Electronic Engineering
Applicable to students admitted in 2013-14

Major Programme

Students with associate degrees
Students are required to complete a minimum of 63 units of Major courses as follows:

(i) Required Courses: 42 units
ENGG1100, 1410, 2030, 2310, 2420, 4910, 4920,
ELEG2510[3301], 2860[ENGG2600], 3201, 3210[3202],
3230[2401], 3310[3203], CSCI2120
Graduation Project as prescribed by ENGG4920 will carry a
separate weight of 6.79% in honours classification.

(ii) Elective Courses:

Group A
select at least 9 units from the following courses with at least 6 units
at 3000 and above level:
ELEG3010[3302], 3207, 3220[3205], 3240[3101], 3320[3303],
3330[3204], 3340[3502], 3410[3503], 3601, BMEG3420,
CSCI1101, 1030, 1040, 1050, 2100, IERG3310, SEEM2440 (or
DSME1030)+
9 units

Group B
select at least 12 units from the following courses:
ELEG4190[BMEG4103], 4210[4201], 4260[4201], 4310[4503],
4320[4203]*[4204]*, 4410[4501], 4430[4502], 4510[4301],
4520[5301], 4530[4303], 4560, 4580[4302], 503, 5104,
5110[5101], 5140[5102], 5210, 5280[5201] (or ENGG5201)+,
5303, 5310[5205] (or ENGG5281)+, 5410[5503] (or
ENGG5202)+, 5420[5501], 5431[5502], 5491, 5521[5302], 5550,
ENER4020
12 units

Total: 63 units

In addition, students are required to take four weeks of industrial training in the summer after their first year of attendance.

[ ] The course(s) inside the square brackets are new courses introduced for 4-Year curriculum and will be offered in 2013-14 or 2014-15 (required courses), 2014-15 (group A elective courses) and 2015-16 (group B elective courses). They will replace the courses offered for 3-Year curriculum, which appear just before these courses.
+ Students can take either one of the courses but not both.
* Students can take both ELEG4203 and 4204, but they are not allowed to take ELEG4203 or 4204 if they have taken and passed ELEG4320.

Streams of Specialization (Note 3)
There are four optional streams of specialization: DSP and Multimedia Technology, Integrated Circuit Technology, Microelectronics and Photonics, and Microwave and Wireless Engineering. Students may choose not to specialize in any stream or to specialize in one of the four streams and select the courses prescribed as follows. To qualify for a stream, students must complete a minimum of 17 units including ENGG4910 and 4920 taken under the stream.

DSP and Multimedia Technology Stream
(i) Compulsory Courses:
ELEG3410[3503], 4410[4501]
(ii) Elective Courses (at least 4 units chosen from the following courses):
ELEG3340[3502], 4310[4503], 4430[4502], 5410[5503] (or
ENGG5202)+, 5420[5501], 5431[5502]
(iii) ENGG4910 and 4920 in an approved topic relevant to the Stream.

Integrated Circuit Technology Stream
(i) Compulsory Courses:
ELEG3220[3205], 4510[4301]
(ii) Elective Courses (at least 4 units chosen from the following courses):
ELEG4210[4205], 4260[4201], 4530[4303], 5210, 5280[5201] (or
ENGG5201)+
(iii) ENGG4910 and 4920 in an approved topic relevant to the Stream.

Microelectronics and Photonics Stream
(i) Compulsory Courses:
ELEG3320[3303], 4510[4301]
(ii) Elective Courses (at least 4 units chosen from the following courses):
ELEG3010[3302], 4260[4201], 4520[5301], 4530[4303], 4560, 4580[4302], 5303, 5521[5302]

(iii) ENGG4910 and 4920 in an approved topic relevant to the Stream.

**Microwave and Wireless Engineering Stream**

(i) Compulsory Courses:
ELEG3330[3204], 4320[4203]

(ii) Elective Courses (at least 4 units chosen from the following courses):
ELEG3340[3502], 4310[4503], 4410[4501], 5310[5205] (or ENGG5281+)

(iii) ENGG4910 and 4920 in an approved topic relevant to the Stream.

The course(s) inside the square brackets are new courses introduced for 4-Year curriculum and will be offered in 2013-14 or 2014-15 (required courses), 2014-15 (group A elective courses) and 2015-16 (group B elective courses). They will replace the courses offered for 3-Year curriculum, which appear just before these courses.

++ Students can take either one of the courses but not both.

