

Office of the Dean Academics

Minutes of the eighteenth meeting of Undergraduate Curriculum Implementation Committee

March 26, 2014

The eighteenth meeting of the Undergraduate Curriculum Implementation Committee (UCIC) was held in the Central Library Committee Room at 1600 hrs on March 25, 2014. 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*, Prof. Shantanu Roy, Dr. N. D. Kurur, Prof. B. Bhattacharjee, Prof. Anshul Kumar, *Prof. S. D. Joshi*, Prof. Ambuj Sagar, *Dr. Seema Sharma*, *Dr. K. Sreenadh*, *Prof. T.R. Sreekrishnan*, *Prof. R. Chattopadhyay*, Prof. D. Ravi Kumar, Prof. Joby Joseph, *Dr. D. Sundar*, *Prof. A. S. Rathore*, Dr. B.R. Chahar, *Dr. Subodh Kumar*, *Prof. G. S. Visweswaran*, Prof. A. Tripathi, Prof. Sangeeta Kohli, Prof. P. Srivastava, Prof. Manjeet Jassal, *Prof. James Gomes*, Prof. M.R. Ravi.

Prof. P.V.M. Rao also attended as a special invitee.

The meeting started with a welcome to all members.

1. **Confirmation of minutes of meeting 17 dated March 13, 2013:** The minutes of meeting 17 were confirmed as circulated.
2. **Course Structure, Scheduling and Core course Templates of Mechanical Engineering B.Tech Programmes:** The Department had accepted the suggestions of the UCIC and modified the credit structure to make both programmes have total credits in whole numbers. The biology and environmental science courses were also scheduled in earlier semesters as suggested by the UCIC. But the Department decided to retain the core courses as proposed originally, stating that in the modern context, these courses are no more specialized but are necessary for every student. All these were accepted by the UCIC. The Heads of AM and ME Departments had met and resolved that the two Departments would work together on courses of mutual interest. The minutes of this meeting is enclosed in Annexure A. The UCIC studied the course templates closely, and accepted all the templates with a few minor suggestions. It was decided to forward the structure, scheduling and templates for discussion in all Faculty Boards, and then present them to the senate for discussion and approval.
3. **Slots of Institute Core and Programme Linked Courses:** A meeting of timetable in-charges of all Departments was held on 24.3.14, in which the following were proposed:
 - a) The slots A and M be exclusively reserved for Humanities category courses. This would mean that Departments would not float UG core / elective courses in these slots, so as to enable students to register for HU category courses without clashes. It was also decided to include a tutorial hour in M slot to facilitate this.
 - b) Slots B, D and F be reserved for courses floated by a Department in which students from other Departments would be expected to register: such as Programme Linked courses and Open category courses. If all Departments use this uniformly, it would be easy for students to look for courses of these categories.
 - c) Slots C, E and F be used by Departments for their own core and DE courses. F slot is also common with PL/open course slots: this is deliberately kept so for such courses that would be core for a Department but also open to other students as PL or open category course.
 - d) In case the number of core /DE courses to be floated exceeds 3 (C, E, F slots), other slots in which students of that Department do not have PL courses could be used; if the core courses of the Departments have a 3-0-0 format, not requiring tutorial or lab, other slots: H, J, K or L could be also used. Out of these, K and L are evening slots, and may clash with laboratory courses.
 - e) Slots H, J, K and L are to be used only for 3-0-0 courses, i.e., courses without a tutorial or laboratory content, so that courses do not need timings outside those allotted for the slot of the course.

The UCIC discussed these propositions in detail. It was decided to swap B and E slots between items (b) and (c) above: i.e., D, E, F slots for PL/open courses, and B, C, F slots for core / elective courses. It was also suggested that courses that are conceptually intense, where lectures longer than 1 hour could be difficult for students to absorb, should either not be put in B slot, or if put, then the time be divided between lecture and discussion of problems / difficulties. With these changes, the tables in Annexure B suggest the slots for Institute core / PL courses to be floated in the coming semester.

