' fee collection, funds for procurement of equipment, dispatching salaries and remuneration are under the purview of this committee. The committee meets thrice in a year.

The composition of finance committee is given below:

S. No.	Name of Finance Committee Members	Position
1	Prof. P.K. Khosla, Vice Chancellor	Chairman
2	Mrs. Saroj Khosla	Member
3	Shri Ashok Anand	Member

4	Prof. Atul Khosla	Member
5	Mr. Bal Krishan Verma, Jt. Controller (F&A), Office of the Director Hr Education H.P.	Member
6	Mr. Vishal Anand, Chief Finance & Accounts Officer	Member Secretary

Total Meetings – 16, (In Last Academic Year 2017-18) – 3

The major functions of finance committee are given below:

- a) All proposals relating to revision of grades, up gradation of the pay scales and those items which are not included in the budget, are examined by the Finance Committee before those are considered by the Board of Management.
- b) The Finance Committee fixes the limits for the total recurring and non-recurring expenditure for the year.

6. Grievance Redressal Committee

Grievance Redressal Committee deals with issues of academic nature, registration, examination, amenities and services in the hostels etc. Generally, grievances are resolved/mitigated at different levels, though most get resolved at the school level. In addition, students can convey their grievance(s) by mail which is acted upon by the Central Cell. All mails are responded to and a reply provided to the concerned person, though their identity is kept confidential. Suggestion boxes are also kept at different places, as and when any compliant/suggestion is dropped by anyone immediate action is taken on the same at the school level.

The composition of Grievance Redressal Committee is given below:

S. No.	Grievance Redressal Committee Members	Position
1	Mrs. Saroj Khosla, President of Foundation	Chairperson
2	Dr. Sunil Puri, Registrar	Member
3	Dr. J.M. Julka, Dean Planning & Placement	Member
4	Dr. Anuradha Sourirajan, Dean, Faculty of Applied Sciences & Biotechnology	Member
5	Dr. Deepak Kapoor, Dean, Faculty of Pharmaceutical Sciences	Member
6	Dr. Adesh Saini, Professor	Member
7	Dr. Dinesh Kumar, Professor, Biotechnology	Member
8	Dr. Kuldeep Rojhe, Associate Professor, Management	Member

9	Mr. Pankaj Vaidya, Associate Professor, Engineering	Member
10	Col. TPS Gill, Director Operations	Member
11	Mrs. Poonam Nanda, Dean Student Welfare	Member Secretary

Total Meetings – 4, (In Last Academic Year 2017-18) – 2

7. Planning Board

The University has a central ‘Planning Board’ composed of members from the Board of Management. This is the apex body that lays down future plans, allocates funds and drives projects for enhancing and/or carrying out improvements of infrastructure or resources. The composition of Planning Board of committee is given below:

S. No.	Planning Board Members	Position
1	Dr. P.K. Khosla, Vice Chancellor	Chairman
2	Prof. Atul Khosla, PVC cum Dean, Management Sciences	Member
3	Dr. Y.S. Negi, Professor	Member
4	Mr. Vishal Anand, CFO	Member
5	Mr. Arvind Nanda, Director General, Placements	Member
6	Mrs. Saroj Khosla, President Foundation	Member
7	Dr. J.M. Julka, Director Planning	Member Secretary

Total Meetings – 3

8. Sexual Harassment Prevention Committee

Shoolini University promotes a gender sensitive environment. Counsellors conduct gender related lectures on sexual harassment and its prevention. A central committee is constituted to deal with the issues related to sexual harassment. A Sexual Harassment Prevention Committee is in place as per the direction of Hon’ble Supreme Court.

The composition of Sexual Harassment Prevention Committee is given below: -

S. No.	Sexual Harassment Prevention Committee Members	Position
1	Mrs. Saroj Khosla, President of Foundation	Chairman
2	Dr. Sunil Puri, Registrar	Member
3	Prof. Ramanand Chauhan, Controller of Examination	Member

4	Col. TPS Gill, Director Operations	Member
5	Ms. Anu Priya Thakur, Assistant Professor, Law	Member
6	Dr. Anuradha Sourirajan, Dean, Biotechnology	Member
7	Dr. Kesari, Associate Professor, Management	Member
8	Mrs. Poonam Nanda, Dean Student Welfare	Member Secretary

9. Central Purchase Committee

The committee has been operative for purchasing all sorts of requirements in the university. Purchases of more than Rs. 20,000/- are put up to a Central Purchase Committee to take necessary decisions on requisitions required.

The composition of Central Purchase Committee is given below:

S. No.	Central Purchase Committee Members	Position
1	Dr. M.L. Vaidya, Director Healthcare	Chairman
2	Dr. P.K. Khosla, Vice Chancellor	Vice Chairman
3	Prof. Atul Khosla, Pro Vice Chancellor	Member
4	Mr. Vishal Anand, Chief Finance Officer	Member
5	Mrs. Saroj Khosla, President SILB	Member
6	Dr. Sunil Puri, Registrar	Member
7	Dr. Kamal Dev, Professor	Member
8	Director Operations	Member
9	Estate Officer	Member
10	Comptroller	Member

Functions of the purchase committee:

The Committee meets at least twice in a month. All academic purchase decisions are taken by the committee.

Deans can approve purchases upto Rs.5,000/- on case basis. Expenditure falling between 5,000 to 20,000 can be approved by Vice Chancellor / any of the trustees. Any academic expenditure at the school level above Rs. 20,000/- after approval from Dean and Vice Chancellor / any of the trustees is forwarded to the Central Purchase Committee for final approval.

10. Library Advisory Committee

Library Advisory Committee consists of 15 members of the University headed by the Pro Vice Chancellor, Prof. Atul Khosla. The other members being Vice Chancellor, Dean, the Registrar and heads of schools of the university. Three students are also members of this committee.

This Library Committee meets twice in a year, once in each semester. Its purpose is to advise and oversee the functioning of the Library in every way. Matters of finance and expenditure are discussed and regulated. Thereafter further improvements in the infrastructure and technology are evaluated.

The composition of Library Advisory Committee is given below:

S. No.	Library Advisory Committee Members	Position
1	Dr. P.K. Khosla, Vice Chancellor	Chairman
2	Prof. Atul Khosla, Pro Vice Chancellor	Member
3	Dr. Sunil Puri, Registrar	Member Secretary
4	Dr. Saurabh Kulshrestha, Academic Advisor	Member
5	Dr. JM Julka	Member
6	Dr. Rohit Goyal	Member
7	Mrs. Poonam Nanda	Member
8	Er. Pankaj Vaidya	Member
9	Er. Raj Kumar Saini	Member
10	Mr. Praveen Vasisht	Member Secretary
11	Dr. Kuldeep Rojhe	Member

11. The minority cell is created and is functional for providing equal opportunity and development of an unbiased environment for a healthy wholesome growth of all the sections of society and protecting the minority interests. The committee meets as and when required. All other committees are duly formed in the university as per the guidelines by the UGC time to time.

The minority cell is created and is functional for providing equal opportunity and development of an unbiased environment for a healthy wholesome growth of all the sections of society and protecting the minority interests. The committee meets as and when required.

S. No.	Minority Committee Members	Position
1	Mrs. Poonam Nanda	Dean Student Welfare
2	Prof. Sunil Puri	Register
3	Dr. Poonam Negi	Member
4	Er. Amar Raj Singh	Member
5	Dr. Azhar Khan	Member Secretary

All other committees are duly formed in the university as per the guidelines by the UGC time to time

Service Rules

The service rules and all other employment policies are well defined and are updated from time to time as per requirement. For the rules not mentioned in the HR manual UGC regulations and HP Government rules are followed. Rules concerned with the general administration of the School, service rules, leave rules policies of promotion and increment are framed properly and are available on the website. All the policies and procedures are made clear to every individual who joins the organization and these are updated from time to time as per requirement.

Effective Date: 1st January, 2019

LEAVE, HOLIDAYS AND WORKING HOURS

1. Objective:

The objective of the Policy is to encourage employees to strike a healthy balance between work and family and to achieve our vision to be a top 200 Global University by 2022.

2. Policy Features:

- All regular employees are eligible for following types of leaves in a Calendar year:

a) Casual Leave/Sick Leave	12
b) Earned Leave	12
c) Hospitalisation Leave	10
d) Sabbatical Leave	As per defined rules
e) Study Leave	As per defined rules
f) Academic Leave	As per defined rules
g) Maternity Leave	As per defined rules
h) Bereavement Leave	4
i) Compensatory Leave	As per defined rules
j) Duty Leave	As per defined rules

3. Leave Types & Accumulation:

Following are different types of leaves available:

- a) **Casual Leave/Sick Leave** – On full pay may be allowed up to maximum of 12 days in any one calendar year. Also, it cannot be combined with any other leave or vacation. Any medical leave where there is no hospitalization, will be treated as Sick Leave.
- b) **Earned Leave** – This leave needs to be earned depending on the period spent on duty by an employee. For calculating this period, all working days including weekly off's and gazetted holidays will be considered except Sabbatical leave, Study leave & Leave without Pay.
Total no of Earned Leaves in the year – 1/30th of period spent on duty (Max 12 per annum)
These leaves cannot be availed by Teaching Staff during the Semester/Classes period and can be only taken during Vacation Period of Students. Deans/Directors will decide the rotation of sanction of these leaves during the complete Vacation Period in order to ensure the continuity of University. One earned leave will be accumulated each month. Maximum 5 unused earned leaves in a calendar year can be carried forward. Any earned leave carried forward is valid only for one year post which it will lapse.

