# FINAL YEAR CURRICULUM STRUCTURE

~ for AY2013-2014 Semester 2 & AY2014-2015 Semester 1

All final year students will have to select one option group from the following:

A. **ELECTRICAL AND SYSTEMS ENGINEERING (ECAL)**
B. **ELECTRONIC ENGINEERING (ENIC)**
C. **INFOCOMMUNICATIONS ENGINEERING (INON)**

The option group selected should be the same for both semesters. The courses to be taken in each semester are indicated in the attached tables for both BRC and Non-BRC Students.

**(NON-BRC STUDENTS)**

- **STUDENTS ADMITTED TO YEAR 1 ON AY2010 & BEFORE**
- **POLY STUDENTS DIRECTLY ADMITTED TO YEAR 2 ON AY2011 & BEFORE**

**ELECTRICAL & SYSTEMS ENGINEERING**
**ELECTRONIC ENGINEERING**

| | |
|---|---|
| CORE | EE4040 ENGINEERS & SOCIETY<br>EE4041 HUMAN RES MANAGEMENT<br>EE4079 FINAL YEAR PROJECT<br>HW0310 PROFESSIONAL COMMUNICATION |
| DESIGN | 2 ELECTIVES |
| TECHNICAL | 5 ELECTIVES |

**INFOCOMMUNICATIONS ENGINEERING**

| | |
|---|---|
| CORE | EE4001 SOFTWARE ENGINEERING<br>EE4040 ENGINEERS & SOCIETY<br>EE4041 HUMAN RES MANAGEMENT<br>HW0310 PROFESSIONAL COMMUNICATION |
| DESIGN | 2 ELECTIVES |
| TECHNICAL | 4 ELECTIVES |

**NOTE**

**DESIGN and TECHNICAL Elective Courses**

- **ECAL and ENIC students are required to take 2 DESIGN elective courses and 5 TECHNICAL elective courses.**
- **INON students are required to take 2 DESIGN elective courses and 4 TECHNICAL elective courses.**
- **The design elective courses and technical elective courses offered under the different option groups and the semester(s) in which each course will be made available are given in Tables A to C below. The design elective courses for students choosing a particular option group must be those under that option group.**
- **Students must choose all except 1(one) technical elective from their chosen option group. The 1(one) technical elective course may be chosen from the technical elective courses offered under <u>any</u> option group (including the student's chosen option group).**

**(BRC STUDENTS)**

- **STUDENTS ADMITTED TO YEAR 1 ON AY2011 & AFTER**
- **POLY STUDENTS DIRECTLY ADMITTED TO YEAR 2 ON AY2012 & AFTER**

**ELECTRICAL & SYSTEMS ENGINEERING**
**ELECTRONIC ENGINEERING**
**INFOCOMMUNICATIONS ENGINEERING**

| | |
|---|---|
| CORE | EE4080 FINAL YEAR PROJECT |
| GER-CORE | EE0040 ENGINEERS & SOCIETY<br>HW0310 PROFESSIONAL COMMUNICATION |
| DESIGN | 2 ELECTIVES |
| TECHNICAL | 3 ELECTIVES |

**NOTE**

**DESIGN and TECHNICAL Elective Courses**

- **Students are required to take 2 DESIGN elective courses and 3 TECHNICAL elective courses. The design elective courses and technical elective courses offered under the different option groups are given in Tables A to C below. The design elective courses for students choosing a particular option group must be those under that option group.**
- **Students must choose all design and technical elective courses from their chosen option group.**

