

Office of the Dean Academics

Minutes of the twelfth meeting of Undergraduate Curriculum Implementation Committee

July 3, 2013

The twelfth meeting of the Undergraduate Curriculum Implementation Committee (UCIC) was held in the Senate Room at 1100 hrs on July 3, 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. B.R. Chahar, *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 following faculty members were also present: Dr. Shouri Chatterjee, representing members of EE Department; Prof. P.V.M. Rao, Prof. S. Mukherjee as special invitees; Prof. V. Upadhyay, acting Head, HSS, representing Head, HSS who was also specially invited.

The meeting started with a welcome to all members.

The chairman informed the members that the next meeting of the senate is being scheduled for July 16, 2013 for approval of some urgent items pertaining to starting the new curriculum from 2013-14. He also informed the committee that the courses of study booklet for PG students would be separate from that for UG this year, and the UG booklet would be initially issued as an interim booklet containing only the first year courses and some rules and information relevant to first year. This would be replaced by a regular booklet once the senate approves all the courses and modified rules pertaining to the new curriculum for UG programmes. When the PG curriculum is also revised, the booklets would again be unified into a single booklet.

1. **Confirmation of minutes of meeting 11 dated May 14, 2013:** Minutes of the previous meeting dated May 14, 2013 were confirmed without modifications.
2. **Revised HuSS course templates:** The course templates prepared by the HSS Department had been revised in accordance with the suggestions made by the UCIC. The committee accepted the revised templates, and in view of the fact that they have already been circulated to Departments and comments obtained, the UCIC decided that the templates can be tabled in the senate meeting on July 16, 2013.
3. **Update on the Engineering Graphics and Product Visualization Courses:** The chairman informed the committee that in accordance with the decision in the last senate meeting in May 2013, the Chairman, Senate had constituted two committees for formulating the templates of these two courses, since the Mechanical Engineering Department had expressed inability to prepare templates for these courses within the 2-credit limit prescribed by the Concept Paper. A committee convened by Prof. Sudipto Mukherjee had prepared the template for the course entitled *Engineering Visualization and Communication* while another committee convened by Prof. P.V. Madhusudhan Rao had prepared the template for the course entitled *Product Realization*, both in 0-0-4 format. The committee discussed the contents of both courses in detail. While the latter course template was approved as presented, a few minor suggestions were made on the former. The templates as submitted by the committees are placed in the Annexure-I. The UCIC decided that the updated templates would be circulated to Departments and placed before the senate on July 16 for approval. It was also recommended that these two courses be taken by the students in the same semester.
4. **Course numbering for courses under the new curriculum:** The chairman informed the committee that the new courses of first year will all have number 100 or 101. The list of courses approved in the previous senate meetings along with the new numbers is given below. He informed the committee that originally in the templates approved by the senate the numbers were different, and now these modified numbers have been approved by the Chairman Senate. This will be reported to the Senate in

the next meeting.

S.No.	New course number	Original course number	Course Title
1	AML100	AML110N	Engineering Mechanics
2	CEL100	CEL140N	Environmental Science
3	CSL100	CSL103N	Introduction to Computer Science for Beginners
4	CYL100	CYL100N	General Chemistry
5	CYP100	CYP100N	Chemistry Laboratory
6	EEL100	EEL101N	Introduction to Electrical Engineering
7	MAL100	MAL110N	Calculus
8	MAL101	MAL120N	Linear Algebra and Differential Equations
9	PHL100	PHL101N	Electromagnetic Waves and Quantum Mechanics
10	PHP100	PHP100N	Physics Laboratory
11	SBL100	SBL100N	Introductory Biology for Engineers

5. Update on the Non-graded Components:

a) Introduction to Engineering and Programme: Prof. P.V.M. Rao, the convener of the UCIC subcommittee for this component, informed the committee that the subcommittee was scheduled to meet at 3 p.m. On 3.7.13 to discuss further details. The chairman suggested that the committee could consider scheduling the Introduction to Engineering in the first semester of the programme and the Introduction to Programme in the third semester. This is desirable since a more liberal policy for programme change is being worked out, and a large number of students may change programmes at the end of two semesters: introduction to programme should be scheduled after this change in order to be effective, and focussed on students pursuing a particular discipline. The UCIC also endorsed this view. The sub-committee would work out the faculty requirement for running this component and inform the Dean Academics early so that faculty members could be identified in time for the semester.

b) Professional Ethics and Social Responsibility: Prof. Sangeeta Kohli, the convener of the subcommittee for PE & SR, informed the UCIC that this component would be implemented in three parts: Orientational inputs for all students, field exposure and on-campus activities. The orientational input should start in July, and is the most urgent component. Each student would have to attend a two-hour interaction session once in two weeks for the first two semesters, where about 40 faculty mentors would interact with groups of about 20-25 students each. This is planned to be organized as follows: the batch of 851 will be divided into two halves, each attending the session alternate weeks. Each half would in turn be sub-divided into 20 groups of about 20-25 students each. Two time slots a week would be identified between 5 p.m. and 7 p.m., with 10 groups attending the session in each time slot.