4. The proposal for rationalization of starting strengths of programmes and revised rules for programme change had been circulated to Departments and feedback from Departments offering UG programmes had been received. These were tabled in the UCIC and discussed. Almost all Departments had agreed with the proposal as it is, with the following exceptions:
- Mathematics Department had suggested that their starting strength be 50 instead of 60, and the % change allowed be 10%.
 - Mechanical Engineering had suggested a starting strength of 120 instead of 135.

Besides, the break-up of starting strengths between multiple programmes of Departments were modified by the Departments as follows: DBEB: (45+15) in BB4 and BB6 instead of 60 in BB5; CSE: (68+22) in CS1 and CS5 instead of (60+30); ME: (60+60) in ME1 and ME2 instead of (90+45).

Departments that wanted to specify a course optionally for minimum grade to be eligible to change into their programmes were: Civil: B(-) in AML100; Physics: B in PHL100.

ME Department proposed that the minimum CGPA criteria of 7.5 for GE/OBC and 6.5 for SC/ST/PD be retained in the revised rules for Department Change.

The UCIC discussed the above and decided the following:

- a) The total starting strength cannot be reduced below the current level of 851. Since in the revision proposed, the strength of ME programmes has been proposed such that after Department change, the maximum number is not much different from the current value, it was decided to retain the total number as proposed, but with equal strengths of ME1 and ME2: 136 (68+68). For Mathematics, instead of increasing from 48 to 60, it was decided to increase the starting strength to 55, but maintain the 15% change uniformly across Departments. The revised table, to be presented to the senate, is given below.

Department Code	Current Strength (B.Tech + Dual)	Rationalized starting strength	Projected max-min strength after dept change (+/-15%)
BB	0+48	(45+15) 60	(38+13) 51-69 (52+17)
CH	71+52	(75+45) 120	(64+38) 102-138 (86+52)
CE	109+0	105	89-121
CS	(63+32) 95	(68+22) 90	(58+19) 77-103 (78+25)
EE	(EE1:89+EE2:32) 121	(EE1:75+EE3:45) 120	(64+38) 102-138 (86+52)
MA	0+48	(20+35) 55	(17+30) 47-63 (23+40)
ME	(ME1:103+ME2:48)151+0	(ME1:68+ME2:68) 136	(58+58) 116-156 (78+78)
PH	63+0	60	52-69
TT	93+0	105	89-121
Total	851	851	851

- b) It was also decided to maintain a minimum grade required in the optional clause at B(-) uniformly for all Department changes as decided in an earlier UCIC meeting. Thus, change to CE1 would need a minimum grade of B(-) in AML100 and to PH1 would need B(-) in PHL100. Since CSE was the Department which initially proposed this clause, it was decided to clarify with CSE as well as other Departments about their optional minimum grade requirements specifically before finalizing the rule.
- c) It was also decided to retain the minimum CGPA criterion as 7.5 (and 6.5 for SC/ST/PD categories), as it exists in the present rules.
- d) This proposal would be implemented starting from 2014-15 entry batch. For the 2013 entry batch, as an interim measure, it was decided to recommend to the senate that since starting strengths have not changed to the rationalized values, a 10% increase be allowed instead of 5% in strengths of various programmes.
5. **Implementation of Design and Practical Experience Non-Graded Component:** Prof. P.V.M. Rao proposed on behalf of the subcommittee the mode of implementation of this component. The proposal document is enclosed in Annexure C. The UCIC discussed this document in detail and agreed to the proposal that the following different modes of earning these points should be facilitated:

- a) Dedicated courses floated by Departments/Centres/Schools which students could take to earn design units. Such courses could be offered by any Department/ Centre/School, and would be graded by the faculty member coordinating the course and moderated by the respective faculty board. No credits can be earned from these courses, but only non-graded points towards design and practical experience can be earned. These courses would be similar in nature to the Design and Innovation courses offered in the previous curriculum.
- b) Minor Design project courses floated by Departments/Centres/Schools or interdisciplinary groups, similar to the existing Minor Project, but towards design points and not credits. Co-curricular activities such as Robotics, Mini-baja, Formula-1 SAE etc., SURA, TDP-IAS projects, etc. could be done by the students registering for this course. Evaluation would be by the faculty coordinator appointed by each UG programme offering Department with the help of the faculty coordinator/mentor/guide of the activity, and moderated by the faculty board. For interdisciplinary work, an Institute level faculty coordinator should be appointed, who would evaluate the project, and moderate it with Associate Dean (Curriculum).
- c) Faculty teaching regular courses could announce design projects optionally in their courses, which would not count towards the credits of the course but towards design points. Evaluation would be by the course coordinator and moderation by the faculty board.
- d) Summer Internships in Industry
- e) Semester-long internships in Industry
- f) Short module courses on Design offered by faculty of Departments/Centres/Schools or visiting faculty. Evaluation would be by the faculty concerned and the moderation by the faculty board of the Department offering the course.

In all these options, it was resolved that about 40 hours of work could be counted towards one design unit. For internships, summer internships (40 working days in summer) could be counted for 2 design points, and semester internships (100 working days in a semester) for 5 design points. The Departmental faculty coordinator would evaluate the internships and the concerned faculty board would moderate the evaluations. Other activities would be evaluated as mentioned in the respective item above. The student could register with a maximum of 2 points per option in the other activities. After evaluation, the faculty coordinator decides to award 2, 1 or zero points depending on the nature and quantum of work.

It was decided to circulate the above proposal to Departments for their suggestions and necessary action for floating courses starting from the coming semester.

The meeting ended with thanks to all members.

Comments, if any, may kindly be sent to the undersigned by 1.4.14.

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

Annexure-A

विभाग : यांत्रिक इंजीनियरी
Dept.: Mechanical Engineering
संदर्भ सं./Ref. No. 20. 14 BMCH 1061
दिनांक /Date: 24/3/14

Department of Mechanical Engineering

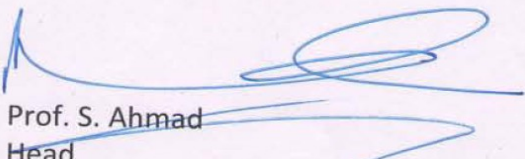
March 24, 2014

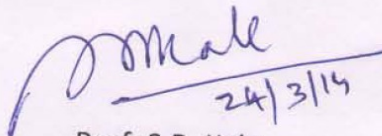
Subject: Academic cooperation between A.M. and M.E. Departments

The following arrangements shall be followed for curriculum and teaching related aspects of UG programs:

- (a) The teaching loads will be shared for all courses of mutual interest by the faculty of both the departments.
- (b) The faculty of both departments shall jointly develop the templates for basic courses on Mechanics of Solids, Fluid Mechanics, and related laboratories. These courses will bear AM number.
- (c) All course templates of the B.Tech. programs ME1 and ME2 shall be discussed jointly and finalized by faculty with expertise and interest in corresponding courses.
- (d) Faculty of both the departments shall design and develop departmental elective courses for the B.Tech. ME1 and ME2 programs. These shall be numbered AM or ME as per mutual agreement.
- (e) Faculty from either department can singly or jointly supervise B.Tech. major projects.

The above arrangement shall be implemented with immediate effect. The details of sharing of teaching load shall be worked out through mutual discussions as and when required. To monitor the progress of the above arrangement, a review meeting will be held immediately after the submission of grades each semester.


Prof. S. Ahmad
Head
AM Dept.


24/3/14
Prof. S.R. Kale
Head
ME Dept.

Dean Academics

Annexure B
Slots and Schedule for I semester 2014-15

Slots	Course	Departments
E	AM (Mat Sc)	BB5; ME1; ME2; TT1
	CY (PL)	CH1; CH7
	PH (Mat Sc)	CS1; CS5; MT6
C	Bio	BB5; EE3;
	Env	MT6; PH1; TT1
D	AM (Mech Solids)	CE1; ME1; ME2
	Prob and Stoc	CS1; CS5
F	CHL110	BB5; CH1; CH7
	AM/ME (Mech Fluids)	CE1; ME1
	Data Structures	CS1; CS5; MT6; EE1; EE3
	AM (Expt Meth)	TT1