**Recommended course pattern**

<table>
<thead>
<tr>
<th>Term 1</th>
<th>Units</th>
<th>Term 2</th>
<th>Units</th>
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<tr>
<td>ELEG2510[3301]</td>
<td>3</td>
<td>CSCI2120</td>
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<tr>
<td>ELEG3310[3203]</td>
<td>3</td>
<td>ELEG2860[ENGG2600]</td>
<td>2</td>
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<td>ELEG3201</td>
<td>3</td>
</tr>
<tr>
<td>ENGG2310</td>
<td>3</td>
<td>ELEG3210[3202]</td>
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<tr>
<td>ENGG2420</td>
<td>3</td>
<td>ENGG1410</td>
<td>3</td>
</tr>
<tr>
<td>General Education</td>
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<td>ENGG2030</td>
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<table>
<thead>
<tr>
<th>Term 3</th>
<th>Units</th>
<th>Term 4</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>ELEG3230[2401]</td>
<td>3</td>
<td>ENGG4920</td>
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<td>Group A Electives</td>
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<tr>
<td>Group A Elective</td>
<td>3</td>
<td>Group B Electives</td>
<td>6</td>
</tr>
<tr>
<td>Group B Electives</td>
<td>6</td>
<td>General Education</td>
<td>2</td>
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<tr>
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<td></td>
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</tr>
<tr>
<td></td>
<td>18</td>
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</table>

The course(s) inside the square brackets are new courses introduced for 4-Year curriculum and will be offered in 2013-14 or 2014-15 (required courses), 2014-15 (group A elective courses) and 2015-16 (group B elective courses). They will replace the courses offered for 3-Year curriculum, which appear just before these courses.

**Students with higher diplomas**

Students are required to complete a minimum of 57 units of Major courses as follows:

(i) Required Courses: 36 units
ENGG1100, 1410, 2310Δ, 2420Δ, 4910, 4920, ELEG2510[3301], 2860[ENGG2600], 3210[3202], 3230[2401], 3310[3203], CSCI2120
Graduation Project as prescribed by ENGG4920 will carry a separate weight of 6.79% in honours classification.

(ii) Elective Courses:

**Group A**
select at least 9 units from the following courses with at least 6 units at 3000 and above level:
ELEG3010[3302], 3207, 3220[3205], 3240[3101], 3320[3303], 3330[3204], 3340[3502], 3410[3503], 3601, BMEG3420, CSCI1101, 1030, 1040, 1050, 2100, IERG3310, SEEM2440 (or DSME1030)+

**Group B**
select at least 12 units from the following courses:
ELEG4190[BMEG4103], 4210[4205], 4260[4201], 4310[4503], 4320[4203*/4204*], 4410[4501], 4430[4502], 4510[4301], 4520[5301], 4530[4303], 4560, 4580[4302], 5103, 5104, 5110[5101], 5140[5102], 5210, 5280[5201] (or ENGG5201)+, 5303, 5310[5205] (or ENGG5281)+, 5410[5503] (or...
In addition, students are required to take ELTU1111 (3 units) to fulfill the Faculty Language Requirement and also four weeks of industrial training in the summer after their first year of attendance.

Depending on the qualifications of the student, and in particular for students who do not have an appropriate level of previous training in circuit analysis, the Department may require students to take ELEG2202 and 3201 instead of the courses marked with “Δ”.

The course(s) inside the square brackets are new courses introduced for 4-Year curriculum and will be offered in 2013-14 or 2014-15 (required courses), 2014-15 (group A elective courses) and 2015-16 (group B elective courses). They will replace the courses offered for 3-Year curriculum, which appear just before these courses.

Students can take either one of the courses but not both.

Students can take both ELEG4203 and 4204, but they are not allowed to take ELEG4203 or 4204 if they have taken and passed ELEG4320.

**Streams of Specialization** (Note 3)

There are four optional streams of specialization: DSP and Multimedia Technology, Integrated Circuit Technology, Microelectronics and Photonics, and Microwave and Wireless Engineering. Students may choose not to specialize in any stream or to specialize in one of the four streams and select the courses prescribed as follows. To qualify for a stream, students must complete a minimum of 17 units including ENGG4910 and 4920 taken under the stream.

**DSP and Multimedia Technology Stream**

(i) **Compulsory Courses:**
   ELEG3410[3503], 4410[4501]

(ii) **Elective Courses** (at least 4 units chosen from the following courses):
   ELEG3340[3502], 4310[4503], 4430[4502], 5410[5503] (or ENGG5202)+, 5420[5501], 5431[5502]

(iii) ENGG4910 and 4920 in an approved topic relevant to the Stream.

