

Specialization Within the EE Program

By suitable choice of electives in addition to the core courses, students in fourth year of the EE program can specialize in the following areas (subject to course scheduling and prerequisite changes). Note that the degree granted is still a B. Eng. in Electrical Engineering without mention of specialization .

1) General Electrical Engineering (No specialization)

This is the existing course pattern including any 7 engineering fourth-year electives and a fourth year project ELEC 4907 or SYSC 4907.

2) Integrated Circuit Design The course pattern would be:

ELEC 3500 Digital Electronics (already required in third year of EE program)
ELEC 3509 Electronics II (already required in third year of EE program)
ELEC 4609 Integrated Circuit Design and Fabrication
ELEC 4706 High-Speed Electronics: Circuits and Systems
ELEC 4707 Analog Integrated Electronics
ELEC 4708 Advanced Digital Integrated Circuit Design
ELEC 4907 Engineering Project – Topic in Integrated Circuit Design
3 more engineering electives from ELEC4XXX or SYSC4XXX

3) Communication Circuits The course pattern would be:

SYSC 3501 Communication Theory (already required in third year of EE program)
ELEC 4503 Radio Frequency Lines and Antennas
ELEC 4505 Telecommunication Circuits
ELEC 4506 CAD for Communication Circuits
ELEC 4509 Communication Links
ELEC 4702 Fiber Optic Communications
ELEC 4907 Engineering Project – Topic in Communication Circuits
2 more engineering electives from ELEC4XXX or SYSC4XXX

4) RF/Microwave Circuits and Applications The course pattern would be:

SYSC 3501 Communication Theory (already required in third year of EE program)
ELEC 3909 Electromagnetic Waves (already required in third year of EE program)
ELEC 4502 Microwave Circuits
ELEC 4503 Radio Frequency Lines and Antennas
ELEC 4505 Telecommunication Circuits
ELEC 4600 Radar and Navigation
ELEC 4907 Engineering Project – Topic in RF/Microwave Circuits and Applications
3 more engineering electives from ELEC4XXX or SYSC4XXX

5) Semiconductor Devices and Technology The course pattern would be
ELEC 3908 Physical Electronics (already required in third year of EE program)
ELEC 4609 Integrated Circuit Design and Fabrication
ELEC 4700 The Physics and Modelling of Advanced Devices and Technologies
ELEC 4704 Nanoscale Technology and Devices
ELEC 4709 Integrated Sensors
ELEC 4907 Engineering Project – Topic in Semiconductor Devices and Technology
3 more engineering electives from ELEC4XXX or SYSC4XXX

6) Electrical Energy and Power The course pattern would be:
ELEC 2602 Electric Machines and Power (already required in EE program)
ELEC 3105 Electromagnetic Fields (already required in EE program)
ELEC 3508 Power Electronics (taken as fourth-year engineering elective)
ELEC 4602 Electrical Power Systems
ELEC 4907 Engineering Project – Topic in Electrical Energy and Power
5 more engineering electives from ELEC4XXX or SYSC4XXX

7) Systems Engineering

This mini-stream is designed so as not to overlap with the existing Engineering programs in Communications Engineering, Software Engineering , and Biomedical/Electrical Engineering.

The course pattern would be:

SYSC 3200 Industrial Engineering (already permitted as fourth-year engineering elective)
SYSC 3501 Communication Theory (already required in third year of EE program)
SYSC 3600 System and Simulation (already required in third year of EE program)
ELEC 4601 Microprocessor Systems
SYSC 4505 Automatic Controls Systems I
SYSC 4907 Engineering Project – Topic in Systems Engineering
4 more engineering electives from ELEC4XXX or SYSC4XXX