

Short Title:	Information Technology APPROVED
Full Title:	Information Technology
Module Code:	INFO H2009
Credits:	5
Field of Study:	Mechanics and metal work
Module Delivered in	6 programme(s)
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Module Description:	The course will provide a foundation for computer programming skills and enable the student to plan, programme for final test and validation and debug code for embedded engineering solutions using a structured approach.

Learning Outcomes	
<i>On successful completion of this module the learner will be able to:</i>	
LO1	Explore and discuss the major ethical implications of the developing use of computers, artificial intelligence and robotics in engineering and wider society.
LO2	Apply structured programme planning techniques for algorithm development such as flowcharts and psuedocode. With focus on development for test and validation.
LO3	Demonstrate and describe standard programming commands such as; loops, decision making structures, comments, variable definitions and assignments, input/output statements and mathematical statements to solve an engineering problem.
LO4	Use structured high level programming languages to develop code that can be embedded into engineering systems (including C and Python)
LO5	Disseminate the outcome of your project using a variety of channels including a report (written in a word processor and demonstrating the use of styles, indexing and other formatting tools found in Word), presentation and a poster to be shown in Tallaght Library.
LO6	Demonstrate team working skills including project planning and division of effort in the design and development of the programme, report writing and HTML tasks. Conduct a team performance appraisal as part of this process.

Module Content & Assessment

Course Work				
<i>Assessment Type</i>	<i>Assessment Description</i>	<i>Outcome addressed</i>	<i>% of total</i>	<i>Assessment Date</i>
Project	Individual Project 1. Individual coding examples. Outcome is a poster on rationale, planning and results of code.	1,2,5	20.00	Week 3
Project	Individual Project 2, Intermediate programmes. Plan, implement and test code that links sensors and actuators using the arduino or similar microprocessor. Outcome is a project demonstration and a one page summary of the approach, design, code plan, results and recommendations for further development.	2,3,4,5	20.00	Week 6
Project	Final Group Report based on the development of a programme for a robotic system. To incorporate sensors, motor control and simple machine learning algorithms.	1,2,3,4,5,6	30.00	Week 10
Project	Group Presentation: Detailing the final outcome of the project.	1,2,3,4,5,6	20.00	Sem 2 End
Continuous Assessment	Multiple Choice Quizzes to assess knowledge of the programming concepts covered during the class	2,3,4,5,6	10.00	Sem 2 End

No End of Module Formal Examination

TU Dublin – Tallaght Campus reserves the right to alter the nature and timings of assessment

Module Workload

Workload: Full Time				
<i>Workload Type</i>	<i>Workload Description</i>	<i>Hours</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Directed Learning	In Class activity around the themes being explored each week or work on project with guidance from the tutor.	4.00	Every Week	4.00
Independent Learning	Students must work in their groups to complete the required individual and group projects.	4.00	Every Week	4.00
Total Weekly Learner Workload				8.00
Total Weekly Contact Hours				4.00

This module has no Part Time workload.

Module Resources

Required Book Resources

Tutorial notes and Programming Exercises

Recommended Book Resources

Michael McRoberts 2013, *Beginning Arduino: Second Edition (Technology in Action)*, 1st Edition Ed., Technology in Action

This module does not have any article/paper resources

Other Resources

Moodle Site: Gerard Ryder*Online presentations and documents on programming concepts*

Website: Arduino Learning Resources

<http://www.arduino.cc/>

Module Delivered in

Programme Code	Programme	Semester	Delivery
TA_EBIOM_B	B.Eng (Hons) in Biomedical Design	4	Mandatory
TA_EAMEC_B	Bachelor of Engineering (Honours) in Mechanical Engineering	4	Mandatory
TA_EAUTO_B	Bachelor of Engineering (Honours) in Mechanical Engineering (Automation)	4	Mandatory
TA_EBIOM_D	Bachelor of Engineering in Biomedical Design	4	Mandatory
TA_EAMEC_D	Bachelor of Engineering in Mechanical Engineering	4	Mandatory
TA_EAUTO_D	Bachelor of Engineering in Mechanical Engineering (Automation)	4	Mandatory