Casual Leave/Sick Leave & Earned Leave: Maximum of 6 Casual/Sick/Earned Leaves can be taken during the working period in any one semester.

- c) **Hospitalisation Leave** - All employees shall be entitled for Paid Hospitalisation Leave for 10 days in a year. Hospitalisation Leave cannot be combined with any other kind of Leave. This leave will be granted only on hospitalisation and on production of Medical Certificate and hospital discharge certificate.
- d) **Sabbatical Leave** - Any employee who has completed 3 years of service with Shoolini University can avail Sabbatical Leave in order to undertake research assignments. No salary will be paid during this leave. Application for the same needs to be made to VC and the Leave will be granted on VC discretion. Max Limit of the Leave is 2 years.
- e) **Study Leave** - Any employee who has completed 3 years of service with Shoolini University can take Study leave in order to pursue special line of his/her study. Application for the same needs to be made to VC and leave will be given on his discretion. Max Limit of the Leave is 3 years. No salary will be paid during this leave period.
- f) **Academic Leave** - Any employee who gets a paid fellowship/project in the top 1000 Universities is eligible to avail academic leave during vacation period of students. This leave can be applied for a minimum period of 10 working days and up to maximum period of 30 working days. The justification for leave will be put across to VC and the leave will be sanctioned as per VC Discretion. If the concerned University is not in top 1000, then unpaid Academic Leave can be granted at the discretion of Vice Chancellor.
- g) **Maternity Leave** - Any female employee, who has worked in the University for a period of not less than 80 days in the twelve months immediately preceding the date of her expected delivery, is entitled for Maternity Leave. The maximum period for which any woman shall be entitled to maternity benefit shall be 26 weeks of which not more than 8 weeks shall precede the date of her expected delivery. Valid for first 2 children.
- h) **Bereavement Leave** - All employees are eligible for bereavement leave in the event of death in an employee's immediate family (parents, grandparents, spouse, children, sister or brother, including in-laws). Max Limit is upto 4 working days for a year.
- i) **Compensatory Leave** - Any employee with total pay of less than or equal to Rs. 30,000/-, who may be required in the interest of the University, to work during holidays, shall be entitled to compensatory leave after getting it approved from their reporting authority. Compensatory leaves needs to be taken within 30 days of the day when it is accrued. Employee cannot take more than two compensatory leaves consecutively.
- j) **Duty Leave** - The employee can avail duty leave in a year as under for attending Workshop/Seminars/Conference/Research Travel/Consultancy etc. Documentary proof will be required for availing duty leave and the leave will be approved on the VC discretion.

For visiting outside University for different invitations e.g. conducting examination/ Guest Lectures of academic importance etc = 5 Days

Conference/Seminar/Workshops = 5 Days

Trainings/FDP's = 5 Days

For any of the Duty Leave, application needs to be approved by Vice Chancellor on recommendation of the Dean & Registrar.

All leaves which needs the approval of the Vice Chancellor, the request needs to be routed through the Registrar's office and the same will be sent to Vice Chancellor post Registrar's recommendation.

4. Leave without Pay/Unsanctioned Leave:

As a matter of the University Policy, Leave without Pay is not permissible. Unauthorized absence will be treated as an act of indiscipline. Also any absence from duty without authorized leave will be considered 2X i.e. either 2 day's deduction of salary or 2 earned/casual leaves will be deducted for one day absence.

5. Gazetted Holidays:

The list of holidays will be declared and circulated at the beginning of every year.

Also, if any leave is clubbed with Gazetted Holiday, then Prefix and Suffix days including weekend holidays will be considered under leave.

6. Administrative Process:

- All employees are required to plan their leave for the year in concurrence with their reporting managers so that University work does not suffer.
- All Leave requests have to be raised through online portal prior to proceeding on leave.

7. Working Hours & Flexibility:

University Timings : 9.00 a.m. – 5.30 pm with a 30 minute Lunch Break.

To give flexibility to employees at the University, all employees need to put in a total 42.5 hours in a week (when there is 5 day week i.e. 8.5×5) and 51 hours in a week (when there is 6 day week i.e. 8.5×6). Also, on any given day, an employee needs to put on minimum of 6 working hours in the University. Employees needs to ensure that the University work / Dally teaching schedule does not get affected while availing this flexibility.

REGISTRAR

All the newly recruited staff and students are made aware of these rules through orientation programs.



Day 2 - Faculty Induction



Induction Training Program (IMPPACT): A formal faculty development training program was initiated in the Academic Year 2016-17. The program works well on the aegis of IMPPACT (Integrated Management Program for Professional

Advancement and Career Transformation) and is dedicated to analyze the training needs, design and develop the content, deliver and evaluate the program. The program enables the new faculty to acclimatize with the university processes, people while for existing faculty to continue evolve them to address developments which are taking place globally in terms of teaching pedagogy and research.

Policies

Shoolini University upholds the philosophy of participative management and ensures that every stakeholder works in a culture of achieving team goals and a sense of self responsibility. The leadership is participative at all levels; staff (teaching and non – teaching) are deeply involved in different activities of the University. The composition of all decision-making bodies is as per Shoolini act and statues (details of the same are given in point 2.1.1.1 of this report). School of Business Management and Liberal Arts adhere to the same, school level committee are also detailed in the same point.

Shoolini University strives for excellence in each of its thrust areas. The five pillars to achieve its vision of being acknowledged amongst the best academic institutions of the world are illustrated below and this edifice is built on a sound foundation of committed and transparent governance and policies.



All decisions, policies and the strategies decision to be adopted are taken in the letter and spirit of the vision to strengthen the foundation and the pillars. In practice, this is ensured by the following:

1. Faculty and Academic Delivery:

- Well qualified and competent faculty employed through a well- defined selection committee.
- Retention and development of faculty ensured through Faculty Development Policy and by encouraging them on the path of self-development.

- Student feedback ensures that each faculty member is assessed for effectiveness of teaching and this is a key parameter in the appraisal.
- Faculty members are involved in improving teaching-learning- evaluation and guided through committees and mentors.
- There is a well-defined process of review and upgradation of course curriculum through Academic Committees and Board of Studies.
- Emphasis laid on application of learning. Project work assigned to students from the first year itself.

2. Infrastructure

- Shoolini University has created infrastructure suited to its academic and developmental needs as per its development policy.
- Well-equipped labs and workshops have been provided to each School. Equipment and facilities are periodically upgraded to keep pace with changing requirements.
- Lecture rooms have been designed to provide quality learning environment and are equipped with audio visual aids.
- Infrastructural excellence goes beyond academics and extends to hostels, sports facilities and other facilities.

3. Research and Development

- Research Policy is on the top of University's agenda. Research projects are regularly monitored and supported under Dean Research.
- Well-equipped research labs have been provided and are constantly being upgraded depending upon fresh needs and projects.
- Every faculty member is required to contribute research papers and encouraged to initiate fresh research projects.
- Research collaborations with industry and globally reputed academic institutes are key objectives and are proactively pursued.

4. Academic Alliances

With the aim to provide quality education, the University has nurtured academic alliances with the reputed institutes for exchange of knowledge and expertise through student and faculty programs, joint research, training, conferences etc. The current academic alliances are as given below and the University plans to establish many more linkages:

Industry Linkages: Establishing industry linkages is a thrust area for Shoolini University. In today's highly competitive world, Shoolini University as a policy recognizes the importance of international, industrial and corporate sector exposure. For transfer of knowledge, student and faculty exchange, joint researches, conferences and training programs, the University has developed successful partnerships with key corporate players like Genpact, Anand Automotive and DAMCO Soft etc. Similarly, partnerships in pharmaceutical sciences and food technology exist.

Industry partners participate in designing and delivery of course curricula to align students with the expectations of the industry.

There is regular interaction and exposure to industry through guest lectures by experts, visits and training.