The content of the interaction is yet to be finalized, through workshops amongst the faculty mentors identified for the purpose. It is also proposed to involve experts to help the group prepare the contents and delivery methods. A workshop is proposed on July 12, with an expert group from a Mumbai-based organization, Illumine.

6. Modalities of operating the non-graded courses: Some of the non-graded components are assessed in one time, while others require assessment at different points in time to be cumulatively considered for award of the S or Z grade. For example, Language and Communication module would be assessed for two non-graded points in one semester; Introduction to Engineering and Programme would be assessed in two different semesters; NSS, NCC and NSO would be assessed cumulatively with activities throughout the year, over multiple semesters; PE & SR is also proposed to be assessed in a similar fashion, over different types of activities, cumulatively over several semesters. On the other hand, the Design and Practical Experience module carries 5 non-graded credit points and can be optionally earned all at once (one-semester industry internship), two points at a time (summer internship) or one point at a time (course project, co-curricular projects etc.). The committee

considered the options defining these activities as single courses for each non-graded component vis-a-vis separate point-wise courses. The committee authorized the Dean Academics to decide on this keeping in mind all the constraints including those imposed by the Web Based Academic Management System.

7. **Termination Rules for first year students:** The existing termination rules state that out of a total of 44 credits (including Introduction to Programme and HUN100) that the students should earn in the first two semesters, the minimum number of earned credits for continuation is 27 (23 for SC/ST students). These numbers correspond to 60% (50% for SC/ST students) of the total credits in the two semesters. In the revised curriculum, the number of credits, including the non-graded credit points for Language and Communication and Introduction to Engineering, is 37. Taking similar proportions for continuation requirement, the revised minimum number of earned credits work out to 24 (20 for SC/ST students). The other rules for probation would remain similar to the existing rules. The committee agreed with this proposition and authorized the Dean Academics to formulate the exact numbers for approval by the senate.
8. **Timetable for first year courses:** The first year students would be divided into four batches: two of these would have lectures in the forenoon and two in the afternoon. Let us call the forenoon batches as FA and FB, and the afternoon batches as AA and AB. Most classes for FA and AA batches will be held in the same classroom (say IV LT 3) and similarly for FB and AB will be in, say, V LT 1. The courses for these batches for I semester 2013-14 are defined in the following table:

	A slot	B slot	C slot	D slot	Lab Classes	5 p.m.- 7p.m.
Batches FA and AA (9-1-14)+ (0-0-3)	CSL100 (3 hrs)		PHL100 (3 hrs) (a/n in EP slot)	MAL100 (3+1 hrs)	CSL100(2 hrs) PHP100(4 hrs) MEP100(4 hrs) MEP101(4 hrs)	All students Intro. to Engg: once a week; PE&SR: once in two weeks.
Batches FB and AB (12-2-10)+ (0-0-3)	EEL100 (3 hrs)	AML100 (3+1 hrs)	CYL100 (3 hrs) (a/n in EP slot)	MAL101 (3+1 hrs)	EEL100(2 hrs) CYP100(4 hrs) Lang. (4 hrs)	

The meeting ended with thanks to all the members.

Comments on the above minutes should be sent to the undersigned by 10.7.2013.

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

COURSE TEMPLATE

1.	Department / Centre proposing the course	Committee set up by the Chairman Senate	
2.	Course Title (< 45 characters)	ENGINEERING VISUALISATION AND COMMUNICATION	
3.	L-T-P structure	0 - 0 - 4	
4.	Credits	2 . 0	
5.	Course number	MEP100	
6.	Status (category for program)	Engineering Core	

7.	Pre-requisites (course no./title)	None	
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8.	Status vis-à-vis other courses (give course number/title)		
8.1	Overlap with any UG/PG course of the Dept./Centre		
8.2	Overlap with any UG/PG course of other Dept./Centre		
8.3	Supercedes any existing course	MEL110	

