

Subject Title	:	College Physics II
Code	:	AP102
Level	:	1
Credit Value	:	3.00
Offering Department	:	Department of Applied Physics
Offering Semester	:	2
Pre-requisite(s)	:	AP101 College Physics I
Co-requisite(s)	:	Nil
Exclusion(s)	:	Nil
Medium of Instruction	:	English
Contact Hours		
<i>Classroom teaching and laboratory experiments</i>		
Lecture	:	34 hours
Laboratory	:	8 hours
Total	:	42 hours
<i>Multimedia teaching/learning and other activities</i>		
Virtual laboratory	:	12 hours
Self-study	:	60 hours
Total	:	72 hours
Objectives		
<p>This is the second bridging course in physics of the Foundation Programme for students admitted from mainland. It is built on College Physics I and continues on topics in waves and optics, electromagnetism and modern physics, in preparing students to study science, engineering, or related programmes.</p>		
Learning Outcomes		
<p>On successful completion of this subject, students are expected to be able to:</p> <ol style="list-style-type: none"> 1. apply simple laws in optics to explain image formation; 2. explain phenomena related to the wave character of light; 3. define electrostatic field and potential; 4. use Gauss' law in solving problems in electrostatics; 5. solve problems on interaction between current and magnetic field; 6. apply electromagnetic induction to various phenomena; 7. solve simple problems in AC circuits, 8. describe simple models of the atom and the nucleus, and 9. explain the properties of materials in relation with bonding and crystal structure. 		
Teaching and Learning Approach		
<ol style="list-style-type: none"> 1. Lectures are given to deliver the subject outline and key physics concepts to the students. The students will also get the guidance on further reading. 2. Assignments are used to help the students gain analytical abilities through problem-solving and also to help them strengthen the concepts taught. 3. Laboratories are designed to help the students gain hands-on experience in the operation of equipment and apply their knowledge in the experiments. 		
Assessment Method		
Continuous Assessment	:	40%
Examination	:	60%
Total	:	100%

Keyword Syllabus
<ol style="list-style-type: none"> 1. Waves and Optics Reflection and refraction; Image formation by mirrors and lenses; Compound lens; Microscope and telescope; Superposition of waves; Huygen's principle; Interference and diffraction; Interferometers and diffraction grating; Polarization; Wave-particle duality. 2. Electromagnetism Charge and field; Coulomb's law and Gauss' law; Electrostatic field and potential difference; Capacitors and dielectric; Current and resistance; Ohm's law; Electromotive force, potential difference and RC circuits; Magnetic force on moving charges and current; Hall effect; Biot-Savart law and Ampere's law; Faraday's law and Lenz's law; Self inductance and mutual inductance; Transformers; AC circuits and applications. 3. Modern physics Photons and photoelectric effects; Bohr model and hydrogen spectrum; Compton effect; Molecular bonds; Structure of solids; Mechanical properties of solids; Electric properties of solids.
Essential Reading and CD-ROM
<ol style="list-style-type: none"> 1. Knight. (2004). <i>Physics for Scientists and Engineers with Modern Physics</i>. Pearson. 2. (2000). <i>Physics CAI</i> in CD-ROM. USTC. 3. (2000). <i>Computer Simulation System for College Physics Experiment</i>. Version 2.0 for Windows. USTC.
Reference List
<ol style="list-style-type: none"> 1. Giancoli. (2000). <i>Physics for Scientists and Engineers</i>. 3rd edition. Prentice Hall. 2. Young and Freedman. (2004). <i>University Physics</i>. 11th edition. Pearson. 3. Halliday, Resnick and Walker. (2005). <i>Fundamentals of Physics</i>. 7th edition. Wiley. 4. Giambattista, Richardson and Richardson. (2007). <i>College Physics</i>. 2nd edition. MaGraw-Hill. 5. Jewett and Serway, Serway's. (2006). <i>Principles of Physics</i>. 4th edition. Thomson.