Slots	E	C	D	F					A/M	N
BB 5	AML120	BIO		CHL110	BEL101	BEL103	BEL201			Intro
CH1 CH7	CYL121			CHL110	MEB	Num methods			HU	Intro
Civil			Mech Solids	Mech Fluids	Geology	Survey	Civil Matls		HU	Intro
CS1 CS5	PHL111		Prob and Stoc	Data Structures	Discrete	Digital Logic				Intro
EE1				Data Structures	EEL211	EEL205	EEL202	EEL203	HU	Intro
EE3		BIO		Data Structures		EEL205	EEL202	EEL203		Intro
MT6	PHL111	Env		Data Structures	MAL180	MAL104			HU	Intro
ME1	AML120		AML140	MEL/ AML160	Thermo	Kinematics				Intro
ME2	AML120		AML140		Th-Sc	Kinematics			HU	Intro
PH 1		Env			EPL101	EPL103	EPL105	EPP211	HU	Intro
TT1	AML120	Env		AML130	Tex Fibers	Polymer Chemistry			HU	Intro

Annexure C

Design/Practical Experience

(Implementation guidelines for five non-graded units to be earned by all UG students)

Preamble

In the new curricula, it is mandatory for all UG students to earn 5 non graded units of Design/Practical Experience as graduation requirements. Objective of this non graded core requirement component is to give opportunities to students to acquire substantial design and practical experience both as a part of formal courses as well as in an informal setting. Second and even more important objective of this course is to inculcate design thinking among students and facilitate them to gain some design immersion experience.

Objective of Design/Practical Experience component is to promote *learning by doing* which does two important things: it allows students to immerse themselves in the environment in which work is to be done, so that they can understand the values and expectations of the target beneficiaries. Secondly it enables a fresh look at problems, not only at the ways of defining them, but also at the ways to solve those including skill-sets that are required to address them. A shift from problem based learning (acquisition of knowledge) to project based learning (application of knowledge), where the projects are grounded in problems outside the classrooms and labs in everyday scenarios, will involve students in reality, and reality in education (MHRD Design Manifesto, 2014). Design and Practical Experience bridges division between the curricular and the co-curricular, and encourage the curiosity and involvement that issue from total absorption in a subject of interest.

Design/Practical Experience activities need not be restricted to design of physical products but must also include system level design and experience. For example a team of students who under the supervision of faculty in collaboration with an NGO, would like to design a new financial inclusion system for marginalized section of population too can earn design/practical experience units.

Implementation

These units can be earned in multiple ways during the semester as well as during vacation period. Institute, departments and centers will specifically identify and designate a set of courses and activities which will provide students opportunity to earn these units. Student will be declared to have completed Design and Practical Experience units after he/she earns total of 5 units. This is analogous to earning credits under humanities, environmental courses etc.

Some of the suggested ways by which design/practical experience can be acquired are as follows:

1. Specialized Elective Courses related to Design and Practical Experience (Maximum 2 Units)

Departments and centres will offer a basket of elective courses which will not have any credits associated with them but will have only Design and Practical Experience units linked to them. In other words successful completion of these courses will not give any credits to students but only design practical experience units. These courses offered by departments and centers can be of one unit (50 hours of students time) or two units (100 hours of student time). Faculty offering these courses will award these units at the successful completion of the course requirements. If the course offered is of 2 units, faculty at the end of evaluation may award 2 units or only 1 unit if the work is partially satisfactory or none if the work is not satisfactory.

Many of the departments which offered design courses in the previous curriculum would like to retain and reoffer them in new form under this category with suitable modification. It is also good opportunity for departments not offering UG programs and centers to engage with UG students by offering new elective courses under this category. A few of these courses which cut across departments and are multi-disciplinary in nature too can be offered under the umbrella of interdisciplinary groups such as robotics.

One of the courses which needs to be offered under this category is Minor Design Project of 2 units. Minor Design Project will give students an opportunity to work in teams under the supervision of faculty on a real life project with design content. Some of the institute co-curricular activities pertaining to team based product building such as Robotics, Automobile, IGEM can be carried out under this project course. SURA projects related to design and practical experience too can be brought under this course.