## TABLE A: ELECTRICAL AND SYSTEMS ENGINEERING

| COURSE CODE AND TITLE | | AVAILABILITY | |
|---|---|---|---|
| | | AY2013 SEM 2 | AY2014 SEM 1 (TENTATIVE) |
| DESIGN ELECTIVE COURSES | | | |
| EE4207 | CONTROL ENGINEERING DESIGN | | ✓ |
| EE4208 | INTELLIGENT SYSTEM DESIGN | ✓ | |
| EE4503 | POWER ENGINEERING DESIGN | | ✓ |
| EE4504 | DESIGN OF CLEAN ENERGY SYSTEMS | ✓ | |
| EE4901 | BIOMEDICAL CONTROL SYSTEM DESIGN | | ✓ |
| EE4902 | DESIGN OF MEDICAL INFORMATION PROCESSING SYSTEMS | ✓ | |
| TECHNICAL ELECTIVE COURSES | | | |
| EE4001 | SOFTWARE ENGINEERING | ✓ | ✓ |
| EE4265 | PROCESS CONTROL SYSTEMS | | ✓ |
| EE4266 | COMPUTER VISION | | ✓ |
| EE4268 | ROBOTICS AND AUTOMATION | ✓ | ✓ |
| EE4273 | DIGITAL CONTROL SYSTEMS | ✓ | |
| EE4285 | COMPUTATIONAL INTELLIGENCE | ✓ | |
| EE4530 | POWER SYSTEM ANALYSIS AND CONTROL | | ✓ |
| EE4532 | POWER ELECTRONICS AND DRIVES | | ✓ |
| EE4533 | POWER APPARATUS AND SYSTEM PROTECTION * | ✓ | |
| EE4534 | MODERN DISTRIBUTION SYSTEMS WITH RENEWABLE RESOURCES | ✓ | |
| EE4903 | PHYSIOLOGICAL SYSTEMS ANALYSIS | | ✓ |
| EE4904 | BIOMEDICAL INSTRUMENTATION | ✓ | |
| EE4905 | BIOMEDICAL SIGNAL PROCESSING | ✓ | |
| EE4840 | BIOPHOTONICS | ✓ | |

* EE4533 WILL BE OFFERED FOR THE LAST TIME IN AY2013 SEMESTER 2.

## TABLE B: ELECTRONIC ENGINEERING

| COURSE CODE AND TITLE | | AVAILABILITY | |
|---|---|---|---|
| | | AY2013 SEM 2 | AY2014 SEM 1 (TENTATIVE) |
| DESIGN ELECTIVE COURSES | | | |
| EE4303 | MIXED-SIGNAL IC DESIGN | ✓ | ✓ |
| EE4304 | RADIO FREQUENCY INTEGRATED SYSTEM DESIGN | ✓ | |
| EE4305 | DIGITAL DESIGN WITH HDL | | ✓ |
| EE4613 | CMOS PROCESS AND DEVICE SIMULATION BY TECHNOLOGY CAD | | ✓ |
| EE4614 | DEVICE PARAMETER EXTRACTION AND LAYOUT IMPLEMENTATION | ✓ | |
| TECHNICAL ELECTIVE COURSES | | | |
| EE4001 | SOFTWARE ENGINEERING | ✓ | ✓ |
| EE4340 | VLSI SYSTEMS | | ✓ |
| EE4341 | ADVANCED ANALOG CIRCUITS | | ✓ |
| EE4343 | RADIO FREQUENCY CIRCUITS | ✓ | |
| EE4344 | ANALYSIS & DESIGN OF INTEGRATED CIRCUITS | ✓ | |
| EE4645 | MICROFABRICATION ENGINEERING | | ✓ |
| EE4646 | VLSI TECHNOLOGY | ✓ | |
| EE4647 | MICROELECTRONIC DEVICES | | ✓ |
| EE4648 | FLAT PANEL DISPLAY TECHNOLOGIES | | ✓ |
| EE4694 | IC RELIABILITY AND FAILURE ANALYSIS | | ✓ |
| EE4838 | LASER ENGINEERING AND APPLICATIONS | ✓ | |
| EE4839 | FIBRE OPTIC COMMUNICATIONS | ✓ | |
| EE4840 | BIOPHOTONICS | ✓ | |