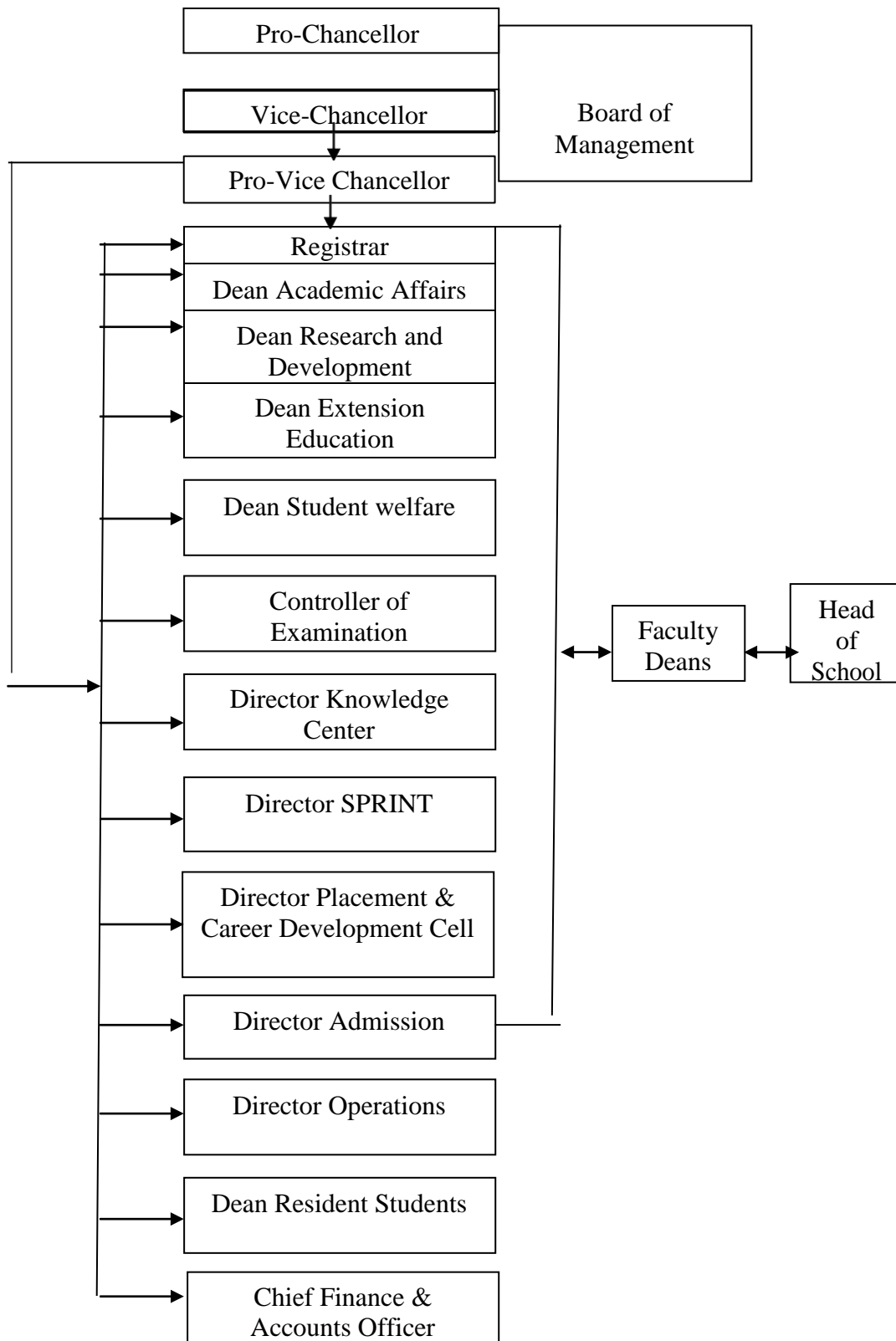
All the policies are framed keeping in mind the benefit of all stakeholders and are available on the website.

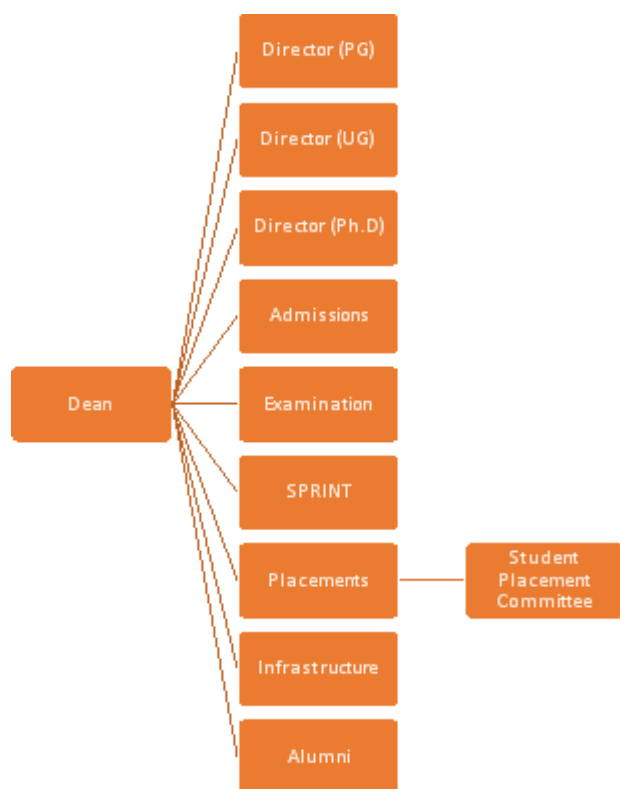
Decentralization in working and grievance redressal mechanism (15)

Shoolini University upholds the philosophy of participative management and ensures that every stakeholder works in a culture of achieving team goals and a sense of self responsibility. The leadership is participative at all levels; staff (teaching and non – teaching) are deeply involved in different activities of the University. The composition of all decision-making bodies is as per Shoolini act and statutes.

Presently almost all the decision-making bodies like Academic council, Placement and Career Development Cell, Board of Management, Joint Research and Development Advisory Committee, Library Advisory Committee, Admission Committee, Sexual Harassment Prevention Committee IQAC etc. have staff as members Details are given in this report.

Organizational Structure at the Central Level





Delegation of Administrative Power at the School level:

School of Pharmaceutical Sciences adheres to the central procedure and policies but these also act as autonomous units for administrative decisions at the school level. School of Pharmaceutical Sciences have in charges for various academic activities and have been delegated power for taking administrative decisions. If the matter cannot be resolved at the School level central offices/committees are referred for the same. Decentralization of administrative power at the School of Pharmaceutical Sciences is given here under:

Board of studies Committee

Sr. No.	Name	Position
1	Prof. Deepak Kapoor	Chairman
2	Dr. Gurjot Kaur	Member Secretary
3	Professor Saranjit Singh	External Member
4	Mr. Sumit Gupta	External Member
5	Professor VK Kapoor	Member
6	All Associates professors in faculty	Member
7	All Assistant professors in faculty	Member

Responsibilities of Board of studies

- To discuss the need for new courses/programs to be introduced
- To collect feedback and discussion on teaching-learning-evaluation, research
- To propose, formulate and discuss the syllabi for new courses
- To propose and approve the change in existing syllabus
- To forward the approved syllabi/courses/programs to Academic Council through Dean Academic Affairs, for final approval

Examination Committee

Sr. No.	Name	Position
1	Prof. Deepak Kapoor	Chairman
2	Dr. Poonam Negi	Coordinator
3	Mr. Lalit Sharma	Member
4	Miss Kalpana Kashyap	Member

School Academic Committee

Sr. No.	Name	Position
1	Prof. Deepak Kapoor	Chairman
2	Dr. Gurjot Kaur	Member Secretary
3	All faculty	Member

Responsibilities

- To discuss the need for new courses/programs to be introduced
- To discuss curriculum, teaching-learning-evaluation and research issues
- To propose, formulate and discuss the syllabi for new courses
- To propose and carry out the change in existing syllabus
- To forward the modified approved syllabi/courses/programs to BoS for final approval

Research and development Committee

Sr. No.	Name	Position
1	Prof. Deepak Kapoor	Chairperson
2	Prof AK Chakraborti	External Member
3	Prof VR Sinha	External Member
4	Dr. Manu Chaudhary	External Member
5	Dr. Gurjot Kaur	Member
6	Dr. Jagattaran Das	Member
7	Dr. Poonam Negi	Member
8	Dr. Deepak Kumar	Member
9	Prof. Rohit Goyal	Member Secretary

Responsibilities

- Identify the research & consultancy needs/issues/areas
- Review the research & consultancy carried out at School level
- Suggest the way forward

Institutional Animal Ethical committee

Sr. No.	Name	Position
1	Prof. Deepak Kapoor	Chairperson
2	Prof. Rohit Goyal	Member Secretary
3	Dr. Kamal Dev	Member
4	Dr. Sandeep Thakur (Veterinarian)	Member
5	Dr. Reena Saini	Member
CPCSEA Nominee for IAEC		
1	Dr. Kamal Saini	Link Nominee
2	Dr. Rajneesh	Member
3	Dr. Lalit Mohan	Socially aware nominee
4	Dr. Gur Fateh Singh	Main Nominee

Program Committee

UG Program Committee		
Sr. No.	Name	Position
1	Prof. Rohit Goyal	Chairman
2	Dr. Deepak Kumar	Member Secretary
3	Dr. Swati Pundir	Member
4	Miss Hemlata Kaurav	Member
5	Four student representatives (one from each academic year)	Member
PG Program Committee		
1	Prof. Deepak Kapoor	Chairman
2	Dr. Poonam Negi	Member Secretary
3	Dr. Ashutosh Kumar Das	Member
4	Mr. Arun	Member
5	Four student representatives (one from each academic year)	Member

Other committees in School of Pharmaceutical Sciences:

Sr. No.	Name of Committee	Members
1	Extracurricular activities	Mrs. Aditi Sharma (Coordinator) Dr. Raveen Chauhan
2	Grievance, Discipline & Student Affairs	Prof. Rohit Goyal (Coordinator) Ms. Hemlata Kaurav
3	Alumni Committee	Mr. Gaurav Sharma (Coordinator) Dr. Swati Pundir
4	Anti-ragging	Dr. Ashutosh Kumar Dash (Coordinator), Ms. Devika Rana, Mr. Lalit Sharma
5	Career & Placement	Dr. Navneet Kumar Upadhyay (Coordinator), Ms. Babita

Grievance redressal mechanism

School of Pharmaceutical Sciences considers feedback and complaints as crucial aspect of improvement process. To enable the stakeholders to provide feedback and register complaints,

various options are made available from suggestion box, email, open door policy and access to authorities, mobile numbers of responsibility centers and contact details of regularity authority. There exists a well-structured escalation process and provision of turnaround time to respond to the grievances.

