B Tech (ICT) Orientation Program 2012

by
Sanjay Chaudhary
Dean (Academic Programs)
Information and Communication Technology

• Engineering is about
  – the learning
  – experimentation and
  – the impact it has on the society

• ICT engineering has courses in three technical domains, Science, and HASS

• Technical Domains:
  – Computer Science & Engineering / Information Technology
  – Electronics and VLSI
  – Communication Engineering
Information and Communication Technology : Why

• What if a communication engineer does not know anything about the Information?
  – may succeed in transmitting and receiving only

• Is it sufficient?

• What if the engineer knows what the information is and how is that stored?
  – Will be able to communicate the information in a superior manner.

• Will it be sufficient to know the Information only?
  – How to make it accessible to the intended users?

• Goal: To create new strategies based on innovations
Applications of ICT

• A driver looks in GPS device and changes his path to reach the correct destination.
• A soldier is inside the forest of enemy region and he contacts his base unit.
• The family member is late and has not reached home. What happened? Call him/her on mobile phone.
• Medical image of brain of a patient in taken in one city, processed and then transmitted to the experts in other cities.
• The impact of ICT in human life is clearly visible
• Emerging economies try to improve their lives and gain a competitive edge using Information and Communication
• Have we reached the edge? Not yet.
B Tech (ICT) Program at DA-IICT

- It is a unique 4-Year Program in Information and Communication Technology (ICT):
  - DA-IICT was the pioneer in introducing a program in ICT at undergraduate level in 2001, following our own curriculum
  - Minor changes were made in the curriculum for the first five batches (2001 to 2005)
  - In 2005, after completion of a full cycle, we set up a B Tech Curriculum Review Committee (BTCRC) for a major review of the curriculum.
- The revised curriculum as a whole has been made applicable from the 2008 batch onwards.
Overview of the Program Structure

• Foundation (Core) Courses:
  – Basic Sciences including Mathematics – 5 courses
  – HASS and Management – 4 courses
  – Technical (ICT) – 15 courses
  – Environment Studies – 1 course

• Electives (commence from Semester V):
  – Track Core (Group Electives) – 2 courses (minimum)
  – Technical (ICT) – 4 courses (minimum)
  – Science Electives – 2 courses (minimum)
  – Open Electives – 1 course (minimum)

• B.Tech. Project – one or two semesters

• Internships – 2

• Integrated five year MTech program
**TECHNICAL ELECTIVES**

12 – 24 Credits

- CS & IT
- ELECTRONICS
- COMM & SP

**INTERDISCIPLINARY**

- OPEN ELECTIVES
  3 – 9 credits

**GROUP ELECTIVES**

6–26 Credits

**SCIENCE ELECTIVES**

6 – 16 credits

**FOUNDATION**

104 credits

**BTP**

15 credits

Industrial/Research – 9 credits,
Rural – 6 credits
## 1st Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>EL103 Basic Electronic Circuits</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>4.5</td>
</tr>
<tr>
<td>HM106 Approaches to Indian Society</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT105 Introduction to Programming</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>4.5</td>
</tr>
<tr>
<td>PC105 Communication Skills*</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>PC107 ICT for Freshers (P/F)*</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>SC105 Calculus &amp; Complex Variables</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>

Total Credits 19

* Indicates P/F course
## 2nd Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT111 Intro to Comm’n Systems</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>4.5</td>
</tr>
<tr>
<td>EL114 Digital Logic Design</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>4.5</td>
</tr>
<tr>
<td>IT114 Object Oriented Programming</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>4.5</td>
</tr>
<tr>
<td>HM116 Principles of Economics</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>SC106 Intro to Discrete Mathematics</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>

- Total Credits 20.5
# 3rd Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT203 Signals and Systems</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>IT205 Data Structures</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>4.5</td>
</tr>
<tr>
<td>IT209 Computer Organization</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>4.5</td>
</tr>
<tr>
<td>HM216 Science, Technology, Society</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>SC116 Algebraic Structures</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>SC217 Electromagnetic Theory</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>

- Total Credits 24

- 4 Weeks Rural Internship (6 credits) in Winter Vacation
# 4th Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT214 Analog &amp; Digital Communication</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>4.5</td>
</tr>
<tr>
<td>EL213 Analog Circuits</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>4.5</td>
</tr>
<tr>
<td>HM206 Introduction to Business &amp; Finance</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT215 Systems Software</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>4.5</td>
</tr>
<tr>
<td>SC209 Environmental Studies</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>SC215 Probability and Statistics</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Total Credits</td>
<td>23.5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5th and Subsequent Semesters

Details are available for perusal in Academic Folder.

Some Key Features:

• Only four remaining core courses (three in Sem 5 and one in Sem 6)

• Track core introduced in 5th Semester:
  – Electronics and VLSI
  – Communication and Signal Processing
  – Computer Science and Information Technology
  – Inter-Disciplinary

• Internship (Industry/Research) in Summer III (after 6th Semester)

• B Tech project
  – B Tech project part I in semester VII and part II in semester VIII
    OR
  – Complete B Tech project in semester VIII as full time project
Student will be placed in **Academic Probation** if SPI is less than 4.5 and CPI is less than 5

Student will be **Discontinued**, if CPI is < 4 at the end of 2\(^{nd}\) or 4\(^{th}\) semester. Will be allowed to register for backlog courses during summer semester. **Self Study hours** with support

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Corr. Points</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>AB</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>BB</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>BC</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>CC</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>CD</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>DD</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>DE</td>
<td>3</td>
<td><strong>Pass</strong></td>
</tr>
<tr>
<td>F</td>
<td>0</td>
<td><strong>Fail</strong></td>
</tr>
<tr>
<td>I</td>
<td>-</td>
<td><strong>Incomplete</strong></td>
</tr>
<tr>
<td>P</td>
<td>-</td>
<td><strong>Passed</strong></td>
</tr>
</tbody>
</table>
Continuous Evaluation
GRADE FOR A COURSE CAN BE BASED ON ANY OF THE FOLLOWING:

- Lecture Attendance
- Tutorial Attendance and/or Submissions
- Quizzes (Informed or Surprise)
- H/W Assignments
- Laboratory Attendance and/or Submissions
- Viva and/or Presentations
- Projects
- Classroom Participation
- In-sem Examinations (one or two)
- End-sem Examination

- Choice and Weightage is the instructor’s prerogative
Institutional Collaboration

• Network of Engineering Institutions (NEI)
  – It is a cooperative endeavor, initiated in January 2011 to promote the quality of PhD research
  – To provide quality courses through workshops conducted and evaluated by experts

• MoUs: DA-IICT and IIT Gandhinagar, Space Applications Center: Sponsored PhD students, ISEP (FR), WSU (USA), Uni of Regina, ICRISAT…

• Tata Consultancy Services (TCS): PhD fellowships
• Ericsson India: High-end industrial training
Suggestions

• Attend each lecture, tutorial and lab session regularly. Be regular.
• Build strong fundamentals and good engineering practices.
• Feel free to contact and discuss with Teaching Assts and Faculty members. Check for office contact hours of faculty members.
• Pay attention to all the courses and not only few courses.
• Do not blindly follow advice from someone / seniors.
• Identify and listen to (good) seniors who have achieved something.
• Observe your academic performance: SPI, CPI, Grade points.
• Define a proper study plan.
• Do not waste your time: computer games and gossip.
• Use resources effectively: labs, resource center, invited special lectures, student activities, IEEE student branch
I offer my best wishes to all of you