## TABLE C: INFOCOMMUNICATION ENGINEERING

| COURSE CODE AND TITLE | | AVAILABILITY | |
|---|---|---|---|
| | | AY2013 SEM 2 | AY2014 SEM 1 (TENTATIVE) |
| **DESIGN ELECTIVE COURSES** | | | |
| EE4105 | CELLULAR COMMUNICATION SYSTEM DESIGN | | ✓ |
| EE4109 | MICROWAVE CIRCUIT AND SYSTEM DESIGN | ✓ | |
| EE4110 | OPTICAL COMMUNICATION SYSTEM DESIGN | ✓ | |
| EE4413 | DSP SYSTEM DESIGN | | ✓ |
| EE4717 | WEB APPLICATION DESIGN | | ✓ |
| EE4718 | ENTERPRISE NETWORK DESIGN | ✓ | |
| **TECHNICAL ELECTIVE COURSES** | | | |
| EE4151 | RF AND MICROWAVE ENGINEERING | | ✓ |
| EE4152 | DIGITAL COMMUNICATIONS | | ✓ |
| EE4153 | TELECOMMUNICATION SYSTEMS | ✓ | |
| EE4188 | WIRELESS COMMUNICATIONS | | ✓ |
| EE4189 | SPREAD SPECTRUM COMMUNICATIONS | ✓ | |
| EE4190 | INTRODUCTION TO MODERN RADAR | ✓ | |
| EE4455 | EMBEDDED SYSTEMS | ✓ | |
| EE4475 | AUDIO SIGNAL PROCESSING | | ✓ |
| EE4476 | IMAGE PROCESSING | | ✓ |
| EE4478 | DIGITAL VIDEO PROCESSING | ✓ | |
| EE4483 | ARTIFICIAL INTELLIGENCE AND DATA MINING | | ✓ |
| EE4490 | MULTIMEDIA SYSTEMS | | ✓ |
| EE4756 | COMPUTER ARCHITECTURE | ✓ | |
| EE4758 | COMPUTER SECURITY | | ✓ |
| EE4761 | COMPUTER NETWORKING | ✓ | |
| EE4791 | DATABASE SYSTEMS | ✓ | |

## TABLE D: SPECIALISATION

Students who wish to pursue a more in-depth specialization within the 3 broad option groups may do so by selecting the relevant DESIGN and TECHNICAL electives courses from 8 areas of specialization under the respective option group.

| OPTION GROUP | SPECIALISATION | RECOMMENDED ELECTIVE COURSES |
|---|---|---|
| ELECTRICAL AND SYSTEMS ENGINEERING | INTELLIGENT SYSTEMS & CONTROL ENGINEERING | EE4207, EE4208, EE4265, EE4266, EE4268, EE4273, EE4285 |
| | POWER & CLEAN ENERGY | EE4503, EE4504, EE4530, EE4532, EE4533, EE4534, EE4265, EE4273, EE4285, EE4001 |
| | BIOMEDICAL ELECTRONICS | EE4901, EE4902, EE4903, EE4904, EE4905, EE4265, EE4266, EE4840 |
| ELECTRONIC ENGINEERING | INTEGRATED CIRCUIT DESIGN | EE4303, EE4304, EE4305, EE4340, EE4341, EE4343, EE4344, EE4694 |
| | MICROELECTRONICS | EE4613, EE4614, EE4645, EE4646, EE4647, EE4648, EE4694, EE4838, EE4839, EE4840 |
| INFOCOMMUNICATIONS ENGINEERING | COMMUNICATION ENGINEERING | EE4105, EE4109, EE4110, EE4151, EE4152, EE4153, EE4188, EE4189, EE4190 |
| | COMPUTER ENGINEERING | EE4717, EE4718, EE4756, EE4758, EE4761, EE4455, EE4483, EE4490, EE4791 |
| | DIGITAL MEDIA PROCESSING | EE4413, EE4105, EE4455, EE4475, EE4476, EE4478, EE4483, EE4490 |