Students and parents are made aware about these provisions at the time of joining through induction & it is ensured that solutions are reached in fair and objective manner.

Grievances of faculty are considered and resolved at dean's level and if needed are finally escalated to HR department. Special committees for specific domains of grievances have been formulated which are Anti Ragging Committee, Grievance, Discipline & Student Affairs Committee, Placement Committee, etc.

The school also follows the central grievance redressal cell which deals with issues of academic nature, registration, examination, amenities and services in the hostels etc. Generally, grievances are resolved/mitigated at different levels, though most get resolved at the school level. In addition, students can convey their grievance(s) by mail which is acted upon by the Central Cell. All mails are responded to and a reply provided to the concerned person, though their identity is kept confidential. Suggestion boxes are also installed at relevant places for the students. Students can directly send an email to the grievance redressal cell care@shooliniuniversity.com which goes directly to the central grievance redressal cell.

The composition of Grievance Redressal Committee of the university is given below:

S. No.	Grievance Redressal Committee Members	Position
1	Mrs. Saroj Khosla, President of Foundation	Chairperson
2	Dr. Sunil Puri, Registrar	Member
3	Dr. J.M. Julka, Dean Planning & Placement	Member
4	Dr. Anuradha Sourirajan, Dean, Faculty of Applied Sciences & Biotechnology	Member
5	Dr. Deepak Kapoor, Dean, Faculty of Pharmaceutical Sciences	Member
6	Dr. Adesh Saini, Professor Shoolini University	Member
7	Dr. Dinesh Kumar, Professor, Biotechnology	Member
8	Dr. Kuldeep Rojhe, Associate Professor, Management	Member
9	Mr. Pankaj Vaidya, Associate Professor, Engineering	Member

10	Col. TPS Gill, Director Operations	Member
11	Mrs. Poonam Nanda, Dean Student Welfare	Member Secretary

Other preventive means are the suggestion received through formal/informal interactions and through feedbacks received from staff and students.

Delegation of financial powers (15)

Budgets for running the school are very essential. These are prepared by every school of the university before the commencement of the academic year. In this regard, Head of the School with senior faculties give the requisition to the Dean with regard to stationery/office requirements for which budget allocations are approved by the Dean in discussion with the Management.

On the same lines, proposals are sent to the Dean for procuring new equipment for the office, interactive technologies in the classrooms, conduction of workshops/ conferences/ seminars by the faculty members for which fund allocations are made.

S. No.	Designation	Financial Power
1	Dean	upto 5,000
2	Dean – VC	5000 -20,000
3	CPC	20,000 and above

All expenditure above 20,000 are considered and approved by the Central Purchase Committee which meets twice in a month. Any purchase over and above Rs. 10,000/- after the respective Deans approval are to be further approved by the Vice Chancellor and then forwarded and approved by the Central Purchase committee.

Transparency and availability of correct/unambiguous information in public domain (10)

Transparency is ensured at all levels of academic and other aspects. University publishes annual prospectus (information brochure) providing details of all courses including courses of School of Pharmaceutical Sciences with their eligibility criteria and elaborating the admission procedure, as also the facilities available in the University. All the information relating to admission, examination, attendance, internal assessments, selection for student exchange

program, placement etc. are done through systematic processes which are transparent and information is also available on the website and myShoolini app.

myShoolini app is a student & faculty developed app (Android & iOS) for end-to-end digitization & knowledge management of Shoolini University's activities.

All information on policies, rules, processes are disseminated to the stakeholders through website.

The University has instituted the followings initiatives for attracting and retaining eminent faculty:

Compensation at par with Top Universities: Salaries of senior teachers are higher than those prescribed by the UGC. The success of the policy is validated by the fact that less than five per cent of eminent faculty has left the University so far, making it less than one per cent per year.

Rewards: To promote excellence in original research, the University has instituted an award of Rs.10 lacs to a faculty member who publishes his/ her findings in Nature and Science and Rs. 5 lacs for publishing in any other distinguished journal of status.

Golden Rudraksha Awards: Golden Rudraksha award has been introduced in the year 2018 with an aim a to recognize the unsung heroes who keep on doing their work with full sincerity and commitment. There are 04 awards in this event:

1. 'Golden Rudraksha Award Best Faculty'
2. 'Golden Rudraksha Award Best Non- Teaching staff'
3. 'Golden Rudraksha Award Best Central Student support staff'
4. 'Golden Rudraksha award Best Faculty/School Administrative staff'

Two of the above awards listed on serial number 1 and 2 are based on 360⁰ feedback from students, management, and peers, whereas awards at serial no. 3 & 4 is purely on the basis of votes given by the students. For this event, a committee is formed with trustworthy and unbiased faces of the University. All Deans, Directors and HOS are purposefully kept out of the contest. The IQAC initiative ended with a fitting award ceremony on 15th August 2018 with the declaration of following winners:

1. Golden Rudraksha 2018 (Teaching)- Dr Somesh Sharma (Foodtech)
2. Golden Rudraksha 2018 (Non-teaching)- Mr ND Sharma (VC Office)
3. eUniv Star Performer 2018- Dr Kesari (Management)
4. Most Student Friendly Central Staff- Library staff

5. Most Student Friendly Faculty Staff- FMSLA Staff

Manthan 2018 (Vote by 1512 Students)		
Feedback- Most Student Friendly Central Staff		
Name of Central Staff	Weighted mean	Rank
Library Staff	1.165	1st
Dean Student Welfare office (Sprint/ Cultural/Co-curricular activities)	1.020	2nd
IT Department	0.983	3rd
Accounts Office	0.982	4th
Office of International Affairs	0.932	5th
VC Office	0.880	6th
Housekeeping and Cleaning	7th-12th
Registrar Office / Dean Academics / HR		
Central Examination Office		
Health Centre Staff		
Sports office		
Transport office		
eUniv Team	Not considered being the conducting agency	
Feedback- Most Student Friendly Faculty Staff		
School Name	Average	Rank
Faculty of Management Sciences & Liberal Arts and Faculty of Legal Sciences	4.12	1st
Faculty of Basic Sciences	3.90	2nd
Faculty of Applied Sciences & Biotechnology	3.83	3rd
School of Pharmaceutical Sciences	4th-5th
Faculty of Engineering & Technology		

Research Awards: In order to encourage the faculty for quality research, the university has also initiated formally research awards from the Academic Year 2017-18. Following are the categories given:

Sr. No.	Award Category
1	Best Researcher Award
2	Best Woman Researcher Award
3	Best Researcher faculty wise Award
4	Best Ph.D. Scholar Award -2
5	Researcher Award (Translational)
6	Young Investigator Award
7	Societal Impact & Visibility Award

- **Annual Appraisal:** The University reviews faculty performance for the purpose of development and enhancement.
- **Promoting Professional Development:** Shoolini provides sabbatical and study leave for higher studies within the country and abroad. Faculty members are encouraged to attend workshops/meetings and provided financial support.
- **Research Support:** The University has adopted a research driven model. Ample facilities and funding are provided to faculty members for fulfilling their research aspirations. In addition, they are also motivated and encouraged to apply for external funding.
- **Spousal employment:** Eligible and well qualified spouses of the faculty are encouraged to take up employment in the University.
- **Safe Environment:** The University provides an atmosphere free of all forms of harassment, exploitation, or intimidation. The University has a zero-tolerance policy for discrimination and harassment of any kind.
- **Creche:** The University has a Creche with basic amenities for day care of the children of the faculty and staff.
- **Faculty Club:** For enhancing campus life, the University has an exclusive faculty club for socialization.

Shoolini University follows a systematic process to ensure the availability of highly specialized human resources. Depending on the revision of the curriculum, requirement of knowledge domain specialist is identified at the School level which is then proposed to the registrar for approval from Vice- Chancellor and University Management. Once the requirement is approved, the recruitment process begins with advertisements of the posts in newspapers and University website giving the detailed job description and specifications. Applications received are scrutinized based on the compatibility of the candidates. Shortlisted candidates appear for personal interview before the expert panel, including external subject experts, constituted by the University.

