

## Office of the Dean Academics

### Minutes of the second meeting of Undergraduate Curriculum Implementation Committee (Revised)

December 11, 2012

The second meeting of the Undergraduate Curriculum Implementation Committee (UCIC) was held in the ME Department Committee room at 1500 hrs on November 8, 2012. 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, *Dr. 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 were confirmed as no comments had been received.
2. Prof. Ravi updated the members about the responses received from various Departments to the queries sent by the committee. Annexure-I contains the note sent to all Departments following the previous meeting. Responses received from the various Departments are summarized in the powerpoint slides given in Annexure-II. As per suggestion received on the floor, a brief discussion on the details of the course contents sent by various Departments was held on all the items received. The following suggestions emerged out of this discussion:

#### I. Mathematics courses:

- (a) Many members felt that the syllabus proposed for first year courses in Mathematics is a bit too vast.
- (b) One observation was also that Real and Complex Analysis, which is a necessary element for some engineering disciplines, is still missing in the contents of the two courses. Mathematics Department was requested to consider including them in the programme-linked basic science courses.
- (c) Many members also suggested that in order to expose the students to practical applications of the concepts covered in mathematics courses, the tutorial problems could be formulated in consultation with colleagues in different Engineering Departments.

#### II. Physics courses:

While one of the members expressed opinion that the contents of the course are not directly relevant to students in some of the disciplines, while other opinions were expressed that the course is of fundamental nature and is of relevance to material science and nanosciences, pertaining to all engineering Disciplines.

#### III. Applied Mechanics courses:

It was suggested to include the concepts of Hamiltonian and Lagrangian, by reducing some details on Newton's laws in the first year core course.

#### IV. Basic Electrical Engineering Course:

While no formal inputs had been received from EE Department on the first year core course on basic electrical engineering, the tentative contents of the course were

placed before the committee (and this has now been placed on the webpage) by the members from EE Department. The contents were agreed upon by the other members present.

V. Computer Science Courses:

There was some discussion regarding the first year courses CSL101 and CSL102 as they exist today. Enrollment of students to these courses by background on computers and programming or by discipline of enrollment in IITD, ability of students to write programmes even after going through these courses, etc. were discussed. A suggestion was put forward that programming ability should form part of non-graded credits in addition to a core course in first year, at least in Departments that feel the need for this aptitude in their students.

VI. Besides these, EE Department placed before the committee the contents of the Material Science course they would like to be offered to students registered in EE Department as programme-linked EA/ES course. These contents are also placed in the webpage.

It was decided to send these inputs to the various Departments for further discussion.

The meeting ended with thanks to all the members.

Comments on the above minutes should be sent to the undersigned within one week of circulation of these minutes.

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

**Annexure – I**  
**Note sent to Departments following I meeting of UCIC.**

**Office of the Dean Academics**

**Sub: Implementation of the New Undergraduate Curriculum**

The following are a few of the proposals approved by the Senate recently:

1. In the new curriculum, the credit requirements of B.Tech. degree were reduced, but provisions have been made for Departments to offer 20-credit Departmental Specializations for their own undergraduate students, and 20-credit Minor area / Interdisciplinary Specializations for undergraduate students from other Departments.
2. Integrated M.Tech. programme would be discontinued, and replaced by dual degree programme.
3. Every Department can allow students who have completed third year B.Tech. to apply for their M.Tech. / M.S. (Research) programmes with Advance Standing if they satisfy certain academic criteria.

The Undergraduate Curriculum Implementation Committee (UCIC) in its meeting on September 5, 2012 observed the following:

1. In view of the Departmental Specialization credits, it may be desirable for each Undergraduate degree awarding Department to consider offering a single programme, and avail of the flexibility of the new curriculum to give varying flavours to the degree.
2. In view of the discontinuation of Integrated M.Tech. Programme, the Mathematics Department has to resolve regarding the changes related to this in their faculty board.
3. All Departments that offer the Dual degree programme could take a fresh look at the programme and decide whether to continue offering a five-year programme at entry (JEE) level or to offer a four-year programme with option to convert it to a B.Tech – M.Tech or a B.Tech – M.S. (R) or Ph.D. combination based on student performance upto the end of third year.
4. In view of the fact that JEE 2013 is likely to be advertised for in October 2012, the topmost priority in terms of time-bound activities for curriculum implementation is the need for Departments to decide on the changes to the existing programmes.

In the above context, it is requested that the concerned Departments discuss the following questions in their faculty boards urgently:

**A. Undergraduate Degree Awarding Departments:**

1. What are the degree programmes that they would like to offer at entry level (JEE)?
  1. Would they want to offer only 4-year B.Tech. Programmes, with option for M.Tech / M.S (R) admission at the end of third year?
  2. Would they want to offer a Dual Degree programme at entry level itself?
2. Departments offering more than one UG programme: Would they want to consolidate their programmes into fewer or a single programme?
3. In each case, what would be the minimum and maximum number of students they would like to admit, keeping in view that the total number (851) for IIT Delhi cannot be changed?

