

Criteria Wise Inputs

CRITERION I: CURRICULAR ASPECTS

Ever since its inception, Shoolini University has strived to maintain excellence in teaching, research, innovations, promotion of use of technology and community services. There has been a constant endeavor in designing and developing outcome based, industry oriented, research focused, nationally and internationally relevant curriculum that inculcates high ethical values and global competencies among students.

The University provides a broad spectrum of courses ranging from basic, applied, technological, managerial, to interdisciplinary and specially designed courses that hone functional, computational and soft skills of the students.

1.1 Curriculum Design and Development

An outcome driven curriculum aligned with the vision of the University is designed on the basis of the inputs from industry, alumni, academia, students and competitive benchmarking to make it globally relevant.

1.1.1. How is the Institutional Vision and Mission reflected in the academic programs of the University?

The vision and mission of the University, to be a globally ranked University, has been interwoven by integrating teaching, research and extension in its academic programs. The key thrusts of our academic programs and curriculum include:

- Programs in emerging areas eg. Nanotechnology, food technology
- Flexible and choice based curriculum
- Outcome based curriculum that is benchmarked with global institutions
- Industry and employment focussed courses and curriculum
- Upgradation of soft skills of students especially from rural and semi urban areas

1.1.2. Does the University follow a systematic process in the design and development of the curriculum? If yes, give details of the process (need assessment, feedback, etc.).

Yes. A systematic process based on program outcomes, industry orientation and progressive vision is followed for the design and development of curriculum. This process including all academic

processes of the university are ISO 9001:2008 certified. The process factors into all relevant courses each with course description, content, skill outcomes, learning outcomes, lecture-wise schedule, pedagogy and evaluation methodology etc. Need assessment is done through consultations with experts, industry, potential employers and through feedback from teachers and, most importantly, students. Students' views are taken in regular teacher-student meetings under mentor-mentee relationship.

The current curriculum design involves a two-step process:

Step-1: The draft curricula of the different Schools prepared by respective committees incorporates the views and suggestions of industry, alumni, prominent external academicians, and potential employers. This is then competitively benchmarked nationally and globally.

Step-2: The modified curriculum is then presented before the Board of Studies (BoS), constituted for each of the Schools. The BoS is headed by the respective Dean and comprises of faculty, industry experts and noted academics as members. The concerned BoS then recommends for approval, to the Academic Council, the detailed curriculum - syllabi with skill and learning outcomes, pedagogy, scheme of examination, lecture schedules and evaluation mechanism.

The process flow chart is given in figure 1.1 in the following page.