Faculty appointment procedure is given below:



Leaders and faculty for School of Pharmaceutical Sciences are selected by the central appraisal committee. University ensures that all positions in various statutory bodies are filled in time and has developed a proper appraisal system to retain the top talent. There is a well-established system of compensation and awards to encourage achievers and act as motivation for others to strive for excellence.

Faculty and staff performance are evaluated broadly on the following parameters:

- Teaching-learning-evaluation
- Research initiatives
- Values, integrity and ethics
- Co-curricular engagements
- Students' feedback

Outcomes of the appraisal are enumerated as under:

- Performance based categorization of faculty and staff.
- Faculty and staff development/improvement.
- Innovation in teaching pedagogy and research methodologies

Reward achievers and motivate others to strive for excellence Budget Allocation, Utilization, and Public Accounting at Institute level (30)

Summary of current financial year's budget and actual expenditure incurred (for the institution exclusively) in the three previous financial years.

Total Income at Institute level: For CFY, CFYm1, CFYm2 & CFYm3

CFY: Current Financial Year, CFYm1 (Current Financial Year minus 1),

CFYm2 (Current Financial Year minus 2) and CFYm3 (Current Financial Year minus 3)

Total Income at Institute level For CFY 2017-18							
Total Income				Actual Expenditure (till 31/03/2018)			Total No of Students
Fee	Govt.	Grant (s)	Other Sources	Recurring including Salaries	Non-recurring	Special Project	Expenditure per student
3,50,67,123		48,82,131		5,10,40,499	79,77,224	3,72,428	1,48,105

Total Income at Institute level For CFY 2016-17							
Total Income				Actual Expenditure (till 31/03/2017)			Total No of Students
Fee	Govt.	Grant (s)	Other Sources	Recurring including Salaries	Non-recurring	Special Project	Expenditure per student
2,95,28,601		58,57,091		4,18,40,541	80,95,815	2,09,36,483	2,01,343

Total Income at Institute level For CFY 2015-16							
Total Income				Actual Expenditure (till 31/03/2016)			Total No of Students
Fee	Govt.	Grant (s)	Other Sources	Recurring including Salaries	Non-recurring	Special Project	Expenditure per student
2,21,34,233		15,92,500		3,24,49,134	42,37,410	26,26,000	1,51,202

Total Income at Institute level For CFYm1 2014-15							
Total Income				Actual Expenditure (till 31/03/2015)			Total No of Students
Fee	Govt.	Grant (s)	Other Sources	Recurring including Salaries	Non-recurring	Special Project	Expenditure per student
1,96,73,600		25,32,800		2,89,66,889	39,00,905	2,25,76,972	2,26,305

Note: Similar tables are to be prepared for CFYm1, CFYm2 & CFYm3.

Items	Budgeted in CFY	Actual Expenses in CFY (31.03.2018)	Budgeted in CFYm1	Actual Expenses in CFYm1 (31.03.2017)	Budgeted in CFYm 2	Actual Expenses in CFYm 2 (31.03.2016)	Budgeted in CFYm 3	Actual Expenses in CFYm3 (31.03.2015)
Infrastructure Built-up	27,00,000	26,28,465	2,60,00,000	2,51,31,231	36,00,000	35,79,378	2,40,00,000	2,31,81,018
Library	31,00,000	30,91,000	27,00,000	26,23,000	20,00,000	19,89,000	9,50,000	9,24,000
Laboratory equipment	65,50,000	63,31,000	50,00,000	48,18,000	38,00,000	36,25,000	36,00,000	36,02,000
Laboratory consumables	5,40,000	5,32,495	4,40,000	4,26,930	3,40,000	3,21,717	2,80,000	2,86,667
Teaching and non-teaching staff salary	2,00,00,000	1,95,46,873	1,60,00,000	1,58,22,983	1,15,00,000	1,01,69,517	1,00,00,000	94,36,961

Maintenance & spares	12,00,000	11,96,722	2,80,000	2,67,434	9,00,000	6,21,783	13,10,000	12,93,949
R & D	11,00,000	10,19,370	10,00,000	8,02,631	4,00,000	2,43,429	3,00,000	2,64,520
Training and Travel	12,00,000	10,55,436	8,00,000	8,84,174	5,00,000	3,18,573	5,70,000	5,52,097
Miscellaneous expenses	2,00,000	1,48,912	3,60,000	3,51,542	2,50,000	2,31,419	2,00,000	1,79,552
Others, Specify	2,45,00,000	2,38,39,877	2,20,00,000	1,97,44,915	1,90,00,000	1,82,12,728	1,60,00,000	1,57,24,002
Total	6,10,90,000	5,93,90,151	7,45,80,000	7,08,72,839	4,22,90,000	3,93,12,544	5,72,10,000	5,54,44,766

Adequacy of budget allocation (10)

School of Pharmaceutical Sciences follows the process of distributing the available financial resources in a manner consistent with our institute's vision, mission, long-term goals, which are transparent to stakeholders. The allocation model is updated annually. Keeping in view of the fact that no budgeting process is perfect and that ideally there would be more funds to allocate, the goals of the process are to:

- recognize the importance of staff to long term success.
- encourage areas to focus on outputs directly related to the strategic plan.
- improve institutional and support facilities to make the learning an environment of vibrant development.
- increase research and development

The school allocates the available resources based on the forecasted requirements, keeping the curricular and beyond curricular activities, R & D, library, transport, and maintenance in mind. It is the responsibility of institutional development and monitoring committee (IDMC) to ensure that the allocated resources are spent as per their forecasted plans. The emphasis is to increase quality of academic inputs delivered and positively contribute to the institute, in terms of development of new technologies, methods and practices.

Sr No	Financial Year	Budget Allocation in (Rs)	Actual Expenditure in (Rs)	Adequate/ Non-Adequate
1	CFY	6,10,90,000	5,93,90,151	Adequate
2	CFCm1	7,45,80,000	7,08,72,839	Adequate
3	CFCm2	4,22,90,000	3,93,12,544	Adequate
4	CFCm3	5,72,10,000	5,54,44,766	Adequate

Utilization of allocated funds (15)

The respective academic and supportive units are informed on allocation of funds under various heads. The guidelines towards making purchase of laboratory equipment, programs conducting, training activities and other miscellaneous. The institutional development and monitoring committee (IDMC) decides the utilization for the financial year's allocated funds in consultation with the concerned experts including Principal. The utilization is made as per the plans and projections. The priorities are identified. Emphasis is made on increasing the quality of academic inputs that positively contribute to the development. The following is the purchase procedures.

Purchases are done up to the level of allocated funds, however, under some special priority considerations, the purchases can go beyond the allocated funds which will be later ratified by the Governing Body. Delegation of financial powers is promoted to keep the autonomy of the college and to reduce time delays.

Every effort is made for providing the best and updated infra-structural facilities to students and staff. Optimum utilization of this attitude and policy of the management by utilizing the funds in the lines of the mission statement and objectives. Regular auditing and inventory checks (in-house) keep the mechanism free from over or unjust spending.

State how the budget was utilized during the last three years.

Sr No	Financial Year	Budget Allocation in (Rs)	Actual Expenditure in (Rs)	Adequate/ Non Adequate
1	CFY	6,10,90,000	5,93,90,151	97.22
2	CFCm1	7,45,80,000	7,08,72,839	95.03
3	CFCm2	4,22,90,000	3,93,12,544	92.96
4	CFCm3	5,72,10,000	5,54,44,766	96.91

Availability of the audited statements on the institute's website (5)

Yes, the audited statements are available on university's website.

Library and Internet (20)

- Shoolini is the one University that is providing students with relevant course work and study material online through an inbuilt platform name

E-Univ. this platform provides the student with the details of the course structure and PPT's of the relevant subject along with the video lectures by the concerned faculty.

- The eUniv is available to students and is easily accessible on Mobile Phones also. The students can access the same where ever they want to. (if number of students registered on eUniv can be of use that can be confirmed and put in along).

Internet

- The University is seriously working hard towards the attainment of fully WI fi campus and have dedicated servers and lab to different departments.
- Apart from centralized computer lab with latest configuration, several departmental labs are available for the students.

It is assumed that zero deficiency report was received by the institution, Effective availability and utilization to be demonstrated.

Quality of learning resources (hard/soft) (10)

- Relevance of available learning resources including e-resources
- Accessibility to students

The Yogananda Library of Shoolini University has evolved as a Multi- dimensional learning facility; it is fully automated and had transformed itself as a Knowledge Center, in keeping with the stated vision of the University.

The five-storey building that houses the Knowledge Center is a state-of-the- art, architectural marvel using „green“ technology. With a naturally-lit central atrium, wooden interiors, spacious layout, topped by a designer lawn, the Yogananda Knowledge Center is an icon of the Shoolini University which can concurrently accommodate 300 students.

Apart from the Central Library, there is also a well-stocked study center for use of students in the heart of Solan Town. Collectively, the Knowledge Center has 38,064 text books, 5,219 reference books and subscribes to a plethora of e-books (1,50,000), journals (10,000), e-journals, magazines and newspapers (* 15.09 Lac is the recurring expenditure spend on newspapers/library, journals/e-journals and newspapers annually).

