

BSc (Hons) Computing &
BEng (Hons) Software Engineering

SWE5306
Systems Analysis and Design

MODULE GUIDE

2025/2026
Semester 1 & 2



Level HE5

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1. Key Information

Module Tutor	Shaheryar Mirza	-
Module Tutor Email	sm68ext@bolton.ac.uk	-
Other Contact Methods	+923472439014	-
Availability	Mon - Friday 10:00 – 18:00	-
Weblink to Moodle Class	https://moodle.bolton.ac.uk/course/view.php?id=32437	
Weblink to Module Specification	https://modules.bolton.ac.uk/swe5306	

2. Module Communications

The Module Tutor's contact details are provided above. You must check your **University of Bolton email address** and the **Moodle** area dedicated to this module regularly as many module communications are channelled through these media.

Your Module Tutor will normally aim to respond to your email messages within **2 full working days** of receipt. However, responses will be longer in holiday periods.

3. Module Description

Most computer systems are part of a greater information system focused on the needs of an organisation. It is therefore important that an organisation's processes, needs and objectives are understood by IT professionals allowing appropriate systems to be designed and implemented. This module covers the approaches by which such factors can be investigated, modelled and understood. In this module the systems analysis and design stages of systems development are addressed. It is focused on the early aspects a systems development and covers such topics as: information gathering, system analysis, requirements specifications and systems design. In this module you will develop the capability to analyse a variety of systems based upon several different case studies using structured methods, to produce requirement specifications and to design appropriate solutions. This module builds up the necessary analysis and design skills which can then be applied to developing a given solution, some of these design skills are covered in more depth which were covered in the HE4 Programming Module, new skills learnt will link to future modules such as Applied software Engineering, Agile Programming and Software Quality Management.

CONTEMPORARY

Up to date research that has informed the development of the module and subsequent lectures/sessions. For example, recent developments related to computer-based solutions is included to allow students to gain an understanding and impact of this area of computing to today's world. Furthermore, the module is delivered by professionals in the field of computing, and whom have experience (both research and applied) in that field.

COHERENCE

Lectures have been designed so that they flow from week to week. Lectures are also grouped together to support the delivery of each assessment, as well as the overall coherence of the module.

The assessment strategy for this module enables learners to consciously improve and enhance their Computational Thinking Skills while developing a fundamental understanding of requirements gathering, programming design strategies, solution integration to ensure problem-solving objectives are met. They will develop a portfolio which will contain in-class activities, self-directed learning activities, independent assignments and group-based tasks.

The First Assessment which maps to LO1, helps students to analyse and investigate an information system for a thorough Feasibility to identify and evaluate improvement opportunities for a new proposed system.

The Final Assessment is a Written Project Output which covers phases of planning, requirements gathering and analysis and design that maps to LO 2,3,4.

COHORT

The module is designed to help HE5 students understand the complete phases of a software development life cycle. Each seminar, the students are split into groups. This will allow greater support for all students, including those that are finding the content harder to understand. The problem-based approach for solving computing concepts will help students to develop problem solving and critical thinking. This module helps develop skills to a level suitable to be applied to software problems, develop analytical, design technique skills as applied to model problems in the software environment.

CONSOLIDATION

In this module the systems analysis and design stages of systems development are addressed. It is focused on the early aspects a systems development and covers such topics as: information gathering, system analysis, requirements specifications and systems design. In this module you will develop the capability to analyse an existing transaction processing system using structured methods, to produce requirement specifications and to design appropriate solutions.

Variety of group and individual activities will be completed to allow formative assessment to take place to ensure the learners fully understand the content and are able to meet the learning outcomes in the assessments.

4. Learning and Teaching

This module is delivered over 15 weeks/sessions using blended learning approach. This involves timetabled face-to-face campus-based sessions. You are also expected to carry out your own independent study including research and assessment activities.

Scheduled on-campus sessions are timetabled for 4.5 hours and are used for lectures, tutorials, practical activities, and consolidation activities including tutorials, and group discussions.

If you are unable to attend a scheduled session due to factors outside your control, you are expected to inform your tutor and engage in any activities set before the next session.

Throughout your study, tutorials will take place which will provide you with the opportunity to discuss your progress on the module and receive feedback on assessments. This may be face-to-face or online as arranged.

Please note that attendance is taken into account when making Assessment Board decisions.

5. Graduate Attributes

Graduate attributes are the personal qualities and skills which the University of Bolton community values, and which a student is expected to develop during their time at the University. Graduate attributes act as a point of reference for a student's personal development and support the articulation of employability and transferable skills.

Undergraduate programmes:

In total there are 10 graduate attributes (GAME: Self-awareness, resilience, problem solving, effective communication, global citizenship (including sustainability), enterprise, adaptability, collaboration, confidence, life-long learning).

This module seeks to develop and assess Self-awareness, collaboration, life-long learning.