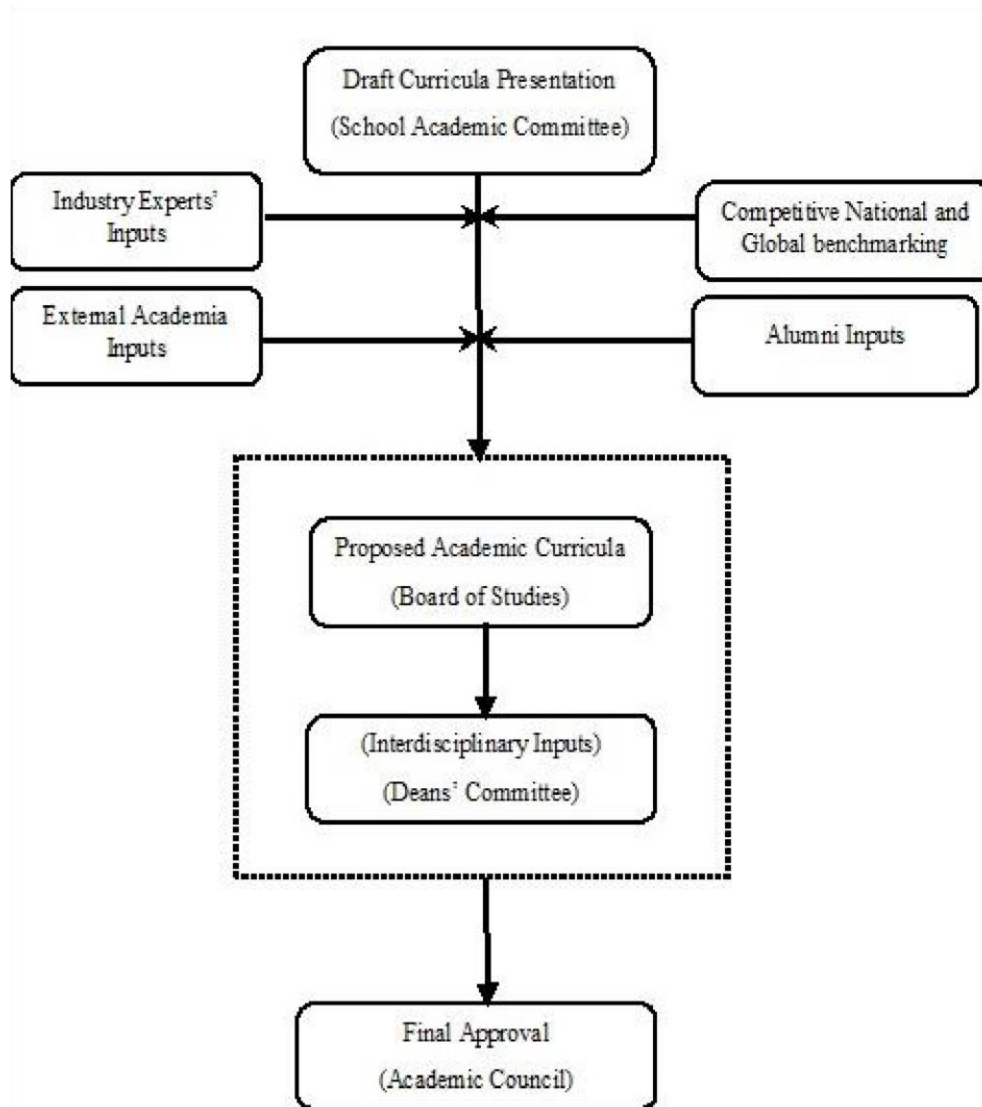
1.1.3 How are the following aspects ensured through curriculum design and development? Employability:

Outcome driven curriculum is designed and developed with the participation of industry experts. Alignment with industry requirements has been a guiding approach while designing the curriculum, particularly for professional programs like B. Tech., B. Pharmacy and MBA. Centers of Excellence have been established with industry partners like GENPACT, Anand Automotive, Damco Solutions, Tirupati and Meridian for equipping students with industry focused practical education. A specially developed program 'Skills Progression through Rapid Intensive and iNnovative Training' (SPRINT) (for details see criterion 7.3) has also been incorporated as an integral component of the curriculum.

With the incorporation of certifications such as the Association of Mutual Funds in India (AMFI) certification, TALLY, MS EXCEL

and Aptitude Training employability of students has made quantum jumps as witnessed during the placements made in the academic year 2014-2015.

Figure 1.1 Curriculum Design and Development Process



Innovation:

Curriculum innovations include:

- Joint development of curriculum with industry

- Development of detailed Lecture Schedules; comprising clearly defined learning objectives, functional outcomes and skill outcomes and mention of reference study materials.
- Distribution of the lecture schedules before commencement of classes and availability of the same on eUniv, a University-wide student portal of Shoolini University.
- Case study method introduced and is a regular feature of the teaching methods.
- Online Study Material- Lectures, cases, assignments and audio/videos etc.
- Live Industry Projects.
- Guest/Expert Lectures.
- Guru Series Talks – Under this initiative, eminent personalities from all walks of life deliver talks on issues enriching the core curriculum; a way forward to imbue real life skills.

