Module code | SP-2302
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Module Title | Electronics: Analogue and Digital
Degree/Diploma | Bachelor of Science (Applied Physics)
Type of Module | Major Option
Modular Credits | 4
Total student workload | 8 hours/week
Contact hours | 4 hours/week
Prerequisite | SP-1202 or SP-1302 Electricity and Magnetism
Anti-requisite | TG-2309 Electronic Instrumentation

**Aims**
To provide an understanding of electronics from introductory level to electronic circuit design and implementation level

**Learning Outcomes:**
*On successful completion of this module, a student will be expected to be able to:*

| Lower order: | 30% recognises basic electronic components and devices used for different electronic functions |
| Middle order: | 50% manages the tools in a basic electronic laboratory and use electronic simulation tools - uses basic techniques for analysing analogue and digital electronic circuits |
| Higher order: | 20% able to design analogue and digital electronic circuits at block level - interprets the results of analyses, and makes an appropriate report for an effective communication |

**Module Contents**
*Analog:* Ohm’s Law, resistors in series and parallel, voltage dividers, Thévenin’s and Norton’s theorems, capacitor, inductor, impedance and reactance, power in reactive circuits, ac circuits, parallel and series resonant circuits, passive filters, diodes and their applications, operational amplifier circuits, active filters, oscillators, basic bipolar and metal oxide semiconductor transistors circuits.
*Digital:* Number systems and codes, concept of bits and word, basic logic functions, Boolean algebra, Karnaugh map, simplification of expression, Flip-flops and their applications.

**Laboratory sessions:** 12 laboratory sessions of 2 hours each will be incorporated into this module.

**Assessment**
*Formative assessment*
Laboratory experiments, assignments and feedback
*Summative assessment*
Examination: 60%
Coursework: 40%
- 2 class tests (30%)
- 2 written laboratory reports (10%)