Completely Wi-Fi enabled, with OFC connectivity and a large capacity UPS and back- up generator, the YKC is a pulsating heart and the center of activity for the students and faculty.

- i. The library services use “Pearl plus MySQL” based on KOHA software.

- ii. The webpage including holdings, booking and queries can be accessed through the University intranet
- iii. Access to centrally subscribed research sites and other libraries can be accessed through a password generated access system.

Each school also maintains a library, which is an adjunct the main Library. In view of the central location of the Central Library. Girls Hostels also have a Mini Library and other hostels are provided newspapers.

Details of the Library:

1	Total area of the library (Square Meters)	2,616.15
2	Total seating capacity	300
3	Working hours:	24 X 7

- iv. The five storied library has adequate seating and is well-lit with natural lighting, exuding an atmosphere conducive to learning. Floor wise layout is given below:

Ground Floor	Student Activity Hall, Faculty Club, Cafe and Main Lawn
First Floor	Research Journals, public computers, Language and Analytics Labs, E –studios, T h e s i s /Dissertation/Projects and Emergency exit (Life Science Section, Book Bank Section)
Second Floor	Main entry w i t h Access control. Foyer, Circulation (Issue/receipt) section, New Arrivals Racks, Resource displays (Touch screen monitors), E-Newspaper/Magazine Screens, Library office, Reference Section, Life and Basic Sciences Sections, Management Section, Bag room, washrooms and emergency exit. (Law Section, Reprographic Service, Coffee Machine, Kindle)
Third Floor	Engineering and Technology section, (Physics Section)
Fourth Floor	General section, Reading areas and Terrace Lawn, (Vending Machine)

Floor plans are prominently marked, facilitating use by occasional visitors.

Library Advisory Committee

The Library Advisory Committee ensures all these requirements are fulfilled through the Member Secretary and the inputs from the other members. Procuring books,

Technical Journals, Technical Magazines, applying for access to e-journals, providing good reference books and adequate reading spaces are provided by this committee, which comprises the following members.

S. No.	Library Advisory Committee Members	Position
1	Dr. P.K. Khosla, Vice Chancellor	Chairman
2	Prof. Atul Khosla, Pro Vice Chancellor	Member
3	Dr. Sunil Puri, Registrar	Member Secretary
4	Dr. Saurabh Kulshrestha, Academic Advisor	Member
5	Dr. JM Julka	Member
6	Dr. Rohit Goyal	Member
7	Mrs. Poonam Nanda	Member
8	Er. Pankaj Vaidya	Member
9	Er. Raj Kumar Saini	Member
10	Mr. Praveen Vasisht	Member Secretary
11	Dr. Kuldeep Rojhe	Member

- a) Average number of walk-ins : 11,730
- b) Average number of books issued : 21,508
- c) Average number of books returned : 21,508
- d) Average number of books added over last four years : 9,663
- e) Average number of log ins to OPAC : 31,564
- f) Average number of log ins to e-resources : 3,010
- g) Average number of e-resources downloaded/printed : 1,456
- h) Number of IT literacy trainings organized : Part of orientation & bi-annually for library staff

Library Automation. Though the entire Library is Wi-Fi enabled, the following are provided:

Total number of computers for public access	24
Total number of printers for public access	2
Intranet bandwidth for library	: 100 Mpbs
Institutional repository	: Through Intranet
Participation in resource sharing networks/consortia:	eUniv, EBSCO, DELNET and Open Sources.

Library Resources

Particulars	Total
Text Books	38,064
Reference Books	5,219
e-Books	1,50,000
Journals	10,000
Digital Database	4
CD & Video	1,800
Others – Magazines	30
Newspapers	22

*The total School of Pharmaceutical Sciences books – 4,565

Strategically located in the heart of the campus, the serene atmosphere provided by the Yogananda Library makes it a sought-after place in the campus.

Internet (10)

- Name of the Internet provider
- Available bandwidth
- Wi Fi availability
- Internet access in labs, classrooms, library and other offices
- Security arrangements

In keeping with Shoolini University’s Mission to be counted as a leading global institution, technology is being leveraged as the enabling platform. ICT is being exploited to provide outreach and the University is progressively making efforts to upgrade and concurrently promote the culture of exploiting technology for attaining global competencies.

The School has a comprehensive strategy to affect a paradigm shift in the knowledge management system and enhance the functional efficiency of administrative departments. A full-fledged cell is functional for the purpose with a Chief Information Officer at its helm.

The constitution of IT Cell is given below:

S. No.	Name	Designation
1	Prof. Atul Khosla	Pro VC (Advisor)
2	Mr. Sachin Sharma	CIO (Advisor)
3	Mr. Pankaj Vaidya	CTO
4	Mr. Hemant Sharma	Sr. System Analyst
5	Mr. Mahesh Sharma	System Analyst
6	Mr. Preeti Sharma	System Analyst
7	Mr. Diksha Sharma	Asstt. System Analyst
8	Mr. Aruna Thakur	Asstt. System Analyst
9	Mr. Paramvir Bhandari	Asstt. Hardware Executive
10	Mr. Jitender Sharma	Network Analyst
11	Mr. Rajesh Kumar	Asstt. Network Analyst

The cell acts as the „in-house“ organization for developing and servicing ICT infrastructure in a cost-effective manner. Development of the Library Management System, KMS, ERP and eUniv platform was done „in-house“ using open source software and this has proved to be a major success.

In order to provide access to on-line teaching and learning resources and other knowledge and information database following initiatives have been taken:

- All faculty members provided computing facilities.
- All classrooms and seminar halls have been provided with projectors as an aid to teaching process.
- Various online journals are subscribed by YKC and made available.
- Various Open Source courses are also made available via University Intranet.
- The University has its own in-house developed software for conducting online tests.
- The Library services are computerized with web enabled software.

In addition to the above, specific measures to optimize the use of ICT in the University are listed:

- Webmail service for all faculty members, staff and students.
- A person specific unique Smart Card to meet ERP requirements.
- Online LMS is serviced by System Analyst of Internal IT team.
- Facilitation of online student Exams and Quizzes by the IT team.
- Software updates done in-house.
- Desktops, Laptops, Servers etc. are repaired, serviced and monitored on a regular basis.
- The University also provides laptops and tablets to students, on requirement basis.

Information Security

The School is strict about information security and follows procedures and protocols to ensure this. The following are ensured:

- A backup system for the sensitive databases such as finance and examinations by use of portable hard disks.
- Question papers are typed in a strong room using stand-alone computers- No external devices are allowed
- Crucial offices like HR and Examinations are separated from the main network using VLANs to provide information security.
- A dedicated team is available to create, modify and delete email accounts.
- A session time out protocol is in place to mitigate misuse of information.
- An enterprise level end point antivirus is used.

Network Security

- A Unified Threat Mechanism has been deployed on the network which acts as the firewall gateway, anti-spam gateway, antivirus protection and bandwidth manager.
- The University also deploys a centralized antivirus server for detection, web filter and other internet security features.

Risk Management

- Though no threats have been detected in the network till date, risk mitigation measures are ensured; important ones are listed:
- Essential service periodically backed up by the person responsible.
- Internal threats are managed by unique login authentication and giving proper permissions to resources.

Software Asset Management

The University has a license agreement with Microsoft for their products which include Operating Systems, Office Suite, SQL etc. This license is renewed every year.

Open Source Resources

- The University has a policy to promote Free Open Source Software, wherever possible.
- Web servers have Linux – a Free Open Source Operating System.
- In collaboration with IIT Bombay, trainings programs are run regarding various open source technologies.
- In house software has been developed to conduct quizzes, post articles and facilitate academic activities.

Green Computing

To contribute to Green Computing in the University, the University procures products from reputed vendors who have taken initiatives for recycling of their products and to reduce carbon footprint. Notwithstanding, disposal of E- garbage is outsourced by the University centrally.

Details of IT Infrastructure

	Total Computers	Computer Labs	Internet	Browsing Centers	Computer Centers	Office	Departments
Existing	363	6 Labs	105 mbps	21	60	40	60 (all)
Added	10	---	395 mbps	-	-	10	
Total	373**	6	500 mpbs	21	60	50	60

** As a policy every faculty member uses laptops for teaching and research – no's above are exclusive.

The list of Licensed Software is as follows:

Office Automation/ Application Software

- i. Tally 9.0
- ii. MS-Exchange Server 2007
- iii. MS-Exchange Server 2000
- iv. Exchange Server CAL OLP NIAE 2000
- v. Microsoft Front Page 2002 AE
- vi. MS-Office 2016, 2013, 2010, 2007, 2003 & XP
- vii. MS Access 2016
- viii. MS Project 2016
- ix. MS Outlook 2016

Operating System/ System Software

- i. Windows Server 2008 R2 and 2003 R2
- ii. Windows 10, 8.1, 7 & XP
- iii. MS- Windows 2012 server
- iv. MS-Windows NT 4.0 Server
- v. MS- Windows NT 4.0 workstation

Anti-Virus Scanners. Trend Micro Antivirus

A number of nodes/ computers with internet facility: 100 % with internet facility.

