### EN1014 Electronic Engineering : Module Discription

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| **Intake** | 2020 onwards | Specialization | | Electronic and Telecommunication Engineering | | |
| **Semester** | Code | Module Title | | Credits | C/E/O | GPA/NGPA |
| **2** | EN1014 | Electronic Engineering | | 4 | C | GPA |
| **Hours/Week** |  | Prerequisites and corequisites | |  | Evaluation | % |
| **Lecture** | Lab./Tut. |  | |  | CA | WE |
| 3 | 2 | None | |  | 40 | 60 |
| **Module Aim:** | | | | | | |
| **Learning Outcomes** | | | | | | |
| At the end of the module the student will be able to: | | | | | | |
| LO1 | Explain functional blocks and elements of an electronic system | | | | | |
| LO2 | Explain simple systems using block level integration | | | | | |
| LO3 | Analyze the op-amp circuits and their performances using the ideal op-amp model | | | | | |
| LO4 | Comprehend diode and transistor datasheets | | | | | |
| LO5 | Design diode application circuits | | | | | |
| LO6 | Analyze simple transistor amplifier circuits | | | | | |
| LO7 | Design simple combinational and sequential logic circuits | | | | | |
| **Outline Syllabus** | | | | | | |
| 1. | **Introduction to Basic Electronic Devices [2h]**  Lumped element abstraction of basic components such as R, L, C, Diode, BJT, FET, Op-amp | | | | | LO1 |
| 2. | **System level Introduction [10h]**  A simple audio system and its building blocks  Lumped Abstraction and Functional description of the building blocks: Input signal generating circuit, pre-amplifier, DC Power supply, Power amplifier, filters and Equalizers | | | | | LO1, LO2 |
| 3. | **Ideal Op-amp Circuits [6h]**  Ideal op-amps, Concept of negative feedback, Inverting Amplifier, Non-Inverting Amplifier, Summing Amplifier, Integrator, differentiator, Peak detector, Negative Impedance Circuit, Logarithmic and Anti-logarithmic(exponential) amplifiers. | | | | | LO3 |
| 4. | **Diodes and Diode Applications [10h]**  Diode characteristics, Diode models, rectifiers and smoothing, clipping circuits, clamping circuits, Zener diodes and voltage regulation, DC power supply using diodes, Source switching and protection circuits using diodes, Voltage multipliers, light emitters and light sensors, Schottky diodes. | | | | | LO4, LO5 |
| 5. | **Transistors and Simple Transistor Amplifiers [10h]**  Device structures of Bipolar Junction Transistor (BJT) and Junction Field Effect transistor (JFET) and its characteristics, Simple biasing methods (Fixed bias and Source bias) Analysis of DC load line, Amplifier gain calculations. | | | | | LO4, LO6 |
| 6. | **Simple Combinational and Sequential Logic Circuits [10h]**  Boolean algebra, Karnaugh maps, Half adder, Full adder, Ripple-carry adder, Multipliers, Comparators, Multiplexers and demultiplexers, Encoders and decoders, Latches and flip-flops, Mealy and Moor machines, Sequence detectors. | | | | | LO 7 |
| Recommended Textbooks | | | Electronic Devices, Thomas Floyd, 7th Edition,  Publisher: Pearson Education, ISBN: 978-8177586435  Electronic Devices Systems and Applications, Robert Diffenderfer  Publisher: Cengage Learning. ISBN: 978-1401835149  Digital Design: with an Introduction to the Verilog HDL, M. M. Mano and M. D. Ciletti  5th Edition, Prentice Hall, 2012 | | | |
| Lecturers in Charge | | | Eng. Kithsiri Samarasinghe / Dr. Chamira Edussooriya | | | |