Module Information

Module Identifier	**CS36410**
Module Title	**Intelligent Robotics**
Academic Year	**2014/2015**
Co-ordinator	**Dr Myra Scott Wilson (mailto:mxw@aber.ac.uk?subject=CS36410)**
Semester	**Semester 2**
Mutually Exclusive	**CS26410 (?m=CS26410)**
Pre-Requisite	**This module is only available to returning Industrial Year students on GH7P and GG47**
Pre-Requisite	**CS21120 (?m=CS21120)**
Other Staff	**Dr Myra Scott Wilson (mailto:mxw@aber.ac.uk?subject=CS36410)** **Mr Tom Blanchard (mailto:ttb7@aber.ac.uk?subject=CS36410)** **Dr Mark James Neal (mailto:mjn@aber.ac.uk?subject=CS36410)**

Course Delivery

Delivery Type	Delivery length / details
Lecture	18 Hours.

Assessment

Assessment Type	Assessment length / details	Proportion
Semester Exam	2 Hours Written Exam	100%
Supplementary Exam	2 Hours Written Exam	100%

Learning Outcomes

On successful completion of this module students should be able to:

1. Demonstrate an understanding of the factors involved in the selection of basic robotic equipment for specific applications.

2. Demonstrate an understanding of the problems inherent in programming robots and dealing with real world interaction.

3. Assess and critically analyse the underlying pholosophical and theoretical issues in the application of AI to robotic systems.

4. Assess and critically analyse how AI techniques can be applied to robotics.

Aims

This module is intended to provide you with a deep understanding of the theoretical problems inherent in robotics and in particular in the application of AI techniques to robots and their control systems.

Brief description

This module introduces the basics of robotics and moves on to examine the relationship between AI and robotics in depth. The emphasis is on control systems and artificial intelligence techniques, and how the inherent problems of uncertainty, unpredictability and lack of repeatability in robotics affect how control systems and AI in particular can be used.

Content

1. Introduction to Robotics - 2 Lectures
Introduction to the nature of the robotics problem, with current example systems.

2. Sensors and Perception - 2 Lectures
Current sensing technologies and the perception problem.
3. Mobile and Assembly Robots ? 3 Lectures
Overview of mobile robots; methods of locomotion and control. Simulation and programming techniques for a particular robot (Pioneer). Overview of assembly robots. Introduction to assignment scenario.

4. Mobile Robot Programming ? 1x2 hour Practical and 1 Lecture
A basic introduction to mobile robot programming to better inform students about the use of AI in control systems.

5. The use of AI in robotics ? 4 seminars
Seminars that look in depth at 4 research texts will be used to introduce the students to some of the deep theoretical issues associated with the use of AI in robotics.

6. Control Architectures - 6 Lectures
Reactive, deliberative and hybrid architectures; concepts, benefits and example systems.

Notes

This module is at CQFW (http://wales.gov.uk/topics/educationandskills/qualificationsinwales /creditqualificationsframework/?lang=en) Level 6