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| **Faculty** | Natural Sciences | | | |
| **Home Department** | Physics and Astronomy | | | |
| **Module Topic** | Waves, Electricity and Magnetism | | | |
| **Generic Module Name** | Physics 126 | | | |
| **Alpha-numeric Code** | **PHY126** | | | |
| **NQF Level** | 5 | | | |
| **NQF Credit Value** | 15 | | | |
| **Duration** | Semester | | | |
| **Proposed semester to be offered.** | Second Semester | | | |
| **Programmes in which the module will be offered** | BSc (Applied Geology) (3214); BSc (Biotechnology) (3211); BSc (Computer Science) (3211); BSc (Environmental & Water Science) (3331); BSc (Mathematical & Statistical Sciences) (3227) | | | |
| **Year level** | 1 | | | |
| **Main Outcomes** | On completion of this module students should be able to:<br>• Have knowledge and understanding of basic ideas relating to wave phenomena, electricity and magnetism.<br>• Be able to understanding natural phenomena and various technologies by applying the basic concepts of vibrations, waves, electricity and magnetism.<br>• Be able to work in a laboratory environment and record, represent and interpret data and deliver a public presentation. | | | |
| **Main Content** | • Description of wave motion, standing waves, Doppler effect, radar gun and shock waves<br>• The origin and nature of sound, reflection and refraction of sound, forced vibrations, natural frequency, resonance, interference, pitch and loudness. Ultrasound applications and compact discs<br>• Electromagnetic waves transparent and opaque media, selective absorption and transmission, natural phenomena (e.g. why the sky is blue)<br>• Reflection, refraction, diffraction, interference and polarization<br>• Electrostatics and current electricity including lightning, electric shielding, the Van de Graaf Generator, electrical circuits and safety.<br>• Magnetism including permanent magnets, electromagnets and applications.<br>• Electromagnetic Induction, Faraday's law, generators and transformers. | | | |
| **Pre-requisite modules** | None | | | |
| **Co-requisite modules** | None | | | |
| **Prohibited module Combination** | None | | | |
| **Breakdown of Learning Time** | **Hours** | **Timetable Requirement per week** | | **Other teaching modes that does not require time-table** |
| *Contact with lecturer / tutor:* | 42 | *Lectures p.w.* | 3 | |
| *Assignments & tasks:* | 0 | *Practicals p.w.* | 3 | |
| *Practicals:* | 42 | *Tutorials p.w.* | 1 | |
| *Tutorials:* | 14 | | | |
| *Assessments:* | 9 | | | |
| *Selfstudy:* | 43 | | | |

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| *Other:* | 0 | | | |
| **Total Learning Time** | **150** | | | |
| **Methods of Student Assessment** | Continuous Assessment (CA): 60%<br>Final Assessment (FA): 40% | | | |
| **Assessment Module type** | Continuous and Final Assessment (CFA) | | | |