9.	Not allowed for (indicate program names)		
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10.	Frequency of offering	☒ Every sem ☐ 1 st sem ☐ 2 nd sem ☐ Either sem	
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11.	Faculty who will teach the course As decided by the first year committee		
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12.	Will the course require any visiting faculty?	NO	
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13.	Course objective (about 50 words): Introduce methods to aid visualisation of of engineering objects and communicating the same to other professionals. This includes engineering drawings, CAD systems and tools for processing and presentation of time evolving systems in the form of animation		
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14.	Course contents (about 100 words) (Include laboratory/design activities): Free hand sketching of engineering objects and interpretation of drawings as a visualisation and communication tool. Creating 3D components through the use of a CAD package. Generation of drawings as per ISO standards from CAD package. Design of simple assemblies through theory of constraints, generation of assembly views from part drawings, animation of assemblies. Use of 3D models of rigid and soft systems in conjunction with physics engines for representation of time evolving system. Scripting for custom and procedural animation effects like, sprays, flames, weaves, moving objects, etc. will be taken up if time permits.		
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15. Lecture Outline *(with topics and number of lectures)*

Module no.	Topic	No. of hours
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COURSE TOTAL (14 times 'L')		0

16. Brief description of tutorial activities

NA

17. Brief description of laboratory activities

Module no.	Experiment description	No. of hours
1	Instructions for laboratories, 1 hr a week	14
2	Free hand sketching of isometric & orthographic views	9
3	Use of CAD packages for discrete component drawings	6
4	Dimensioning, sectioning and assembly drawings	9
5	Introduction to VRML based manipulations	6
6	Differential Equation driven animations with physics engines	3
7	Scripting for visualisation of various processes	3
8		
9		
10		
COURSE TOTAL (14 times 'P')		56

18. Suggested texts and reference materials

STYLE: Author name and initials, Title, Edition, Publisher, Year.

Warren Luzadder and Jon M. Duff, 2009, Fundamentals of Engineering Drawing with an Introduction to Interactive Computer Graphics for Design and Production, 11th Edition, PHI Learning.

The Essential Blender: Guide to 3D Creation with the Open Source Suite Blender [With CDROM], 2007, 1st Edition, Shroff/No Starch Press.

Antonio Siciliano, 2008, MATLAB: Data Analysis and Visualization, World Scientific Publishing Company.

MEP100 Class notes.

19. Resources required for the course *(itemized & student access requirements, if any)*

19.1	Software	3D CAD package with 5000 user licenses, Open
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		source software including Blender, Bullet, Python, Online examination and assessment module
19.2	Hardware	100 CAD workstations, Data backup, high speed networked printer
19.3	Teaching aides (videos, etc.)	Will have to make some
19.4	Laboratory	Space to host 100 workstations
19.5	Equipment	Projector
19.6	Classroom infrastructure	450 capacity
19.7	Site visits	

20. Design content of the course *(Percent of student time with examples, if possible)*

20.1	Design-type problems	
20.2	Open-ended problems	
20.3	Project-type activity	10%
20.4	Open-ended laboratory work	20%
20.5	Others (please specify)	

Date:

(Signature of the Head of the Department)

COURSE TEMPLATE

1.	Department /Centre proposing the course	Committee constituted by the Chairman, Senate	
2.	Course Title (<i>< 45 characters</i>)	PRODUCT REALIZATION	
3.	L-T-P structure	0 - 0 - 4	
4.	Credits	2 . 0	
5.	Course number	MEP 101	
6.	Status (<i>category for program</i>)	Engineering Core	

7.	Pre-requisites (<i>course no./title</i>)	None	
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8.	Status vis-à-vis other courses (<i>give course number/title</i>)		
8.1	Overlap with any UG/PG course of the Dept./Centre	None	
8.2	Overlap with any UG/PG course of other Dept./Centre	None	
8.3	Supercedes any existing course	Has some overlap with earlier course MEL120	

9.	Not allowed for (<i>indicate program names</i>)		
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10.	Frequency of offering	☐ Every sem ☐ 1 st sem ☐ 2 nd sem ☒ Either sem	
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11.	Faculty who will teach the course Interested faculty from across the institute;		
12.	Will the course require any visiting faculty?	No	

13.	Course objective (<i>about 50 words</i>): 1.Understanding the concepts involved in product realization by carrying out manufacturing shop exercises. 2.Hands on practice with manufacturing shop exercises and assembly leading to realization of a new product in a group. 3.While realizing a product, understand importance of manufacturing planning.		
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14.	Course contents (<i>about 100 words</i>) (<i>Include laboratory/design activities</i>): Exposing role of manufacturing processes in product realization; Understanding product realization by endeavouring hands on activities; Experience of product realization by undertaking manufacturing exercises and assembly activity in teams;		
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15. Lecture Outline *(with topics and number of lectures)*

