

Office of the Dean Academics

Minutes of the Fifth meeting of Undergraduate Curriculum Implementation Committee

January 31, 2013

The fifth meeting of the Undergraduate Curriculum Implementation Committee (UCIC) was held in the Senate room at 1500 hrs on January 29, 2013. The following members were present:

(Italics indicate inability to attend).

Prof. Anurag Sharma, Prof. Santanu Chaudhury, Prof. S. R. Kale, Prof. Sanjeev Sanghi, *Dr. Atul Narang, Dr. Shantanu Roy*, Dr. N. D. Kurur, Prof. B. Bhattacharjee, Prof. Anshul Kumar, *Prof. S. D. Joshi*, Prof. Ambuj Sagar, *Dr. Seema Sharma*, Dr. S. Dharamraja, Prof. T.R. Sreekrishnan, *Prof. R. Chattopadhyay, Prof. D. Ravi Kumar*, Prof. Joby Joseph, *Dr. D. Sundar*, Prof. A. S. Rathore, *Dr. G.S. Benipal*, Dr. Subodh Kumar, *Prof. G. S. Visweswaran*, Dr. N. Chatterjee, Prof. Sangeeta Kohli, Prof. P. Srivastava, Prof. Manjeet Jassal, Prof. James Gomes, Prof. M.R. Ravi.

The meeting started with a welcome to all members.

1. Minutes of the previous meeting dated January 15, 2013 were discussed. A couple of corrections were suggested by Prof. Santanu Chaudhury. Many members felt that the total contact hours of 31 in I semester was too high, and against the very spirit of the CRC decision to lower the number of credits of the undergraduate programmes. The matter was re-opened and discussed. After detailed deliberations, it was decided that:
 - I. Institute core courses had to spill over to the second year first semester in order to keep the load light. A typical distribution of (16+18) credits was recommended for the first two semesters, followed by 5 semesters (III to VII) of 20 credits each, so that 16 credits remain for the final semester, if a Department chose 150 credits for graduation.
 - II. It was recommended that 4 credits of Biology could be moved to semesters II and III instead of I and II. Some members felt that the pair of Graphics and Product Realization courses could be moved to semesters II and III, while some others suggested that Physics and Chemistry could be shifted to semesters II and III instead of I and II. It was recommended the following distribution could be sent to Departments, and they could be asked to give their opinion on which **one of the following three options** should be implemented. Preferably, engineering courses such as Mechanics, Electrical Engineering, Computer Programming, Graphics and Product Realization should start in the earlier semesters in each programme.
 - III. The course on Environment should thus be part of the II year curriculum or later. It was recommended that all the Departmental core credits should be completed by 7th semester of B.Tech thus permitting an industryinternship that need a continuous stay in an industry for those who desire to take it up.

Option-1 (15+20 credits in I year)

Semester	Lecture Course-1	Lecture Course-2	Lecture Course-3	Lecture Course-4	Other	Other	Other
I semester (9-2-12/8 or 9-1-14/10)	Maths-1/2 (3-1-0)	EE / CS (3-0-2)		Mechanics / Biology (3-1/0-0/2)	Intro. to Engg/ Prog (0-0-2)	Graphics / Prod. Real. (0-0-4)	None/ Language (0-0-4)
II semester (12-1-18/14 or 12-2-16/12)	Maths-2/1 (3-1-0)	CS / EE (3-0-2)	CY / PH (3-0-4)	Biology / Mechanics (3-0/1-2/0)	Intro to Engg/ Prog (0-0-2)	Prod Real./ Graphics (0-0-4)	Language / None (0-0-4)
III semester	PL BS	PL EA/ES	PH / CY (3-0-4)	PL BS / EA/ES	Lecture: DC		

Glossary: PL BS EA/ES: Programme-linked Basic Science / Engg. Arts/Science; Prod. Real: Product Realization; EE, CS, PH, CY: 1st year core EE, CS, PH and CY courses; DC: Department Core

Option-2 (16+20 credits in I year)

Semester	Lecture Course-1	Lecture Course-2	Lecture Course-3	Lecture Course-4	Other	Other	Other
I semester (9-1-16/12)	Maths-1/2 (3-1-0)	EE / CS (3-0-2)	PH / CY (3-0-4)		Intro. to Engg/ Prog (0-0-2)	Graphics / Prod. Real. (0-0-4)	None/ Language (0-0-4)
II semester (12-1-18/14 or 12-2-16/12)	Maths-2/1 (3-1-0)	CS / EE (3-0-2)	CY / PH (3-0-4)	Biology / Mechanics (3-0/1-2/0)	Intro to Engg/ Prog (0-0-2)	Prod Real./ Graphics (0-0-4)	Language / None (0-0-4)
III semester	PL BS	PL EA/ES	PL BS / EA/ES	Mechanics / Biology (3-1/0-0/2)	Lecture: DC		