6. Learning Outcomes and Assessments

Module Learning Outcomes	Assessment No. and Type
LO1: Investigate, document and understand an information system and the feasibility of a new proposed system	Assessment 1: Report

LO2: Apply a structured method to analyse an information system as well as using a variety of design methods	Assessment 2: Written Project Output
LO3: Analyse an information system defining requirements, problems and solutions	Assessment 2: Written Project Output
LO4: Appraise the underpinning principles of structured methods as well as other life cycle models	Assessment 2: Written Project Output

7. Assessment Deadlines

Assessment item		Due Date	Weight
1	Report- investigate and analyse a current case study/system and suggest solutions in the form of a feasibility report.	13/05/26	25%
2	Written Project Output deeper analysis and design of the proposed solutions with justifications of the life cycle model used and for the selection of chosen artefacts used for modelling the system design.	24/06/26	75%

8. Assessment Feedback

Feedback on items of assessment can be formal (such as on a signed feedback form) or informal (such as advice from a tutor in a tutorial). Feedback is therefore not just your grade or the comments written on your feedback form, it is advice you get from your tutor and sometimes your peers about how your work is progressing, how well you have done, what further actions you might take.

We recognise the value of prompt feedback on work submitted. Other than in exceptional circumstances (such as might be caused by staff illness), **you can expect your work to be marked and feedback provided not more than 15 working days** from the deadline date. However, please note that such feedback will be provisional and not agreed until the Assessment Board has met and may therefore be subject to change.

Please take time to read or listen to your assessment feedback. This can be very useful in determining your strengths and key areas for development, and can therefore help you improve on future grades.

9. Module Calendar

Session No.	Date or Week Commencing	Topics Covered	Planned Delivery Method(s)
1	30/03/26	Introduction to Module	On campus and Zoom
2	06/04/26	Project Management, SLDC	On campus and Zoom
3	13/04/26	Feasibility Study Assignment 1 Briefing	On campus and Zoom
4	20/04/26	Requirements Analysis 1	On campus and Zoom
5	27/04/26	Requirements Analysis 2 – RAD need to investigate and have a new system Assignment 2 Briefing	On campus and Zoom
6	04/05/26	Business Process and Functional Modelling – Activity Diagrams Tutorial: Assignment Support	On campus and Zoom
7	11/05/26	Use Cases, Object Oriented Design, Class and Method Design +Assignment 1 submission	On campus and Zoom
8	18/05/26	Structured Analysis 1 – Data Flow Diagram, Data Dictionary	On campus and Zoom
9	25/05/26	Structure Analysis 2 - Decision Trees, Decision Tables, Structured English, Pseudocode Assignment 1 feedback tutorials	On campus and Zoom
10	01/06/26	Behaviour Modelling	On campus and Zoom
11	08/06/26	System Design, Design Strategy, Data Management Layer Design Tutorial: Assignment Support	On campus and Zoom
12	15/06/26	Information Systems and Transaction Processing Systems Strategy tools i.e. SWOT, Boston Matrix, Roles in systems development Tutorial: Assignment Support	On campus and Zoom
13	22/06/26	Assignment 2 – Project Output	On campus and Zoom
14	29/06/26	Directed Study Assignment 2 – Presentation	On campus and Zoom
15	06/07/26	Directed Study	On campus and Zoom

10. Formative Assessment

Formative assessment is employed to support your learning on the module, allowing you to reflect on feedback on your progress from your tutors and peers. It takes a variety of forms including developmental feedback from mock assignments, group discussions, practice presentations, and does not contribute to the final module mark.

11. Indicative Reading

- **Essential Resources**

Aguanno, K., Schibi, O. (2019) *Agile business analysis: enabling continuous improvement of requirements, project scope, and agile project results*. Florida: J Ross Publishing.

Bennett, S., McRobb, S., Farmer, R. (2010) *Object-oriented systems analysis and design using UML*. 4th ed. London: McGraw-Hill

Dennis, A., Wixom, A., Haley, B., Roth, R. M. (2019) *Systems Analysis and Design*. 7th ed. Chichester: Wiley.

- **Recommended Resources**

Cadle, J., Paul, D., Turner, P. (2021) *Business Analysis Techniques: 123 essential tools for success*. Swindon: BCS Learning & Development Limited. London: McGraw-Hill

Kendall, K.E. & Kendall, J.E. (2014) *Systems analysis and design*, 9th, Global ed, London: Pearson

Satzinger, J. W., Jackson, R. B., & Burd, S. D. (2016). *Systems analysis and design in a changing world*. Cengage learning.

Seidl, M., Scholz, M., Huemer, C. & Kappel, G. (2015) *UML @ classroom: an introduction to object-oriented modeling*, Springer, Berlin.

- **Further Reading**

Martin, R. (2013) *Agile Software Development, Principles, Patterns, and Practices*. London: Pearson

Sommerville, I. (2015) *Software Engineering*, 10th Ed., Harlow: Pearson Education.