Research:

The course curriculum is designed to spur innovation and inculcate interest in research by introducing research training both at the undergraduate and postgraduate levels across all faculties. The students get exposure to research methodology, research ethics, literature search, presentation skills as well as training in basic and contemporary technologies.

Some students of the University carry out funded research as JRF/SRF and also as research scholar with faculty members doing industrial projects. Some of the students are also the co-authors of research publications. Majority of faculty is Ph.D. and/or Post Docs from national and international institutes of very high repute like NIH USA, Notre Dame USA, IISc, IITs and IIMs etc.

The research policy of University emphasizes on the utilization and conservation of Himalayan economy and the faculty and students are encouraged to address the topical issues of the region. The University has also signed industrial and academic MoUs with institutions in India and abroad (refer to 3.7.3 for details). Research leading to patents is encouraged even for students.

In order to promote quality research, the university encourages its doctoral students to publish two research papers in Scopus indexed

journals before the submission of their theses. Also, one of the thesis examiner has to be a professor in a foreign university.

1.1.4 To what extent does the University use the guidelines of the regulatory bodies for developing and/or restructuring the curricula? Has the University been instrumental in leading any curricular reform which has created a national impact?

All norms followed by the University are as per the guidelines of regulatory bodies (UGC, AICTE, PCI, etc.) for all academic programs. The University has decided to adopt 'Choice Based Credit System (CBCS) from the session 2015-16 onwards.

University has undertaken several innovative initiatives that we believe will have impact in the coming years.

- Shoolini's online learning initiative (eUniv) has innovated continuous learning delivery
- For functional and soft skills, the SPRINT program has been started as a credit course for MBA students and is being rolled out to other Schools. SPRINT has the potential to be a role model for functional and soft skills training.
- University admits annually 20-30 employees of Anand Automotive Pvt. Ltd. in B. Tech. (Automobile Engineering) under lateral entry as per the curriculum designed by the company. Such joint industry programs are role models for Academia-Industry alliances
- A multinational company, GENPACT, jointly developed with Shoolini University a course for MBA (Business Process Management) for national requirement.
- Physical Training and Meditation forms one credit hour course in B.Tech. From 2015-16 it would be an elective course under CBCS for enhancement of ethical values and physical and mental fitness of the students.

1.1.5 Does the University interact with industry, research bodies and the civil society in the curriculum revision process? If so, how has the University benefitted through interactions with the stakeholders?

As mentioned earlier, the University takes feedback and suggestions for the curriculum development and revision process by incorporating inputs from the potential employers, scientists, alumni and other eminent personalities who visit the campus during

placement week, workshops, conferences, SPRINT program and Guru Series talks. Boards of Studies constituted at School level include external experts from industry and academics to structure and revise the curriculum for improving the employability of students.

Through such interactions, the University has developed best practice curriculum. Placements of the University's students have significantly improved through regular fine-tuning of curriculum.

1.1.6 Give details of how the University facilitates the introduction of new programs of studies in its affiliated colleges. Not Applicable

1.1.7 Does the University encourage its colleges to provide additional skill oriented programs relevant to regional needs? Cite instances (not applicable for unitary universities).Not Applicable

1.2 Academic Flexibility

1.2.1 Furnish the inventory for the following:

Programs taught on campus:

(1) Faculty of Applied Sciences and Biotechnology

(i) School of Biotechnology

Table 1.1 Programs taught in the School of Biotechnology

UG Programs	PG Programs	Ph.D. Program
B. Sc.(Hons) Biotechnology	M. Sc. Biotechnology	Ph.D. Biotechnology
B. Sc.(Hons) Microbiology	M. Sc. Microbiology M. Sc. Biochemistry M. Tech. Biotechnology M.Phil. Biotechnology M. Phil. Microbiology	Ph.D. Microbiology
Dual Degree		B.Tech.-M.Tech. Biotechnology B.Tech.-MBA Biotechnology