2. Regular Courses with optional Design and Practical Experience Component (Maximum 2 Units)

Departments and faculty offering regular core and elective courses can offer optional design component in their courses at the time of registration. Successful completion of course will give credits to students and at the same time they will be eligible for earning (1 or 2) design units if they successfully complete optional design component. Faculty offering these courses will award these design units at the successful completion of assigned design work.

3. Summer Internships with Industry (2 Units)

Students can undertake minimum of 40 days of successful internship (to earn two design practical experience units) during summer vacations. This would be administered in the same manner in which departments presently administer the internship course by appointing a faculty coordinator who would also be responsible for awarding these units.

4. One Semester Internship (5 Units)

In the new curriculum a provision has been made for students to opt for one semester internship in industry with minimum of 100 working days. This is the only activity upon successful completion of which students would be eligible for 5 units of design practical experience. It is mandatory that student's work during this internship is supervised by two mentors one from the institute and another from industry. Students desiring to opt for one semester internship are required to plan well in advance and submit a project proposal in consultation with supervisors. Students can proceed with the internship after committee constituted by the department approves the same. Partial or complete units can be awarded by the departmental committee after evaluation at the end of internship period.

5. One Time Design Practical Experience Module (1 Unit)

For both existing and visiting faculty as well working professionals from industry, NGO & Freelancers who would like to engage students in a workshop/course related to design and practical experience, this one time module can be offered as one unit course. This is one of those courses which will not appear in courses of study but can offered with approval from Dean/Chairman (Senate). This 50 hour modules can be typically offered during mid-semester breaks, winter/summer vacations and even during non-class hours during the semester. Different ways in which above discussed methods of earning design/practical experience units are summarized in the following table.

Summary of Offering and Evaluation of Design Practical Experience Units

Design/Practical Experience	Design of Textile Products (TTDXXX) Design of medical Products (BMDXXX)	Course is offered by departments/centers. Student registers at the time of registration	Faculty offering course awards these units
	Robotics - Vision, Sensing and Path Planning (ABDXXX)	Course is offered by interdisciplinary group on Robotics	Faculty offering course awards units
	Minor Design Project (MEDXXX) Minor Design Project (AMDXXX) Interdisciplinary Design Project (JLDXXX)	Minor Design Project courses are offered by Departments/Centers. Students register for this course preferably in teams under the supervision of faculty.	Departmental committee which evaluates these projects awards units. Institute level committee which evaluates these projects will award these units
	Energy Systems & Technologies (MELXXX) Soil Mechanics (CELXXX)	Faculty teaching these courses also decide to offer optional design component. Some of the students registered for this course also opt for design component	Faculty offering course awards units
	Practical Training (EEDXXX) Practical Training (CSDXXX)	Course is offered by departments having UG programmes.	Departmental committee which evaluates these internships/practical training awards these units
	One semester Internships (EPDXXX) One semester internship (CEDXXX)	Course is offered by departments having UG programmes.	Departmental committee which evaluates these internships/practical training awards these units
	Design of Android Applications (YZDXXX)	One time module is offered by a faculty or group of faculty with one of the faculty as coordinator	Faculty coordinator awards design units
	Design of Radio Controlled Aircrafts (UVDXXX)	A visiting faculty together with IIT faculty as coordinator offers this one time module during mid-semester break	Faculty coordinator awards design units

Administration and Evaluation of Design Units

- Every department offering UG programmes will appoint a faculty who would be coordinator for Design and Practical Experience Units. HOD and coordinator together will moderate these units awarded to students. The coordinator also has responsibility of ensuring that units earned by heterogeneous activities meet the requirements in terms of learning efforts and experience.
- Institute will appoint a faculty who would be the coordinator for Design and Practical Experience units earned under the umbrella of interdisciplinary work. Associate Dean (Curriculum) together with this coordinator will moderate these units awarded under interdisciplinary work as well as those offered by departments and centers not having UG programmes.
- Departmental coordinators, Coordinator for interdisciplinary units and Associate Dean (Curriculum) together will form an institute level committee to review and modify plan and policies for administering these units.