Option-3 (18+20 credits in I year)

Semester	Lecture Course-1	Lecture Course-2	Lecture Course-3	Lecture Course-4	Other	Other	Other
I semester (12-2-12/8 or 12-1-14/10)	Maths-1/2 (3-1-0)	EE / CS (3-0-2)	PH / CY (3-0-4)	Mechanics / Biology (3-1/0-0/2)	Intro. to Engg/ Prog (0-0-2)		None/ Language (0-0-4)
II semester (12-1-18/14 or 12-2-16/12)	Maths-2/1 (3-1-0)	CS / EE (3-0-2)	CY / PH (3-0-4)	Biology / Mechanics (3-0/1-2/0)	Intro to Engg/ Prog (0-0-2)	Prod Real./ Graphics (0-0-4)	Language / None (0-0-4)
III semester	PL BS	PL EA/ES	PL BS / EA/ES		Lecture: DC	Graphics / Prod. Real. (0-0-4)	

2. Members from various Departments were requested to update the committee with inputs related to the Basic Science and Engineering Arts/Science courses offered / required by their respective Departments. The following is the summary of this discussion:

Civil Engineering: Separate Solid Mechanics and Fluid Mechanics courses under EA/ES required.

Mathematics: Need Signals&Systems; Digital Electronics and Lab; Data Structures; Computer Architecture. Will offer Numerical Methods; Probability and Stochastic Processes; Linear Algebra; Optimization and Applications; Differential Equations; Statistics.

Physics: Need Signals&Systems, 1 EE and 1 ME course

Textile: Need Statistics; Solid& Fluid Mechanics (one course); Polymer Chemistry; Material Science.

Electrical: Need Probability&Stochastic Proc; Electrical Properties of Materials; Data Structures; Thermodynamics. Will offer Electromechanics; Signals and Systems; Digital Electronics.

Computer Science: Need Digital Electronics; Signals & Systems; Probability and Stochastic Proc.

3. The convener of the subcommittee appointed to recommend implementation strategy for non-graded credits under Professional Ethics and Social Responsibility, Prof. Sangeeta Kohli, presented the recommendations of the subcommittee. The document containing the recommendations is in annexure I. The committee deliberated the recommendations and accepted them. It was appreciated that a substantial effort is required to put in place the mechanism recommended, and administrative support for the activity is essential to carry out the implementation effectively.

The meeting ended with thanks to all the members.

Comments on the above minutes should be sent to the undersigned by 4.2.2013.

M.R. Ravi
Associate Dean Academic (Curriculum)
and Convener, UCIC.

**Recommendations of the Committee on the Non-graded Component on
“Professional Ethics and Social Responsibility (PE&SR)”**

January 25, 2013

The Committee, in its meeting of January 24, 2013, made the following recommendations for implementation of the non-graded component on “Professional Ethics and Social Responsibility (hitherto referred as PE&SR)” as part of the new UG curriculum.

General Framework:

The PE&SR related activities can be partly in structured and partly in unstructured format.

Structured Part : The students can first attend a few introductory workshops, then carry out some field activities in association with organizations outside IITD followed by one advanced workshop to analyze the experiences from the activities and provide further inputs on professional ethics. The students will earn 26 hours from the 6 workshops (as detailed later) and 50-60 hours from the activities with other organizations.

Unstructured Part : The remaining 14-24 hours can be earned in flexible ways through various activities in the campus.