(ii) School of Bioengineering and Food Technology

Table 1.2 Programs taught in the School of Bioengineering and Food Technology

UG Programs	PG Programs	Ph.D. Program
B. Tech. Biotechnology	M. Tech. Food Technology	Ph.D. Food Technology
B.Tech. Food Technology	M. Sc. Food Technology	
Dual Degree		B.Tech.- M.Tech. Food Technology

(2) Faculty of Management Sciences and Liberal Arts

(i) School of Business Management and Liberal Arts

Table 1.3 Programs taught in the School of Business Management and Liberal Arts

UG Programs	PG Programs	Ph.D. Program
BBA B. Com (Hons.) B. A. (Hons.) Economics	MBA	Ph.D. Management Science Ph.D. Economics

(3) Faculty of Engineering and Technology

(i) School of Mechanical and Civil Engineering

Table 1.4 Programs taught in the School of Mechanical and Civil Engineering

UG Programs	PG Programs	Ph.D. Program
B. Tech. Mechanical Engineering B. Tech. Civil Engineering B. Tech. Nanotechnology	M. Tech. Mechanical Engineering M. Tech. Civil Engineering	Ph.D. Mechanical Engineering Ph.D. Civil Engineering
Dual Degree	B.Tech. – M.Tech. Mechanical	

(ii) School of Electrical and Computer Science Engineering

Table 1.5 Programs taught in the School of Electrical and Computer Science Engineering

UG Programs	PG Programs	Ph.D. Program
B. Tech. Electrical Engineering B. Tech. Computer Science Engineering B. Tech. Electronics & Communication Engineering B. Tech. Bioinformatics	M. Tech. Computer Science Engineering M. Tech. Electronics & Communication Engineering	Ph.D. Computer Science Engineering Ph.D. Electronics & Communication Engineering
Dual Degree		B.Tech. – MBA B.Tech. – M.Tech. (ECE) B.Tech. – M.Tech. (CSE)

(4) Faculty of Pharmaceutical Sciences**(i) School of Pharmaceutical Sciences****Table 1.6 Programs taught in the School of Pharmaceutical Sciences**

UG Programs	PG Programs	Ph.D. Program
B. Pharmacy	M. Pharmacy (Pharmaceutics) M. Pharmacy (Pharmacology) M. Pharmacy (Pharmaceutical Chemistry) M. Pharmacy (Drug Regulatory Affairs)	Ph.D. Pharmaceutical Sciences

(5) Faculty of Basic Sciences**(i) School of Biological and Environmental Sciences****Table 1.7 Programs taught in the School of Biological and Environmental Sciences**

UG Programs	PG Programs	Ph.D. Program
B. Sc.(Hons) Zoology B. Sc.(Hons) Botany	M. Sc. Zoology M. Sc. Botany M.Sc. Environment Science M. Phil. Zoology M. Phil. Botany M. Phil. Environment Science	Ph.D. Zoology Ph.D. Botany Ph.D. Environment Science
Dual Degree		B.Sc. (Hons) – M.Sc.

(ii) School of Chemistry**Table 1.8 Programs taught in the School of Chemistry**

UG Programs	PG Programs	Ph.D. Program
B. Sc.(Hons) Chemistry	M. Sc. Chemistry M. Sc. Pharmaceutical Chemistry M. Phil. Chemistry	Ph.D. Chemistry
Dual Degree		B.Sc.(Hons) – M.Sc.

(iii) School of Physics and Materials Science

Table 1.9 Programs taught in School of Physics and Materials Science

UG Programs	PG Programs	Ph.D. Program
B. Sc.(Hons) Physics	M. Sc. Physics M. Phil. Physics	Ph.D. Physics
Dual Degree		B.Sc.(Hons) – M.Sc.