Module no.	Topic	No. of hours
1	This is a course without any lecture component. Keeping this in view faculty's interaction and engagement with students during the practical classes is crucial to emphasize the importance of activities being carried out. Practical class size is expected to be 40-50 students, requiring about 10 faculty per semester. Each week student would be given a self study exercise which will be of exploratory in nature (not exceeding 2 hours)	
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COURSE TOTAL (14 times 'L')		

16. Brief description of tutorial activities

NA

17. Brief description of laboratory activities

Module no.	Experiment description	No. of hours
1	SESSION 1 Briefing: Introduction to the course and its objectives; mandatory briefing on shop-floor safety. Practicals: Visit and quick demonstration of all manufacturing facilities including hand tools and power tools available in the lab.	4
2	SESSION 2 Briefing: An overview of engineering materials and forms in which they are commonly available as raw materials. Practicals: Hands on exercises with wood working tools and machines to manufacture a component.	4
3	SESSION 3 Briefing: An overview of shape realization by manufacturing. Practicals: Machine shop exercise I - involving sawing, turning and drilling. SESSION 4 Briefing: Measurement of manufactured parts Practicals: Machine shop exercise II - involving milling, grinding and joining. Inspection of manufactured component using simple metrology instruments	8
4	SESSION 5	4

	Briefing: An overview of computer numerically controlled machines Practicals: Machine shop exercise using CNC - Part modeling, CNC program generation and cutting part on CNC milling machine	
5	SESSION 6 Briefing: Use of plastics and composites as engineering materials Practicals: Hands-on exercise involving plastics - use of vacuum forming, injection/compression molding, extrusion, ultrasonic welding of plastic components etc. SESSION 7 Briefing: Announcement of teams for product realization projects Practicals: Modeling and manufacture of parts using 3D printer	8
6	SESSION 8 Briefing: Overview of process Planning Practicals: process planning for product realization.	4
7	SESSION 9 Practicals: Presentation by students in teams on products selected for realization	4
8	SESSIONS 10, 11, 12, 13, 14 Practicals: Product realization exercise involving multiple manufacturing processes and assembly in teams; Evaluation of projects during SESSION 14.	20
9		
10		
COURSE TOTAL (14 times 'P')		56

18. Suggested texts and reference materials

STYLE: Author name and initials, Title, Edition, Publisher, Year.

SELECTED READING FROM:

1. Manufacturing Engineering and Technology by
Serope Kalpakjian and Steven Schmid, 7th Edition, 2013
2. Making It: Manufacturing Techniques for Product Design
Chris Lefteri, 2012
3. 21st Century Manufacturing
Paul Wright, 2000
4. Product Design: Techniques in Reverse Engineering and New Product Development
Kevin Otto and Kristine Wood, 2000

19. Resources required for the course *(itemized & student access requirements, if any)*

19.1	Software	Simple CAD/CAM software, Software having material and manufacturing database
19.2	Hardware	Computers and accessories
19.3	Teaching aides (videos, etc.)	Set of manufacturing videos
19.4	Laboratory	Dedicated laboratory only meant for this course (at least 9500 sq. ft).
19.5	Equipment	Hand Tools, Powered Hand Tools, Lathe (Conventional & CNC), Milling Machine (Conventional

		& CNC), Woodworking Tools & Machines, Sawing Machine, Bench Grinder, Drilling Machine, Micrometer, Profile Projector, Handheld Surface Roughness Tester, One simple table top Non-destructive testing machine, Vacuum forming machine, Injection/Compression Molding Machine, Ultrasonic Welding Machine, 3D printers, Assembly Planning kits. (Some of these are required in multiple quantities and primarily tabletop machines meant for conducting laboratory classes)
19.6	Classroom infrastructure	A normal class room with all multi media infrastructure to accommodate 50 students. (A class room to accommodate 250 to 450 students at a time may be required occasionally).
19.7	Site visits	Students may be encouraged to visit one industry or on-going exhibition in the city.

20. Design content of the course *(Percent of student time with examples, if possible)*

20.1	Design-type problems	Yes
20.2	Open-ended problems	Yes
20.3	Project-type activity	Yes
20.4	Open-ended laboratory work	Yes
20.5	Others (please specify)	

Date:

(Signature of the Head of the Department)