

MODULE DESCRIPTOR

| | | | | |
|---|--|----------------|---------------|-------------|
| TITLE | Introduction to Requirements and Systems Modelling | | | |
| SI MODULE CODE | 55-4948 | | | |
| CREDITS | 20 | | | |
| LEVEL | 4 | | | |
| JACS CODE | G510 | | | |
| SUBJECT GROUP | Software Engineering, Graphics & Multimedia | | | |
| DEPARTMENT | Computing | | | |
| MODULE LEADER | Jamie Hufford | | | |
| NOTIONAL STUDY HOURS BY TYPE | Tutor-led | Tutor-directed | Self-directed | Total Hours |
| | 48 | 48 | 104 | 200 |

MODULE AIM(S)

The aim of this module is to explore and develop established concepts and methods used in the modelling of business and software requirements from the perspective of data and objects.

MODULE LEARNING OUTCOMES

By engaging successfully with this module a student will be able to:

1. Identify and discuss the main aspects of UML and entity-relationship modelling, and use them to model system requirements
2. Construct simple prototypes as a means to present and discuss system requirements models
3. Discuss the appropriateness of object-oriented and data driven modelling for given system requirements

INDICATIVE CONTENT

System Development-

- Historical Context
- Overview of Software Development Processes
- Software crisis and importance of software requirements

Requirements Analysis, Modelling and Specification

- Techniques for requirements elicitation
- Using use cases to identify, validate and evolve requirements
- Modelling requirements
- Requirements specification (Contents and concerns, standards for documentation)
- Requirements Validation

Data-oriented Approach to Requirements Analysis and Modelling

- Business Process Modelling

- Requirements analysis for data intensive applications
- Why we model databases: data anomalies
- From conceptual to physical Modelling:
 - Top-down (entities, attributes, relationships, cardinality)
 - Bottom-up (determinacy diagrams, functional dependencies, comparison with entity-relationship models)
- Validation of models using prototype database systems

Object-Oriented Approach to Requirements Analysis and Modelling

- The role of object orientation and modelling in the software development process
- Object Oriented Concepts and Principles (Classes, objects, attributes, operation, methods, message passing, inheritance, information hiding)
- UML and modelling systems using UML (UML diagrams, such as activity diagrams, class diagrams, sequence diagrams and state diagrams) and its notation
- CRC cards

A Comparison of Object-Oriented and Entity-Relationship Approach to Requirements Analysis and Modelling

LEARNING AND TEACHING METHODS

Students will be supported in their learning, to achieve the above outcomes, in the following ways:

- Lectures will introduce key terms, concepts and principles.
- Tutorial and laboratory sessions will provide guided support in the practice of terms, concepts and principles in using the modelling notation introduced in the lecture programme.
- Directed study from textbooks, a set of module notes, online and offline postings of appropriate learning material will encourage learner autonomy.

ASSESSMENT STRATEGY AND METHODS

| Task No. | TASK DESCRIPTION | SI Code | Task Weighting % | Word Count / Duration | In-module retrieval available |
|----------|------------------|---------|------------------|-----------------------|-------------------------------|
| 1 | Coursework | CW | 50% | | Y |
| 2 | Coursework | CW | 50% | | N |

ASSESSMENT CRITERIA

All assessments will address all LOs. To pass students will need to get 40% overall on the four tasks outlined above.

In order to pass the module, students will be able to:

- use UML notation and entity-relationship modelling to model system requirements of a simple case study;
- construct a simple prototype to validate a requirements model;

- differentiate the object-oriented and data-oriented approaches in system modelling

FEEDBACK

Students will receive feedback on their performance in the following ways:

Both task 1 and task 2: Verbal and written feedback will be provided within three weeks of submission

LEARNING RESOURCES (INCLUDING READING LISTS)

Brittain, Carol & Doake, Jill , "Object Oriented Systems Development", McGraw-Hill, ISBN: 0-07709544 8.

Davis, Alan M. "Software Requirements- Objects functions and states", Prentice-Hall International Series, ISBN: 0-13-562174-7.

Stevens, Perdita with Pooley, Rob, "Using UML- Software Engineering with Objects and Components", 2nd Edition, Pearson Education, ISBN: 0-32126-967-5

REVISIONS

| Date | Reason |
|-------------|-----------------------------|
| July 2012 | Assessment Framework review |
| | |

SECTION 2 'MODEL A' MODULE (INFORMATION FOR STAFF ONLY)

MODULE DELIVERY AND ASSESSMENT MANAGEMENT INFORMATION

MODULE STATUS - INDICATE IF ANY CHANGES BEING MADE

| | |
|--|---------|
| NEW MODULE | N |
| EXISTING MODULE - NO CHANGE | N |
| Title Change | Y |
| Level Change | N |
| Credit Change | N |
| Assessment Pattern Change | N |
| Change to Delivery Pattern | N |
| Date the changes (or new module) will be implemented | 09/2012 |

MODULE DELIVERY PATTERN - Give details of the module delivery pattern. If the course has more than one intake, for example, September and January, please give details of the module start and end dates for each intake.

| | Module Begins | Module Ends |
|-----------------|---------------|-------------|
| Course Intake 1 | DD/MM/YYYY | DD/MM/YYYY |
| Course Intake 2 | DD/MM/YYYY | DD/MM/YYYY |
| Course Intake 3 | DD/MM/YYYY | DD/MM/YYYY |

| | |
|--|---|
| Is timetabled contact time required for this module? | Y |
|--|---|

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|--|-----|
| Are any staff teaching on this module non-SHU employees? | N |
| If yes, please give details of the employer institution(s) below | |
| | |
| What proportion of the module is taught by these non-SHU staff, expressed as a percentage? | N/A |

MODULE ASSESSMENT INFORMATION

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|--|-------|
| Does the Module (using Model A Assessment Pattern) Require Either* | |
| Overall Percentage Mark of 40% | Y / N |
| Overall Pass / Fail Grade | Y / N |

***NB:** Choose one of the above – Model A module cannot include both percentage mark and pass/fail graded tasks

FINAL TASK

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|--|---------------|
| According to the Assessment Strategy shown in the Module Descriptor, which task will be the LAST TASK to be taken or handed-in? (Give task number as shown in the Assessment Strategy) | Task No. 2 |
|--|---------------|

MODULE REFERRAL STRATEGY

| | |
|--|---|
| Task for Task (as shown for initial assessment strategy) | Y |
| Single Referral Package for All Referred Students | N |