Overseas programs offered on campus Not Applicable

Programs available for colleges to choose from Not Applicable

1.2.2 Give details on the following provisions with reference to academic flexibility

a. Core / Elective options

As per recommendations of UGC, the University has adopted CBCS embodying academic flexibility in designing and developing programs and course curriculum. The course curriculum comprises of core, foundation and electives courses (subject based and choice based). Intensive practical's along with research/project form important components of curriculum.

b. Enrichment courses

The curriculum of both PG and UG programs include enrichment courses that enable the student to broaden his/her knowledge and vision.

Enrichment courses offered include Current Affairs, Business Awareness, Aptitude Development, Persona Enhancement, SPRINT, Social Projects, Written and Verbal Communication. The list is not comprehensive. In addition AutoCAD, Pro/e, CATIA etc. are offered by the Faculty of Engineering and Technology.

c. Courses offered in modular form

All courses at University are offered in modular form.

d. Credit accumulation and transfer facility

Yes, the University has a policy for credit transfer in UG and PG programs as per the recommendations of the University's equivalence committee.

e. Lateral and vertical mobility within and across programs, courses and disciplines

The University does offer lateral and vertical mobility in selected programs.

These include:

(i) Dual degree programs have the provision of vertical mobility in the following courses:

1. **B.Tech.-M.Tech.** (Biotechnology, Food Technology, Mechanical Engineering, Computer Science Engineering, Electronics & Communication Engineering)
2. **B.Tech.-MBA** (Biotechnology, Computer Science Engineering, Electronics & Communication Engineering, Bioinformatics)
3. **B.Sc. (Hons.)-M.Sc.** (Zoology, Botany, Chemistry, Physics)

(ii) The University provides lateral mobility in B. Tech. programs after 1st year as per the guidelines of the UGC and required regulatory bodies.

1.2.3 Does the University have an explicit policy and strategy for attracting international students?

The University has a dedicated Office of International Affairs which does liaison with International Agencies/Universities to attract foreign students; however, formal admission process is dealt by the Admission Cell of the University. Students from South Korea and UK have visited the University for research and semester exchange programs.

1.2.4 Have any courses been developed targeting international students? If so, how successful have they been? If 'no', explain the impediments.

The University is in the early stages of developing such courses. The University has already developed a course – English as a Foreign Language for South Asian students.

1.2.5 Does the University facilitate dual degree and twinning programs? If yes, give details.

The university's dual degree programs are described in point 1.2.2 (e) Presently no Twinning programs are being offered.

1.2.6 Does the University offer self-financing programs? If yes, list them and indicate if policies regarding admission, fee structure, teacher qualification and salary are at par with the aided programs?

Not applicable as the University is self-financed.

1.2.7 Does the University provide the flexibility of bringing together the conventional face-to-face mode and the distance mode of education and allow students to choose and combine the courses they are interested in? If ‘yes’, give operational details.

Not applicable.

1.2.8 Has the University adopted the Choice Based Credit System (CBCS)? If yes, for how many programs? What efforts have been made by the University to encourage the introduction of CBCS in its affiliated colleges?

The University has adopted the CBCS from the Academic Session 2015-16 for all the courses being offered.

1.2.9 What percentage of programs offered by the University follow:

- Annual system - M. Pharmacy, starting from 2015-16 onwards
- Semester system - All, except M.Pharmacy and MBA
- Trimester system - None
- Quadmester system- MBA

1.2.10 How does the University promote inter-disciplinary programs? Name a few programs and comment on their outcome.

Shoolini University offers several inter-disciplinary programs as listed below.

