

6. Software Defined Networks (SDN)

Fundamental concepts: separation of control and data plane, layers of abstraction: specification, distribution and forwarding.

7. Introduction to Traffic Engineering

Fundamental concepts: queuing theory and network optimization.

8. Design Assignment

Group based commercial design project covering following aspects:

- User need surveys/quiescent meaning,
- PCBs meeting industry standards/norms,
- Enclosures meeting industry standards/norms,
- Design documentation.

Semester 5

EN3880: Engineer and Society

Intake	2020 onwards	Specialisation	Electronic and Telecommunication Engineering		
Semester	Code	Module Title		C/E/O	GPA / NGPA
4	EN2160	Electronic Design Realization		C	GPA
Hours/Week		Credits	Prerequisites / Corequisites	Evaluation %	
Lecture	Lab/Tutes			CA	WE
2	2	3	EN1190	70	30
Learning Outcomes					
1. Identify a suitable design model for a given problem. 2. Design testable PCBs complying with industry standards. 3. Explain testing methodologies used in electronic manufacturing. 4. Design product enclosures complying with industry standards. 5. Prepare proper documentation for electronic design. 6. Apply the knowledge gained to a commercial design project resulting in a working prototype.					
Syllabus Outline					
1. Design Models User centred design, design driven innovation.					
2. User Centred Design Need analysis, conceptual design, detail design, design iterations.					
3. Design Driven Innovation Existing meaning, quiescent meaning, technology epiphany, design interpreters.					
4. Circuit Design and Prototyping Top-down/bottom-up approaches, schematic design, HDL design, simulation and verification, PCB prototyping.					
5. Testing Test coverage, boundary scanning, test vector generation, prototype testing and design verification, product testing and quality assurance.					
6. Enclosure Design Solid modelling and visualization, rapid prototyping, mould design, tool design.					
7. Documentation User manuals, maintenance manuals, QC manuals, design manuals.					

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Semester	Code	Module Title		C/E/O	GPA / NGPA
5	EN3880	Engineer and Society		C	GPA
Hours/Week		Credits	Prerequisites / Corequisites	Evaluation %	
Lecture	Lab/Tutes			CA	WE
1	4	3	None	100	-
Learning Outcomes					
1. Explain the proper professional conduct as an engineer. 2. Interpret the role of an engineer as an agent in balancing interests. 3. Assess the basic health and safety aspects of a premise or product. 4. Assess the environmental impact of a product or a project.					
Syllabus Outline					
1. Introduction Social motivation for law and ethics, basic definition of law, morality, conscience and ethics, holistic view of engineering in terms of balancing the interests of the client, society and the environment.					
2. Legal Fundamentals Types of law, sources of law, interpretation of laws, natural justice and due process of the law, evidence, relevant laws in engineering (industrial relations, commercial law, contract law, intellectual property laws), regulations, legal remedies, jurisprudence for good policy making.					
3. Ethics Types of ethics based upon formulation and application, ethics in academic, professional, and engineering environments, conflicts of interest, role conflicts, misconduct, ethics of experimentation (e.g., clearance requirement, informed consent).					
4. Health and Safety in Engineering Ethical and legal background, occupational safety, product safety, negligence, case studies.					
5. The Environment Human ecology theory, environmental impact assessment, principles of environmental law and ethics in engineering (sustainable development, precautionary principle, prevention principle, polluter-pays principle, inter-generation equity, greenwashing).					