

2024 / 25

School of Science and Computing

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🌐 www.wit.ie/schools/science_computing



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TU**

Ollscoil
Teicneolaíochta
an Oirdheiscirt

South East
Technological
University

Module Descriptor

Physics 2

(Computing and Mathematics)

Physics 2 (A11064)

Short Title: Physics 2
Department: Computing and Mathematics
Credits: 5
Level: Introductory

Description of Module / Aims

This module is designed to introduce the student to additional fundamental physics principles and will augment the content covered in the semester one physics module (Physics I). Problem-solving skills will be developed and used to analyse physical situations. The integrated practical programme will enhance the student's experimental, logical thinking and report-writing skills.

Programmes

stage/semester/status		
COMP-0547	BEng (Hons) in Electrical and Automation Engineering (International) (WD_ETRIC_BI)	1 / 2 / M
COMP-0547	BEng (Hons) in Information Engineering (International) (WD_EEELC_BI)	1 / 2 / M
COMP-0547	BSc (Hons) in Applied Computing (International) (WD_KACCM_BI)	1 / 2 / M
COMP-0547	BSc (Hons) in Applied Computing (WD_KACCM_B)	1 / 2 / M
COMP-0547	BSc (Hons) in Applied Computing (WD_KCOMP_B)	1 / 2 / M
COMP-0547	BSc (Hons) in Computer Science (WD_KCMSC_B)	1 / 2 / M
COMP-0547	BSc (Hons) in the Internet of Things (International) (WD_KINTT_BI)	1 / 2 / M

Indicative Content

- Thermal Physics: Temperature and temperature scales; Expansion of solids; Heat capacity and latent heats; Heat transfer
- Electromagnetism: Electric forces and fields; Electric Potential and electric potential energy; Capacitance and dielectrics; Magnetism and electromagnetic induction
- DC circuits: Kirchoff's Laws; Series and parallel circuits
- AC circuits: AC current and voltage: Impedance and phase angle; Analysis of series and parallel RC circuits
- Semiconductor Theory: Band Theory of solids; Intrinsic and extrinsic semiconductors; p-n junction diode and thermistor
- Application of measurement principles to a range of sensors

Learning Outcomes

On successful completion of this module, a student will be able to:

1. Describe and explain the fundamental physics principles underlying the concepts outlined in the indicative content.
2. Compute routine expressions related to simple AC and DC electrical circuits.
3. Apply problem-solving skills to find solutions to a range of practical and theoretical problems.
4. Describe and discuss the practical application of the physics concepts introduced related to a number of physical devices.
5. Record and analyse experimental data in an accurate manner.
6. Report on and critically assess a range of experiments relating to the course content.

Learning and Teaching Methods

- Lectures
- Laboratory work
- Live and video-based demonstrations
- Tutorial/revision sheets provided on moodle
- Self-directed learning

Learning Modes

Learning Type	F/T Hours	P/T Hours
Lecture	36	
Practical	24	
Independent Learning	75	

Assessment Methods

	Weighting	Outcomes Assessed
Final Written Examination	60%	1,2,3,4
Continuous Assessment Assignment	40%	5,6

Assessment Criteria

- <40%: Unable to interpret and describe key concepts of the specific knowledge domain(s).
- 40%–49%: Be able to interpret and describe key concepts of the specific knowledge domain(s).
- 50%–59%: Ability to discuss key concepts of the specific knowledge domain and ability to discover and integrate related knowledge in other knowledge domains.
- 60%–69%: Be able to solve problems within the specific knowledge domain(s) by experimenting with the appropriate skills and tools.
- 70%–100%: All the above to an excellent level. Be able to analyse and design solutions to a high standard for a range of both complex and unforeseen problems through the use and modification of appropriate skills and tools.

Essential Material(s)

- "Materials provided on Moodle." <http://moodle.wit.ie>

Supplementary Material(s)

- "Podcasts such as." Tech Weekly, Science Friday, Science Weekly, More or less
- Giancoli, G.C. *Physics, Principles with Applications*. 6th Ed. NY: Prentice-Hill, 2013.
- Johnson, K. *Physics for You*. NY: Stanley Thornes, 2011.
- O'Regan, D. *Real-World Physics*. NY: Folens, 2000.
- Walker, J.S. *Physics Technology Update*. 4th Ed. NY: Pearson International, 2014.

Requested Resources

- Science Lab: Physics