Module Specification

Industrial Applications of Vision and Automation

Version: 2023-24, v2.0, 06 Jul 2023

Contents

Part 1: Information

Module title: Industrial Applications of Vision and Automation

Module code: UFMFCC-15-M

Level: Level 7

For implementation from: 2023-24

UWE credit rating: 15

ECTS credit rating: 7.5

Faculty: Faculty of Environment & Technology

Department: FET Dept of Engineering Design & Mathematics

Partner institutions: None

Field: Engineering, Design and Mathematics

Module type: Module

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: Not applicable

Features: Not applicable

Educational aims: See Learning Outcomes

Outline syllabus: The syllabus includes:

General introduction, lectures and workshops on relevant technical aspects of

automation and vision.

Guest lectures and component inspection in practice.

Guest lectures and student-led workshops about self-directed research on technical topics and their application to industry.

Guest lectures and component inspection in practice.

Project in pairs on a theoretical problem in the field.

Part 3: Teaching and learning methods

Teaching and learning methods: Scheduled Learning:

After a few introductory lectures/discussions, the module will assume a range of modern teaching styles, including:

Student-led workshops where the students work in teams to research a particular topic and present the results to the rest of the group via a presentation and workshop session.

Guest lectures from industry experts and technical lectures from UWE staff.

Tutorials using computer rooms.

Independent learning:

Written assignment.

Small project in pairs (partly supervised, but mainly independent).

Background reading and literature surveying.

Self-study in preparation for all areas covered in scheduled learning in addition to preparation of workshops.

Work-based learning is applicable to those students enrolled on the course via the work-based learning scheme. The precise nature of the learning methods in this case will depend on the current experience and expertise of the student and the nature of the employer. It will be expected that one or more coursework elements may be substituted by reports on relevant work in practice and oral presentations. This work will be completed individually, but with a small amount of input from the students' employers where necessary.

Contact: 44 hours
Self-directed learning: 36 hours
Course work: 70 hours
Exam preparation: 0
Total hours: 150

Module Learning outcomes: On successful completion of this module students will achieve the following learning outcomes.

MO1 Apply ideas from machine vision and automation to real-world industrial problems in manufacturing and quality control

MO2 Develop software based on image analysis and computer vision to solve industrial component inspection problems

MO3 Critically analyse potential solutions (each with pros and cons) to automation problems and apply financial and technical arguments to each

MO4 Research novel methods for automation and vision and organise findings into both written and oral forms

MO5 Effectively distribute workloads between members of a small team and manage projects accordingly

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 106 hours

Face-to-face learning = 44 hours

Total = 150

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link https://uwe.rl.talis.com/modules/ufmfcc-15-m.html

Part 4: Assessment

Assessment strategy: The assessment for this module is as follows:

Group student workshops for Automation, Vision and Management:

Controlled conditions will be applied in that the assessment is based entirely on what is observed in the scheduled time period (1hr). While students will be working as a group, only the part of the presentation/workshop delivered by the individual will be assessed.

Industry assignment (individual written report, 1,500 words):
Assesses the students' understanding of applications of automation and vision and the various approaches to solving problems in the field. It also assesses the written presentational skills in a substantial written piece.

Technical project in groups of two (via technical report, 2,000 words):

Assesses the overall technical, project, research and presentational skills of the student. Again this will involve a substantial individual report. One or more coursework elements may be substituted for work-based learning reports as described in the Teaching and Learning section above.

Resit is the same as the first sit

Resit deliverable(s) will be scaled appropriately to group size and task complexity

Assessment tasks:

Report (First Sit)

Description: Industry assignment (individual written report) (max 1,500 words)

Weighting: 30 %

Final assessment: No

Group work: No

Learning outcomes tested: MO3

Project (First Sit)

Description: Technical project in groups of two (Max 2,000 words)

Weighting: 45 %

Final assessment: Yes

Group work: Yes

Learning outcomes tested: MO2, MO4, MO5

Practical Skills Assessment (First Sit)

Description: Students' research skills, technical competence, presentation skills and group work.

Weighting: 25 %

Final assessment: No

Group work: Yes

Learning outcomes tested: MO1, MO3, MO4, MO5

Report (Resit)

Description: Industry assignment (individual written report) (max 1,500 words)

Weighting: 30 %

Final assessment: No

Group work: No

Learning outcomes tested:

Project (Resit)

Description: Technical project in groups of two (Max 2,000 words)

Weighting: 45 %

Final assessment: Yes

Group work: Yes

Learning outcomes tested:

Practical Skills Assessment (Resit)

Description: Students' research skills, technical competence, presentation skills and group work.

Resit deliverable(s) will be scaled appropriately to group size and task complexity

Weighting: 25 %

Final assessment: No

Group work: Yes

Learning outcomes tested:

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Aerospace Engineering [Sep][FT][Frenchay][4yrs] - Not Running MEng 2020-21

Aerospace Engineering with Pilot Studies [Sep][FT][Frenchay][4yrs] - Not Running MEng 2020-21

Aerospace Engineering with Pilot Studies (Systems) [Sep][FT][Frenchay][4yrs] - Not Running MEng 2020-21

Automotive Engineering [Sep][FT][Frenchay][4yrs] - Not Running MEng 2020-21