Table 1.10 List of Inter-disciplinary Programs

S. No.	Program	Inter disciplinary programs	Offering Schools
1.	B. Tech.	Biotechnology	School of Bioengineering and Food Technology, School of Biotechnology
2.	B. Tech.	Food Technology	School of Bioengineering and Food Technology , School of Biotechnology

S. No.	Program	Inter disciplinary programs	Offering Schools
3.	B. Tech.	Bioinformatics	School of Electrical and Computer Science Engineering , School of Biotechnology
4.	B. Tech.	Nanotechnology	School of Mechanical and Civil Engineering, School of Physics & Materials Science
5.	M. Tech.	Biotechnology	School of Bioengineering and Food Technology, School of Biotechnology
6.	M. Tech.	Food Technology	School of Bioengineering and Food Technology, School of Biotechnology
7.	MBA	Pharma & Healthcare	School of Business Management & Liberal Arts, School of Pharmaceutical Sciences
8.	MBA	Biotechnology	School of Business Management & Liberal Arts, School of Biotechnology

The outcome of the above programs is as follows:

Biotechnology, Food Technology, Nanotechnology and Bioinformatics are multidisciplinary in nature and hence, are offered jointly in partnership with different Schools of the Faculty and/or with one or two Faculties. Such programs enhance the overall competence of the students and better equip them to address complex problems. Same is true for programs like MBA Pharma and Healthcare and MBA Biotechnology.

1.3 Curriculum Enrichment

1.3.1 How often is the curriculum of the University reviewed and upgraded for making socially relevant and/or job oriented / knowledge intensive and meeting the emerging needs of students and other stakeholders?

It is done annually (or as needed) as referred in 1.1

1.3.2 During the last four years, how many new programs at UG and PG levels were introduced? Give details.

Inter-disciplinary Programs:

School of Biotechnology

2014-15

- B. Sc. (Hons.) Microbiology with School of Bioengineering and Food Technology

School of Bioengineering and Food Technology

2013-14

- M. Tech. Food Technology with School of Biotechnology

2014-15

- M. Sc. Food Technology with School of Biotechnology

School of Biological and Environmental Sciences

2012-13

- B. Sc. - M. Sc. Dual Degree Program in Zoology with School of Chemistry and School of Physics and Materials Science
- B. Sc. - M. Sc. Dual Degree Program in Botany with School of Chemistry and School of Physics and Materials Science

School of Physics and Materials Science

2012-13

- B. Sc. - M. Sc. Dual Degree Program in Physics with School of Chemistry and School of Biological and Environmental Sciences

School of Chemistry

2012-13

- B. Sc. - M. Sc. Dual Degree Program in Chemistry with School of Biological and Environmental Sciences and School of Physics and Materials Science

School of Electrical & Computer Science Engineering

2011-12

- B. Tech. Bioinformatics with School of Biotechnology

School of Mechanical and Civil Engineering

2014-15

- B. Tech. Nanotechnology with School of Physics and Materials Science

Programs in emerging areas:

School of Biotechnology

2014-15

- B. Sc. (Hons.) Biotechnology
- B. Sc. (Hons.) Microbiology

School of Bioengineering and Food Technology

2010-11

- B. Tech. Food Technology

2013-14

- M. Tech. Food Technology
- Ph.D. Food Technology

2014-15

- M. Sc. Food Technology

School of Biological and Environmental Sciences

2011-12

- M. Sc. Botany

2015-16

- M. Sc. Zoology
- B. Sc. (Hons.) Zoology
- B. Sc. (Hons.) Botany

School of Physics and Materials Science

2015-16

- B. Sc.(Hons) Physics

School of Chemistry

2015-16

- B. Sc.(Hons) Chemistry

School of Business Management and Liberal Arts

2010-11

- MBA Biotechnology

2013-14

- MBA Pharma & Health Care

1.3.3 What are the strategies adopted for the revision of the existing programs? What percentage of courses underwent a syllabus revision?

Shoolini University aims to produce quality workforce by providing its students adequate interaction with the leading subject experts from the academia and for providing industrial exposure. To ensure the said aim, a systematic and regular review process has been adopted for the development and revision of curriculum. Need for revision of programs and curriculum is identified in the meetings of Board of Studies which is a blend of academic and industrial experts. Emphasis is laid on the current needs and dynamic changes taking place in academics and corporate world.