Any other. The University has connected all blocks and hostels by OFC to concurrently broadcast lectures, motivational movies etc.

Apart from the above, the institution has deployed the following IT facilities

- i. Mail, Messaging (Microsoft/Gmail cloud for students and faculty)
- ii. Web content filtering & caching proxy
- iii. Gateway security & anti-spam
- iv. Application servers on Linux and windows

- v. DHCP and RADIUS protocols
- vi. Library management services and online web catalog
- vii. Many to Many Video-conferencing
- viii. Helpdesk services
- ix. Network security
- x. Key management services and DNS
- xi. Wi-Fi campus on 802.11n with fault tolerance and load balancing
- xii. Open source Learning Management System - eUniv
- xiii. Anti-plagiarism system
- xiv. Virtual classroom and eUniv

The University ensures a three-year comprehensive warranty for newly purchased IT related equipment. The University has in house mechanism to maintain and repair computers, laptops, servers and UPS by the technicians of the Computer Center. The University undertakes maintenance through the IT Cell to provide repair and maintenance services.

Planned for future

- i. Directory-based Authentication
- ii. Timetable optimizer and smartcard-based real time attendance management system
- iii. Services & parent-services
- iv. ERP system – Enterprise portal for student/ employees
- v. Implementation of Open source tool for network management system
- vi. Backup and Data Recovery
- vii. IP Camera Surveillance
- viii. Database services
- ix. Endpoint enterprise antivirus
- x. Asset and Inventory Control

Other initiatives on IT are:

- The Institution facilitates extensive use of ICT resources including development and use of computer-aided teaching/ learning materials for generating a teaching-learning environment.

- The Institute has Computer Labs equipped with latest Hardware configuration, peripherals (including Printers, Scanners etc.) and latest version of Software to fulfill the academic needs.
- All computers are connected to a central network with Fiber Optic backbone and are accessible from everywhere within the campus.
- The IT lab allows students, faculty to take printouts, browsing and surfing etc.
- The Wi-Fi enabled campus provides 24x7 internet access to students and Faculty.
- All lecture halls are equipped with specialized teaching aids like LCD projectors to enhance the quality of the teaching learning experience.
- All auditoriums are inter connected for live broadcasting of lectures and motivational movies, this facility has been extended to hostels.
- The auditorium and seminar halls are equipped with the latest state of the art audio-video facilities and are used for hosting intra and inter college events like seminars, conferences, panel discussions, talk shows and cultural activities etc.
- Training programs are regularly conducted on software applications, installation of software, upgrading hardware etc.
- Faculty are allowed to download and rehearse lecture presentation.
- Teachers use ICTs for 'routine tasks' (record keeping, lesson plans, information presentation, searches on the Internet etc.).
- Special sound proof e-Studios have been made for faculty to prepare and record interactive lectures.
- Labs are modernized and upgraded to keep pace with the latest technologies. Help of industries has also been taken in this regard.
- Latest IT techniques available in evaluation process have been adopted.
- Implementation of Smart Class Room project.
- Faculty, Students and administrative staff of the University have been provided with Webmail service.
- Revised version of University website with advanced features and updated information about the University is available
- Online student's feedback system is in place.
- Online information regarding placement activities available to the students from the Placement Cell in real time.
- The University has its own ERP portal which helps it in progress towards its aim to become a paperless University.

- The faculty is encouraged to share content repositories of original content in the KMS Portal.
- They are encouraged to contribute their recorded videos lectures to the open domain to overall contribute to the enhancement of the knowledge bank for wider viewing.
- The Wi-Fi enabled campus provides round the clock internet access to both the students and Faculty.
- Every course is made available online to students from eUniv platform.
- The library provides access to e-resources to 24x7.
- Anti-plagiarism: Imbibes a culture of academic integrity.
- Cloud based services: Provide a future proof scalable, pool of tunable, configurable computing resources to students and faculty.
- For building in redundancy and fault tolerance at the network layer, the following are in place to ensure maximum uptime:
 - Dual ring fiber network
 - Core switch
 - Wireless Controller
 - Unified Threat Management device & firewall
 - Redundant wireless mesh network – will take over in case of multiple fiber cuts to keep campus services running
 - Improved bandwidth management – to ensure bandwidth availability to respective user groups
 - Improved security, risk management & compliance
 - Segregation of campus network into multiple VLANs – assigned dynamically on user authentication.
 - Enhanced web content filtering
 - Network access Control
 - Network Access Protection (checks OS legality, and patch levels prior to letting end point join the network)
 - Improved auditing of object access and internet access
 - Online Library on ‘Moodels’
 - LMS system for Students and teachers
 - MyShoolini app for Android and IOS for faculty & Students (Details given in the next point)

- Online attendance system for students and faculty

IT facilities available to individual teachers for effective teaching and quality research

- Wi-Fi available 24 x 7 across the campus.
- Various databases are subscribed by the University to facilitate and promote quality research. These are used by the faculty members to conduct discussion with online and live data display in classrooms.
- Computerized book circulation facility with smart identity card
- E-access to library resources on 24x7 basis
- The University has its own user-friendly ERP portal.

Use of Audio-visual aids has enhanced the quality of learning and supplement the traditional „chalk-talk“ mode of instruction. Each lecture being put on the eUniv portal and this has ensured improvement in the quality of instruction, since teachers are conscious of their on-line presence.

This has acted as a great catalyst for teachers to improve on their instruction delivery and hone their presentation skills.

Declaration

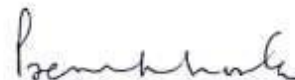
The head of the institution needs to make a declaration as per the format given below:

I undertake that, the institution is well aware about the provisions in the NBA's accreditation manual concerned for this application, rules, regulations, notifications and NBA expert visit guidelines in force as on date and the institute shall fully abide by them.

It is submitted that information provided in this Self-Assessment Report is factually correct. I understand and agree that an appropriate disciplinary action against the Institute will be initiated by the NBA in case any false statement/information is observed during pre-visit, visit, post visit and subsequent to grant of accreditation.

Date: 27/4/2019

Place: Shoolini University, Solan (H.P.)



Signature & Name

Head of the Institution with seal

Vice Chancellor
Shoolini University of Biotechnology
& Management Sciences
SOLAN (HP)

ANNEXURE – I

Research comparison of Shoolini University with NIRF top ranked Indian Institutes and Times top ranked Higher Education Institutes

Shoolini University – Quality of Research



Research Quality Indicators

Institution/s (Average)	Field-Weighted Citation Impact	Citations per Publication	% Publications in top 10% most cited worldwide	% Publications in top 1% most cited worldwide	% International Collaboration
Shoolini University* (Estb. 2009)	1.87	4.1	33.2	7.2	53.1
Top 10 Indian Universities (NIRF 2018)	0.96	1.8	14.6	1.2	20.3
Top 10 Overall (NIRF 2018)	1.01	2.0	16.4	1.1	22.2
IITs	1.08	2.1	17.5	1.1	21.8
Top 10 World Universities (THE)	2.14	4.3	27.6	4.7	50.3

Shoolini R&D Source: SciVal
 *Time Period: [2017 - 2019]
 Date exported : 14-Mar-2019

1

Shoolini University – Quality of Research



Top 10 Overall Institutes/Universities (NIRF 2018) Research Quality Indicators

Institution	Research Output (SCOPUS Documents)	Field-Weighted Citation Impact	Citations per Publication	% Publications in top 10% most cited worldwide	% Publications in top 1% most cited worldwide	% International Collaboration
Shoolini University* (Estb. 2009)	414	1.87	4.1	33.2	7.2	53.1
Top 10 Overall (NIRF 2018)	49050	1.01	2.0	16.4	1.1	22.2
Indian Institute of Science Bangalore	6373	1.03	2.1	16.4	1.7	29.8
Indian Institute of Technology, Kharagpur	5954	1.05	2	17.2	1	20.1
Indian Institute of Technology, Madras	5796	1.11	2.6	17.6	1.6	28.2
Indian Institute of Technology, Bombay	5736	1.06	2.4	16.3	1.2	27.8
Indian Institute of Technology, Delhi	5517	1.15	2	17.7	0.9	19.8
Banaras Hindu University	4750	0.96	2	16.3	1.4	20
Anna University	4571	0.77	1.4	13.2	0.7	13.1
Indian Institute of Technology Roorkee	4415	1.1	1.9	17	0.9	17.8
Indian Institute of Technology, Kanpur	3746	1.04	2	17.4	1	24.8
Jawaharlal Nehru University	2192	0.84	1.4	13.2	0.8	21

Shoolini R&D Source: SciVal
 *Time Period: [2017 - 2019]
 Date exported : 14-Mar-2019

2

Shoolini University - Quality of Research Top 10 Indian Universities (NIRF 2018)