**Integrated Circuit Technology Stream**

(i) **Compulsory Courses:**
   ELEG3220[3205], 4510[4301]

(ii) **Elective Courses** (at least 4 units chosen from the following courses):
   ELEG4210[4205], 4260[4201], 4530[4303], 5210, 5280[5201] (or ENGG5201)+

(iii) ENGG4910 and 4920 in an approved topic relevant to the Stream.

**Microelectronics and Photonics Stream**

(i) **Compulsory Courses:**
   ELEG3320[3303], 4510[4301]

(ii) **Elective Courses** (at least 4 units chosen from the following courses):
   ELEG3010[3302], 4260[4201], 4520[5301], 4530[4303], 4560, 4580[4302], 5303, 5521[5302]

(iii) ENGG4910 and 4920 in an approved topic relevant to the Stream.

**Microwave and Wireless Engineering Stream**

(i) **Compulsory Courses:**
   ELEG3330[3204], 4320[4203]

(ii) **Elective Courses** (at least 4 units chosen from the following courses):
   ELEG3340[3502], 4310[4503], 4410[4501], 5310[5205] (or ENGG5281)+

(iii) ENGG4910 and 4920 in an approved topic relevant to the Stream.

The course(s) inside the square brackets are new courses introduced for 4-Year curriculum and will be offered in 2013-14 or 2014-15 (required courses), 2014-15 (group A elective courses) and 2015-16 (group B elective courses). They will replace the courses offered for 3-Year curriculum, which appear just before these courses.

Students can take either one of the courses but not both.

**Recommended course pattern**

<table>
<thead>
<tr>
<th>Term</th>
<th>Units</th>
<th>Term</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEG2510[3301]</td>
<td>3</td>
<td>CSC12120</td>
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<tr>
<td>ELEG3310[3203]</td>
<td>3</td>
<td>ELEG2860[ENGG2600]</td>
<td>2</td>
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<td>ENGG1100</td>
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<td>ELEG3210[3202]</td>
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<td>ENGG2310Δ</td>
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</tr>
<tr>
<td>ENGG2420Δ</td>
<td>3</td>
<td>General Education</td>
<td>6</td>
</tr>
</tbody>
</table>
Term 3 | Units | Term 4 | Units
---|---|---|---
ELEG3230[2401] | 3 | ENGG4920 | 4
ENGG4910 | 4 | Group A Elective | 6
Group A Elective | 3 | Group B Electives | 6
Group B Electives | 6 | General Education | 3
| 19 | | 16 |

The course(s) inside the square brackets are new courses introduced for 4-Year curriculum and will be offered in 2013-14 or 2014-15 (required courses), 2014-15 (group A elective courses) and 2015-16 (group B elective courses). They will replace the courses offered for 3-Year curriculum, which appeared just before these courses.

Depending on the qualifications of the student, and in particular for students who do not have an appropriate level of previous training in circuit analysis, the Department may require students to take ELEG2202 and 3201 instead of the courses marked with “Δ”.

Notes:
1. Major courses at 3000 and above level will be included in the calculation of the Major GPA for honours classification.
2. Besides the Major courses mentioned in Note 1, BMEG3420, 4103, ENER4020, ENGG4910, 4920, 5201, 5202, 5281 and IERG3310 will also be included in the calculation of Major GPA.
3. A student who satisfies all the requirement of a stream of specialization may obtain a certifying letter from the Department.
4. Students with higher diplomas are required to fulfil the Faculty Language Requirement, in addition to other requirements stipulated by the University. Please refer to the Faculty Language Requirement of the Faculty of Engineering for details.