Since the concept paper recommends a common first year curriculum with 22 credits of Basic Science courses and 18 credits of EA-ES courses, it is essential to have a broad outline of what these courses would contain, before the Departments could discuss the details of other courses to be included in the curriculum of their respective programmes. In view of this, the following questions need to be answered by the concerned Departments urgently:

**B. Departments offering the Basic Science Core courses / EA-ES core courses for I year students:**

1. What would be the broad outline of the first year core course(s) your Department proposes to offer?
2. What would be the tentative contents of other courses that your Department would offer in the programme related credits bouquet?

A copy of the concept paper approved by the Senate is enclosed for the reference of the Department. This document is also available at <http://web.iitd.ac.in/~ravimr/curriculum/concept-paper.pdf> in soft copy for circulation. The concerned Departments are requested to discuss the above questions in their faculty boards and send pointed answers to the above questions within two weeks, i.e., **latest by September 25, 2012.**

Dean Academics

II meeting of the

## Undergraduate Curriculum Implementation Committee

Venue: ME Committee Room

Date: November 8, 2012

## First year courses

- Mathematics: 2 x 4-credit (3-1-0)
  - Mathematics-I: Calculus
  - Mathematics-II: Linear Algebra and Differential Equations
- Physics: 1 x 3-0-0 + 1 x 0-0-4: 5 credits
  - Electromagnetic Waves and Quantum Mechanics
- Biology: 1 x 3-0-0 + 1 x 0-0-2
  - Introduction to Practical Modern Biology
- App. Mechanics: 1 x 4 credits (3-1-0 or 3-0-2)
  - Engineering Mechanics
- Chemistry, EE, CSE: awaited.

- Confirmation of minutes of previous meeting held on Sep 5, 2012

## BS / EA / ES Courses for Programme-linked core / elective

- Mathematics:
  - 5 x 4-credit (3-1-0) courses:
    - Optimization methods and Applications
    - Numerical Methods and Computations
    - Probability and Stochastic Processes
    - Linear Algebra
    - Introduction to Statistics (proposed)
- Physics:
  - Yet to be received
- Chemistry:
  - Yet to be received

## Feedback from Departments

- First year core courses
  - Mathematics, Physics, App. Mech., School of Bio. Sci.
- BS/EA/ES core/elective courses
  - Mathematics, App. Mech.
- Programmes to be offered
  - DBEB, Chemical, Mathematics, Textile

## BS / EA / ES Courses for Programme linked core / elective

- Biology:
  - No new proposal (minor area courses?)
- Applied Mechanics:
  - 8 courses: 6 x 5 credits; 1 x 4 cr; 1 lab x 1.5 cr
    - Experimental Methods and Analysis (3-1-2)
    - Mechanics of Solids (3-1-2)
    - Mechanics of Solids and Fluids (3-1-2)
    - Mechanics of Fluids (3-1-2)
    - Fluid Mechanics (3-1-2)
    - Solid Mechanics (3-1-2)
    - Design Engineering (3-0-2)
    - Fluids and Solids Lab

## BS / EA / ES

- Suggestions Departmentwise by AM:

- CH1: Materials, Solids and Fluids
- CE1: Materials, Solids, Fluids, Lab
- EE1 & EE2: Materials, Solids and Fluids
- PH1: Materials
- ME1: Materials, Solids, Fluids, Lab
- ME2: Materials, Solids and Fluids
- TT1: Materials, Solids and Fluids
- or
- Materials, Solids, Fluids, Lab
- BB5: Solids and Fluids
- MT5: Solids and Fluids

## Discussion items

- Issue of Tutorials
  - Suggestion from Physics: 3-0-0 structure with 36 lectures and 6 problem solving sessions
- Non-graded Credits
- Any other item

## Programmes to be offered by Depts

- Mathematics:
  - 4-year programme with M.Tech option at 3rd year
  - M.Tech in Maths and Computing (to be proposed)
  - 50-60 students in JEE entry
- Physics
  - 4-year programme (same name)
  - 30-40 students
- Biochemical & Biotech:
  - 10 dual degree at entry + 38 B.Tech with option at 3rd yr
- Mechanical Engg:
  - Total Intake: ideally 100(?)

## Programmes to be offered by Depts

- Chemical Engg:
  - 100-125 students
  - 60-40 division between 4-year B.Tech and Dual degree at JEE entry level
  - Exit policy for dual degree students
- Textile Tech:
  - Dual MBA desired
  - 60 B.Tech; 40 Dual MBA, total 100.
- Others:
  - awaited.