Structured Components:

I. Introductory workshops

In the first year, the students can do the introductory workshops to get the initial orientation for PE&SR. These workshops can be divided into five categories based on the topics they would be expected to cover:

- A. Sustainability & Civic Responsibility Workshops:** Sensitization to the issue of sustainability in terms of resource utilization and its impact on physical environment, habitat & heritage, engaging with the community within and outside the campus.
- B. Gender Sensitization Workshops**
- C. Workshops on Foundation and Skills for Lifelong Learning:** Understanding one’s own goals of life and its impact on one’s relationship with the society around; time and stress management workshops, introduction to yoga and meditation techniques as an aid to self-management.
- D. Diversity Workshops:** Sensitization to the need for respecting others irrespective of their background, culture, gender, profession, economic level, etc.
- E. Professional Ethics Workshops:** Introduction to issues in ethical behaviour, in student life and beyond: cheating, plagiarism, corruption, cyber crime; ethics in the area of technology & society - “Responsible research / technology”, social and environmental risk awareness/assessment; engineering disasters and failure - case studies (A few of these topics can be dealt with in the introductory workshop and others in the advanced workshop)

- In each category, several workshops can be held by different resource persons. The workshops may use audio-visual resources, debates, discussions, games etc. It is proposed that each student must do one workshop in each category in the first two years – with minimum of one workshop in every semester.
- Each introductory workshop should be of 4 hour duration and the students would get 4 hours for attending one such workshop.
- Thus, in each category, workshops will be held in each semester.

II. Field Activity

- The field activity must cover internship or short stay with an organization involving field level project work fulfilling the objectives of professional ethics and social responsibility.
- These organizations must be identified *a priori* by IITD. These must be NGOs or CSR wings of corporates.
- The student will need to earn a minimum of 50 hours and can earn a maximum of 60 hours in PE&SR category through the field activity.
- It is suggested that this work be carried out in a distributed manner or in a single block utilizing the winter vacations of first or second year and/or summer vacations at the end of first year or second year.
- Further discussion is required to spell out the kinds of activities which can be covered under this component.

III. Advanced Workshops

- Several workshops can be organised in this category, each of 6 hours duration. The student will earn 6 hours after attending this workshop.
- Each student will have to attend one workshop in this category, AFTER COMPLETING the field activity. This can be attended in the first or second semester of the third year.
- Each of these workshops will have two parts: (i) reflection and analysis of the experiences during the field activity. (ii) Special inputs on “Professional Ethics for Engineers”
- Each part can be conducted by a separate resource person or both parts may be conducted by the same resource person.
- The resource persons for the first part must preferably be those who have had field level experience. For the second part, resource persons can be drawn from various walks of professional life.

Unstructured Component

- With introductory and advanced workshops constituting (20+6) 26 hours of activity, and field activity being associated with 50-60 hours, 14-24 hours of work will be covered under unstructured component
- These hours may be earned at anytime during the first three years of student’s stay, but preferably in third year.
- It is suggested that the hours earned in PE&SR through on-campus activities must not be given for attending lectures and meetings. They should correspond to carrying out a project or

taking initiative in organizing/coordinating a relevant activity. Further discussion is required to detail out the kinds of activities which can be covered under this component.

Relationship with NSS Activities

- In the first year, the students can continue to carry out NSS related activities which will be distinct from the PE&SR workshops.
- Some of the organizations identified by IITD for the field activity under PE&SR may be the same as some of the NGOs with which students work to complete a part of their NSS requirements. A student working with such an organisation may work long enough to fulfill NSS as well as PE&SR requirements of hours separately. Under no circumstances should the student get double credit for a certain number of hours of work.
- Same can be true for the on-campus activities corresponding to 14-24 hours of PE&SR. A mechanism must be evolved to ensure that for involvement in a given activity, the student does not get credit for both NSS and PE&SR, unless adequate number of hours have been put in to justify the same.

Administrative and Infrastructural Requirements

- There must be a core committee of faculty members coordinating this activity. The committee will also identify the organizations for field activity and the resource persons for the workshops.
- There must be a non-faculty coordinator of the workshops in charge of the logistics of the workshops. In accordance with the above proposal, workshops will have to be conducted every semester to cater to an average of (850x3) 2550 students. Taking 40-50 students per workshop, this would require about 60 workshops to be organised every semester. This certainly requires a full time person for managing the workshops and support staff for additional help. Secretarial help would be required to maintain the relevant records of the students (attendance, feedback et.).
- Considering that generally, in a semester only 9-10 Saturdays are available for these workshops, 6-7 workshops will have to be held in parallel for which adequate infrastructure must be provided to ensure their smooth conduct. Some of the workshops could also be scheduled during summer or winter breaks.
- There is a need to evolve an effective system for administering NSS/NCC/NSO and PE&SR components of the curriculum. The administrative support required for the purpose must be clearly worked out and the same must be provided by the institute. Also, the time spent by faculty coordinators on these activities must be counted towards co-curricular load.
- Subsequent to the above, a manual/working paper must be prepared to detail out the implementation mechanism for the PE&SR component.