### Course List

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ELEG2401</td>
<td>Introduction to Embedded Systems</td>
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<tr>
<td>ELEG2510</td>
<td>Microelectronic Devices</td>
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</tr>
<tr>
<td>ELEG2860</td>
<td>Professional Engineering Practice</td>
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</tr>
<tr>
<td>ELEG3010</td>
<td>Introduction to Lasers and Photonics</td>
<td>2</td>
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<tr>
<td>ELEG3101</td>
<td>Medical Instrumentation and Sensors</td>
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</tr>
<tr>
<td>ELEG3201</td>
<td>Circuits and Devices II</td>
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<tr>
<td>ELEG3202</td>
<td>Analog Integrated Circuits</td>
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</tr>
<tr>
<td>ELEG3203</td>
<td>Electromagnetic Fields and Waves</td>
<td>3</td>
</tr>
<tr>
<td>ELEG3204</td>
<td>Wireless Technology and Systems</td>
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<tr>
<td>ELEG3205</td>
<td>Modern Digital Circuit Design</td>
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</tr>
<tr>
<td>ELEG3207</td>
<td>Introduction to Power Electronics</td>
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<td>ELEG3210</td>
<td>Analog Integrated Circuits</td>
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<tr>
<td>ELEG3220</td>
<td>Modern Digital Circuit Design</td>
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<tr>
<td>ELEG3230</td>
<td>Microprocessors and Computer Systems</td>
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<tr>
<td>ELEG3240</td>
<td>Medical Instrumentation and Sensors</td>
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<tr>
<td>ELEG3301</td>
<td>Principles of Semiconductor Devices</td>
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<tr>
<td>ELEG3302</td>
<td>Fundamentals of Photonics</td>
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<td>ELEG3303</td>
<td>Introduction to Optical Communications</td>
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<td>ELEG3310</td>
<td>Basic Electromagnetic Theory</td>
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<tr>
<td>ELEG3320</td>
<td>Introduction to Optical Communications</td>
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<tr>
<td>ELEG3330</td>
<td>Wireless Transmission Systems</td>
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<tr>
<td>ELEG3340</td>
<td>Analog and Digital Communications</td>
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<tr>
<td>ELEG3410</td>
<td>Random Processes and Digital Signal Processing</td>
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<tr>
<td>ELEG3502</td>
<td>Analog and Digital Communications</td>
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<tr>
<td>ELEG3503</td>
<td>Introduction to Digital Signal Processing</td>
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<td>ELEG3601</td>
<td>Introduction to Electric Power Systems</td>
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<td>ELEG4190</td>
<td>Biomedical Modelling</td>
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<tr>
<td>ELEG4201</td>
<td>CMOS Integrated Circuits</td>
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</table>
ELEG4203  Radio Frequency Electronics  3
ELEG4204  Advanced Radio Frequency Circuit Design  3
ELEG4205  Power Converter Circuits  3
ELEG4210  Power Management Electronics  3
ELEG4260  CMOS Integrated Circuits  3
ELEG4301  Physics and Technology of Semiconductor Devices  3
ELEG4302  Microoptics  3
ELEG4303  Integrated Circuits Fabrication Technology  3
ELEG4310  Modern Communication Systems  3
ELEG4320  Microwave Electronics  3
ELEG4410  Advanced Digital Signal Processing and Applications  3
ELEG4430  Digital Image Processing  3
ELEG4501  Digital Signal Processing and Applications  3
ELEG4502  Digital Image Processing  3
ELEG4503  Modern Communication Systems  3
ELEG4510  Physics and Technology of Semiconductor Devices  3
ELEG4520  Integrated Optics  3
ELEG4530  Integrated Circuits Fabrication Technology  3
ELEG4560  Electronic Thin Film Science  3
ELEG4580  Microoptics  3
ELEG5101  Advanced Medical Instrumentation and Biosensors  3
ELEG5102  Biomedical and Health Informatics  3
ELEG5103  Prosthetics and Artificial Organs  3
ELEG5104  Introduction to Biomimetic Engineering  3
ELEG5110  Advanced Medical Instrumentation and Biosensors  3
ELEG5140  Biomedical Information Engineering  3
ELEG5201  Analog-Digital ASIC Design  3
ELEG5205  Advanced Microwave Engineering  3
ELEG5210  CMOS Analog Integrated Circuits  3
ELEG5280  Analog-digital ASIC Design  3
ELEG5301  Photonic Integrated Circuits  3
ELEG5302  Biophotonics  3
ELEG5303  Flexible Electronics – Physics and Technology  3
ELEG5310  Advanced Microwave Engineering  3
ELEG5410  Pattern Recognition  3
ELEG5420  Speech and Audio Processing  3
ELEG5431  Video Coding Technology  3
ELEG5491  Introduction to Deep Learning  3
ELEG5501  Speech and Audio Processing  3
ELEG5502  Video Coding Technology  3
ELEG5503  Pattern Recognition  3
ELEG5521  Biophotonics  3
ELEG5550  Micro- and Nano-Fabrication Laboratory  3