The Academic Council initiates the process of revising of programs and curriculum which is guided by the feedback from students, potential employers, industry and alumni. Once the Board of Studies reaches a consensus on the revision of a program and curriculum, the recommended changes are forwarded to the Academic Council for discussion and final approval. In this process, some enrichment courses like aptitude development, written and verbal communications, persona enhancement etc., primarily focusing on skill development have been added to the curriculum over time.

Most of the courses underwent periodic revision since the inception of the University, catering to current needs and employment opportunities in the corporate and academic world. Time to time courses are revised to match the parameters of:

- Employability,
- Global changes,
- System of values and ethics.

1.3.4 What are the value-added courses offered by the University and how does the University ensure that all students have access to them?

The University offers and designs value added courses and certifications from time to time. An illustrative list of such courses/certifications includes:

- Personality Enhancement courses
- Aptitude and analytical skill courses
- Refrigeration and Air-conditioning with Anand Automotive
- Business Process Management with GENPACT
- NET/ GPAT/ GATE
- AMFI (Association of Mutual Funds in India) Certification
- IRDA (Insurance Regulatory and Development Authority) Certification
- Computerized accounting through TALLY
- PT for physical fitness for first year students
- Cyber Security

These Value added courses are announced well in advance and the program coordinators ensure the participation of interested students.

1.3.5 Has the University introduced any higher order skill development programs in consonance with the national requirements as outlined by the National Skills Development Corporation and other agencies?

Yes. Shoolini University is conducting higher order skill development programs in consonance with the National Skill Development Corporation (NSDC), Life Sciences Sector Skill Development Council (LSSSDC) and other agencies. Some illustrative examples are:

- **Under NSDC:** Online workshop conducted by IIT Kharagpur & IIT Bombay on Thermal Engineering & Fluid Mechanics by the Mechanical Engineering School.
- **Under LSSSDC and NSDC:** Faculty of Pharmaceutical Sciences has started:
 - Medical Representative Course
 - Production Chemist Course
 - Quality Assessment Course
 - Quality Control Course

○ **Under Ministry of Human Resource Development (MHRD):**

School of Electrical and Computer Engineering started conducting Free Open Source Software (FOSS) courses from IIT Bombay which is helpful for students to have exposure in technical topics.

1.4 Feedback System

1.4.1 Does the University have a formal mechanism to obtain feedback from students regarding the curriculum and how is it made use of?

The University has a formal feedback system. Regular meetings are held with the Class Representative to get formal feedback both on the quality and content of the courses delivered. The feedback from Alumni is also obtained on the usefulness and the industrial relevance of the modules that are being offered.

The feedback so collected is used for revision/up gradation of the course. This is also taken into consideration during the performance appraisal of the faculty members.

1.4.2 Does the University elicit feedback on the curriculum from national and international faculty? If yes, specify a few methods such as conducting webinars, workshops, online discussions, etc. and its impact.

The University gets feedback on curriculum from national and international faculty. Based on such feedback, few need based courses have been added to the curriculum of different programs overtime. Feedback is collected at different levels through the following methods:

- Inclusion of external faculty members in Board of Studies and Academic Council.
- Online discussions with the national and international faculty
- Getting feedback on the curriculum from the external experts
- Tie-ups with industries and academic institutes

1.4.3 Specify the mechanism through which affiliated institutions give feedback on curriculum enrichment and the extent to which it is made use of.

Not Applicable

1.4.4 What are the quality sustenance and quality enhancement measures undertaken by the University in ensuring the effective development of the curricula?

Effective development of curricula is achieved through the well-defined process (Fig 1.1) as a result of which the University is now ISO 9001:2008 certified for education and research work which itself indicate a process of continuous improvement in academic pursuits.

Any other information regarding Curricular Aspects which the University would like to include.

The SPRINT program has proved to be a major success story of Shoolini University. It has led to development of the students in:

- Key functional and soft skills
- Global competencies
- Values and ethics; Confidence
- Writing formal and informal documents
- Carrying of persona and Power dressing
- Telephone and Table manners