

MODULE SPECIFICATION

Please contact your College Learning and Teaching Team for guidance completing this form:
 Colleges of Arts & Social Sciences and of Business & Law – cass-tandlteam@salford.ac.uk
 College of Health and Social Care – chsc-teaching@salford.ac.uk
 College of Science and Technology – cst-tl@salford.ac.uk

This form is available to download from http://www.governance.salford.ac.uk/page/aqa_forms).

Date of completion of this version of Module Specification: 12/01/2016				
Date of approval by the USP: 26/01/2016				
1. Module Title: (Full title and short title no more than 30 characters) Thin Films and Materials Characterisation			2.CRN: 34050 (Oct start, S2) 40866 (Feb start, S1)	
3.University module code: F300 M0009		4.HESA/JACS subject area code ⁱ : F300,F310,F321,F200		
5.Level: Level 7	6.Credit Value: 30	7.ECTS Value ⁱⁱ : 15	8.Length of module in semesters: 1	9.Month(s) in which to be offered ⁱⁱⁱ : January
10.Module Status ^{iv} Existing	11.Title of Module being replaced (<i>if any</i>):		12.With effect from ^v (academic year): September 2016	
13.Originating School: School of Computing, Science & Engineering		14.Module Leader(s) Dr Heather Yates		
15.Programme(s) in which to be offered ^{vi} : MPhys (Hons) Physics MPhys (Hons) Physics with Professional Experience MPhys (Hons) Physics with Acoustics MPhys (Hons) Physics with Acoustics with Professional Experience MPhys (Hons) Physics with Studies in North America MSc Renewable Energy Materials This module has a subject JACS code that requires applicants from outside the European Economic Area (EEA) and Switzerland to hold an Academic Technology Approval Scheme (ATAS) certificate. This requirement also extends to any programme to which this module is attached. The list of JACS codes for which an ATAS certificate is required can be found via the following link: https://www.gov.uk/government/publications/taught-masters-student-jacs-codes				
16.Pre-requisites (<i>between levels</i>): None		17.Co-requisites (<i>within a level</i>): None		
18.Indicative learning hours (breakdown of hours required) ^{vii} 300				
Lecture	48	Fieldwork		
Seminar		External visits		
Tutorial	12	Work based learning		
Project supervision		Guided independent study		216
Demonstration Practical classes and workshops	24	Placement		
Supervised time in studio/workshop		Year abroad		
Other – please specify ^{viii}				

19. Percentage of module taught by School(s) other than originating School: 0%

20. Aims of Module^{ix}: (maximum of 5)

1. To develop a knowledge and systematic understanding at the forefront of the area of Thin Films and Materials Characterisation including the origin and limitations of the associated laws.
2. To develop expertise in advanced analytical, numerical and computer based problem solving skills in the area of Thin Films and Materials Characterisation.
3. To develop laboratory skills in the area of Materials Characterisation.

21. Intended Learning Outcomes^x

Knowledge and Understanding (maximum of 5)^{xi}

On successful completion the student will be able to:

1. Demonstrate an expert critical understanding of the laws and their origins at the forefront of the area of Thin Films and Materials Characterisation
2. Demonstrate an ability to specify problems using the laws of Thin Films and Materials Characterisation and solve such problems using analytical and numerical means.
3. Demonstrate understanding of materials deposition and characterisation equipment and its operation.

Transferable/Key Skills and other attributes (maximum of 5)

On completion the student will have had the opportunity to:

4. Demonstrate communication through written material.
5. Demonstrate analytical and numerical problem solving skills.
6. Demonstrate experimental and data analysis skills.

22. Module mark calculation: Method A

23. Assessment components (in chronological order of submission/examination date)

Denote final assessment component in box marked **final assessment component (99)**

Type of assessment	Identify which ILO is met by number ^{xii}	Weighting %	Duration	Word count	Component pass required ^{xiii}	E Submission	Assessment organised by
Portfolio (Practical Skills assessments and Report)	1,3,4,6	40			No	No	School
					Choose an item.	Choose an item.	Choose an item.
Final assessment component (99) Examination	1,2,4,5	60	3 hours		No	No	SID

24. Is ethical approval for the module required?

No

25. Is ethical approval for an assessment component required?^{xiv}

No

26. Learning, teaching and assessment strategies:

The module is taught through a combination of lectures, tutorial classes and laboratory classes.