Institution	Research Quality Indicators					
	Research Output (SCOPUS Documents)	Field-Weighted Citation Impact	Citations per Publication	% Publications in top 10% most cited worldwide	% Publications in top 1% most cited worldwide	% International Collaboration
Shoolini University* (Estb. 2009)	414	1.87	4.1	33.2	7.2	53.1
Top 10 Indian Universities (NIRF 2018)	37777	0.96	1.8	14.6	1.2	20.3
Indian Institute of Science Bangalore	6373	1.03	2.1	18.4	1.7	29.8
University of Delhi	5984	1.15	2.3	16.1	1.9	21
Banaras Hindu University	4750	0.96	2	16.3	1.4	20
Anna University	4571	0.77	1.4	13.2	0.7	13.1
Jadavpur University	3888	1	1.7	15.3	0.8	17.4
Amrita Vishwa Vidyapeetham	3829	1.08	1.1	7.8	0.6	9.9
Aligarh Muslim University	2619	1.05	2.2	18.5	1.9	31.3
Jawaharlal Nehru University	2192	0.84	1.4	13.2	0.8	21
University of Pune	1889	0.84	1.6	11.7	0.6	19.1
University of Hyderabad	1882	0.9	2	15.6	1.1	20.8

Shoolini R&D Source: SciVal
*Time Period: [2017 - 2019]
Date exported : 14-Mar-2019

3

Shoolini University - Quality of Research Top 10 World Universities

Institution	Research Quality Indicators					
	Research Output (SCOPUS Documents)	Field-Weighted Citation Impact	Citations per Publication	% Publications in top 10% most cited worldwide	% Publications in top 1% most cited worldwide	% International Collaboration
Shoolini University* (Estb. 2009)	414	1.87	4.1	33.2	7.2	53.1
Top 10 World Universities (THE)	251831	2.15	4.6	30.2	4.8	50.2
Harvard University	67008	2.17	4.5	29.8	4.7	45.8
University of Oxford	31022	2.09	4	28	3.9	60.7
Stanford University	30517	2.38	5	30.9	5.4	42.2
Imperial College London	25971	2.11	4.2	29.7	4.2	62.4
University of Cambridge	25438	2	4.3	29.2	4.4	61.3
Yale University	19887	1.96	4	28.3	4.2	40.1
Massachusetts Institute of Technology	18970	2.16	5	31.2	5.6	51.2
University of Chicago	13533	2.15	4.5	28.2	4.5	36.9
Princeton University	9867	2.3	4.6	31.1	5	48
California Institute of Technology	9618	2.15	5.5	35.8	6.2	53.7

Shoolini R&D Source: SciVal
*Time Period: [2017 - 2019]
Date exported : 14-Mar-2019

4

Shoolini University - Quality of Research
Indian Institute of Technology (New IITs)

Research Quality Indicators

Institution	Research Output (SCOPUS Documents)	Field-Weighted Citation Impact	Citations per Publication	% Publications in top 10% most cited worldwide	% Publications in top 1% most cited worldwide	% International Collaboration
Shoolini University* (Estb. 2009)	414	1.87	4.1	33.2	7.2	53.1
Roorkee	4415	1.1	1.9	17	0.9	17.8
Guwahati	3724	1.03	2.1	18.7	1.1	17.7
Dhanbad	3335	1.05	1.8	16.6	1	12
Indore	1401	1.4	2.7	25.2	2	30.5
Hyderabad	1347	1.5	4.1	19.2	1.9	25.4
Bhubaneswar	966	1.8	3.2	27.2	4.7	35.5
Patna	912	1.04	1.6	16.5	0.6	18.3
Gandhinagar	777	1.06	1.9	19.3	1.5	24.5
Mandi	761	2.02	7.3	20.3	3.5	34.6
Ropar	661	2	4.6	24.4	2.7	26.2
Rajasthan	426	0.89	1.9	16.5	1.3	20.9

Shoolini R&D Source: SciVal
 *Time Period: [2017 - 2019]
 Date exported : 14-Mar-2019

5

Shoolini University - Quality of Research
Institutes in Himachal Pradesh

Research Quality Indicators

Institution	Research Output (SCOPUS Documents)	Field-Weighted Citation Impact	Citations per Publication	% Publications in top 10% most cited worldwide	% Publications in top 1% most cited worldwide	% International Collaboration
Shoolini University* (Estb. 2009)	414	1.87	4.1	33.2	7.2	53.1
Jaypee University of Information Technology	1477	1.1	1.3	12.4	0.8	9.9
Indian Institute of Technology Mandi	777	1.06	1.9	19.3	1.5	24.5
Himachal Pradesh University	523	0.48	1.2	8.2	0.4	9.9
National Institute of Technology Hamirpur	440	0.93	1.7	15.9	1	8.2
Dr. Yashwant Singh Parmar University of Horticulture and Forestry	217	0.27	0.5	3.3	0	5.1
Central University of Himachal Pradesh	137	1.16	3.4	23.3	4.7	27.7

Shoolini R&D Source: SciVal
 *Time Period: [2017 - 2019]
 Date exported : 14-Mar-2019

6

Shoolini University - Quality of Research
Top Indian Universities THE 2019



Research Quality Indicators

Institution	Rank	Research Output (SCOPUS Documents)	Field-Weighted Citation Impact	Citations per Publication	% Publications in top 10% most cited worldwide	% Publications in top 1% most cited worldwide	% International Collaboration
Shoolini University* (Estb. 2009)	-	414	1.87	4.1	33.2	7.2	53.1
Indian Institute of Science Bangalore	251-300	8373	1.03	2.1	18.4	1.7	29.8
Indian Institute of Technology Indore	351-400	1401	1.4	2.7	25.2	2	30.5
Indian Institute of Technology Roorkee	401-500	4415	1.1	1.9	17	0.9	17.8
Indian Institute of Technology, Bombay	401-500	5736	1.06	2.4	16.3	1.2	27.8
JSS Academy of Higher Education & Research	401-500	562	1.92	5	8.7	1.7	18.2
Indian Institute of Technology, Delhi	501-600	5517	1.15	2	17.7	0.9	19.8
Indian Institute of Technology, Kanpur	501-600	3746	1.04	2	17.4	1	24.8
Indian Institute of Technology, Kharagpur	501-600	5954	1.05	2	17.2	1	20.1
Savitribai Phule Pune University	501-600	1889	0.84	1.6	11.7	0.6	19.1
Indian Institute of Technology Bhuvaneshwar	601-800	966	1.6	3.2	27.2	4.7	35.5

Shoolini R&D Source: SciVal
 *Time Period: [2017 - 2019]
 Date exported: 14-Mar-2019

7

Shoolini University - Quality of Research
Top Indian Universities THE 2019



Research Quality Indicators

Institution	Rank	Research Output (SCOPUS Documents)	Field-Weighted Citation Impact	Citations per Publication	% Publications in top 10% most cited worldwide	% Publications in top 1% most cited worldwide	% International Collaboration
Shoolini University* (Estb. 2009)	-	414	1.87	4.1	33.2	7.2	53.1
Indian Institute of Technology Hyderabad	601-800	1347	1.5	4.1	19.2	1.9	25.4
Indian Institute of Technology, Guwahati	601-800	3724	1.03	2.1	18.7	1.1	17.7
Indian Institute of Science Education and Research Pune	601-800	1085	1.81	5.5	34.4	7.1	51.1
University of Delhi	601-800	5984	1.15	2.3	16.1	1.9	21
Amrita Vishwa Vidyapeetham	601-800	3829	1.08	1.1	7.8	0.6	9.9
Benaras Hindu University	601-800	4750	0.96	2	16.3	1.4	20
Indian Institute of Technology, Madras	601-800	5796	1.11	2.6	17.6	1.6	28.2
Jadavpur University	601-800	3888	1	1.7	15.3	0.8	17.4
National Institute of Technology Rourkela	601-800	2624	1	1.7	16	0.7	11.8
Punjab University	601-800	2614	1.27	2.9	23.7	3.1	31
Tezpur University	601-800	971	1.1	2	17.8	0.7	14.5

Shoolini R&D Source: SciVal
 *Time Period: [2017 - 2019]
 Date exported: 14-Mar-2019

8

ANNEXURE- II

Certificate of NIRF ranking



ANNEXURE- III

Pictures of extra-curricular activities

DST Sponsored Conference, April, 2016



Flower Fest Celebration, March,2016



A Guest lecture as 'Guru Talk', April, 2016



IPA Student Congress, ISF College of Pharmacy, Moga, Sept, 2016



World Pharmacist Day, Sept. 2016



Annual Function 'MOKSHA', March, 2017



International YOGA day celebration, June, 2017



MARATHON, 5th Sept, 2017



Interdepartmental Cultural Competition, Sept, 2017





A Guest Lecture from GENPACT, March, 2018



Participation of students at conference ‘PHYTOCON’ organized at Lovely Professional University, April, 2018



MARATHON, 5 Sept, 2018



Interdepartmental Cultural Competition, Sept, 2018







Annual Function 'MOKSHA', March, 2019





Swachh Bharat Campaign, April, 2019



Inter University SPORTS Meet, April, 2019