Tutorial classes facilitate the formative testing of students understanding through problem solving as well as preparing students for the exam.

The portfolio element is a combination of laboratory exercises and associated reports. The continuous assessment element is a combination of laboratory exercises and associated reports. Formative assessment is conducted via demonstration of laboratory skills appropriate to the exercises. Summative assessment is conducted via observation and report.

The experimental skills developed in the laboratory component facilitate the undertaking of experimental research

projects.

Formative assessments conducted in tutorial classes are designed to enhance students' problem solving skills.

Examinations are used to assess the students' knowledge and understanding of concepts, fundamental principles and problem solving skills.

27. Syllabus outline:

Introduction to Thin Films – Substrate

Optical interference

Measurement of film thickness

Thin film growth mechanisms

Measurement of adhesion and stress

Physical deposition processes – Vacuum evaporation

Sputtering

Chemical deposition processes - CVD

Effect of APCVD deposition parameters on Thin Film properties

Introduction to film functionality

Chemical deposition processes – FACVD

Plasma Enhanced CVD

Scanning electron microscopy; transmission electron microscopy; electron diffraction and X-ray microanalysis

Brief introduction to scanning probe microscopy (STM and AFM)

Photoelectron spectroscopy and synchrotron radiation

Structural analysis

X-ray and neutron diffraction techniques

Raman scattering

28. Indicative texts and/or other learning materials/resources^{xv}:

After initial approval, up to date reading lists can be accessed at <https://salford.rl.talis.com/index.html>

Note: This replaces the LaSU reading lists from September 2015 onwards.

For Office Use only:

Teaching and Learning

Team Comments:

- i See UoS guidance notes on selecting JACS codes (http://www.planning.salford.ac.uk/jacs_codes/) see HESA JACS Codes webpage <http://www.hesa.ac.uk/index.php/content/view/356/233/>
- ii The ECTS value is half of the module credit value
- iii Please indicate the month (s) in which delivery of the module will commence.
- iv Amendments to the title or credit value constitute a new module.
- v If the delivery month of the module is to be available for different intakes of a programme, please indicate this here. E.g. Module effective from Sept 2014 – to state the module is to be available for Sept 2014 intake & Feb 2014 intake.
- vi The module will only be attached to programmes specified in this section. Any approved module can be available as a stand-alone module.
- vii These categories are used for the Key Information Set which currently applies only to full time undergraduate students only but please include for all students – for more information including definitions see http://www.qaa.ac.uk/Publications/InformationAndGuidance/Documents/contact_hours.pdf and http://www.hesa.ac.uk/component/option,com_studrec/task,show_file/Itemid,233/mnl,13061/href,Calculations_methods.html/#LearningandTeaching
- viii The 'other' category should not be used for learning undertaken by full undergraduate students as 'other' is not used in KIS categories
- ix The aims should express the purpose of the module.
- x The intended learning outcomes should detail the knowledge, understanding and skills that students will be able to demonstrate on successful completion.
- xi In some circumstances it may be necessary to have more than 5 intended learning outcomes. You will be asked to provide your rationale for this in discussion at the USP.
- xii For example, if the assessment is an essay and the essay meets ILOs number 1-4 and 6-7, state 1-4,6-7
- xiii If Method B is used for module mark calculation, indicate Yes to specify the assessment component(s) to be passed in order to pass the module
- xiv Please specify component(s) for which ethical approval is required.
- xv The "Indicative texts and/or learning materials/resources" box should include a maximum of five items for new modules. These should be formatted using the University's agreed referencing style for the subject area (usually APA Harvard System 6th). See http://www.salford.ac.uk/library/infolit/tool#referencing_tab for more information. The texts should normally be recent texts (i.e. within the last six years) unless they are a particularly "classic" text. For existing modules, the "Indicative texts and/or learning materials/resources" box should include a link for USP reviewers and readers to the comprehensive reading list at <http://lasu.salford.ac.uk>