Stephens, R. (2015) *Beginning Software Engineering*. Indianapolis: John Wiley & Sons, Inc.,

Wiegers, K. (2013) *Software Requirements (Developer Best Practices)*. Hoboken: Microsoft Press

12. Guidelines for the Preparation and Submission of Written Assessments

1. Written assessments should be word-processed in Arial or Calibri Light font size 12. There should be double-spacing and each page should be numbered.
2. There should be a title page identifying the programme name, module title, assessment title, your student number, your marking tutor and the date of submission.
3. You should include a word-count (excluding reference list/bibliography, figures, tables and appendices).
Where a word limit is specified, the following penalty systems applies:
 - Up to 10% over the specified word length = no penalty
 - 10 – 20% over the specified indicative word length = 5 marks subtracted (but if the assessment would normally gain a pass mark, then the final mark to be no lower than the pass mark for the assessment).
 - More than 20% over the indicative word length = if the assessment would normally gain a pass mark or more, then the final mark will be capped at the pass mark for the assessment.
4. **At the end of the assessment you should include a declaration of any software tools including Generative AI (GAI) applications that you used in developing and completing the assessment. The assessment brief will specify if and how you can use GAI applications in the assessment.**
5. All written work should be referenced using the standard University of Bolton referencing **Harvard** style– see: <https://libguides.bolton.ac.uk/resources/referencing/>
6. Unless otherwise notified by your Module Tutor, electronic copies of assignments should be saved as word documents and uploaded into Turnitin via the Moodle class area. If you experience problems in uploading your work, then you must send an electronic copy of your assessment to your Module Tutor via email BEFORE the due date/time.
7. Please note that when you submit your work to Moodle, it will automatically be checked for matches against other electronic information, as well as for hidden text characters and GAI generated text. You will be able to see similarity matches but not currently flags for hidden characters and AI-generated text. The outcomes of Turnitin reports may be used as evidence in an academic misconduct investigation (see Section 14).
8. **Late work**
Late work will be subject to the following penalties:
 - Up to 7 calendar days late = 10 marks subtracted but if the assignment would normally gain a pass mark, then the final mark to be no lower than the pass mark for the assignment.
 - More than 7 calendar days late = This will be counted as non-submission and no marks will be recorded.Late submission of assessments on refer and those which are graded Pass/Fail only, is not permitted unless an extension is approved. See below.
9. **Extensions**
In the case of exceptional and unforeseen circumstances, an extension of up to 14 days after the assessment deadline may be requested using the standard University Extension Request

Form. For approval there would need to be an explanation and evidence of relevant circumstances.

Longer extensions for individual assessments, projects and artefacts may be granted, at the discretion of the Programme Leader.

Requests for extensions which take a submission date past the end of the module (normally week 15) must be made using the Mitigating Circumstances procedure.

Some students with registered disabilities will be eligible for revised submission deadlines. Revised submission deadlines for disability adjustments do not require the completion extension request paperwork. However, students should request these in writing in advance.

Please note that the failure of data storage systems is not considered to be a valid reason for an extension. It is therefore important that you keep multiple copies of your work on different storage devices before submitting it.

13. Procedures for Other Assessments

NA

14. Academic Misconduct

Academic misconduct may be defined as any attempt by a student to gain an unfair advantage in any assessment. This includes plagiarism, collusion, commissioning (contract cheating and unauthorised use of GAI) amongst other offences.

In order to avoid these types of academic misconduct, you should **ensure that all your work is your own and that sources and software applications are attributed**. You can also check originality through *Turnitin*.

Please note that penalties apply if academic misconduct is proven. See the following link for further details:

<https://www.bolton.ac.uk/student-policy-zone/student-policies-2024-25/academic-misconduct-regulations-and-procedures-2024-25>

15. Assessments

Please see Assessment Briefs on Moodle.

16. General Assessment Criteria for Written Assessments

GENERAL ASSESSMENT GUIDELINES – LEVEL HE5

	Relevance Learning outcomes must be met for an overall pass	Knowledge and Understanding	Analysis, Creativity and Problem-Solving	Self-awareness and Reflection	Research/ Referencing	Written English	Presentation and Structure
Class I (Exceptional Quality) 85% - 100%	Work is directly relevant and expertly addresses the requirements of the brief. Learning outcomes are met.	Demonstrates an exceptional breadth and depth of knowledge and understanding of theory and practice beyond the threshold expectation for the level. Demonstrates sophisticated conceptual understanding of specialised areas.	Presents a perceptive synthesis and critical evaluation of findings' drawing on a broad range of relevant sources in order to draw clear, systematic, justified conclusions. Provides a critical insight and interprets complex matters and ideas comprehensively. Demonstrates creative flair and a high level of originality. Demonstrates exceptional problem- solving skills and initiative.	Provides insightful reflection and critical self-awareness in relation to the outcomes of own work and personal responsibility.	A wide range of contemporary and relevant reference sources selected and drawn upon. Sources cited accurately in both the body of text and in the Reference List/ Bibliography.	Writing style is clear and appropriate to the requirements of the assessment. An exceptionally well written answer with competent spelling, grammar and punctuation. For example, paragraphs are well structured and include linking and signposting. Sentences are complete and different types are used. A wide range of appropriate vocabulary is used.	The presentational style and layout are correct for the type of assignment. Evidence of planning and logically structured. Where relevant, effective inclusion of, and reference to, figures, tables and images.
Class I (Excellent Quality) 70% - 84%	Work is relevant and comprehensively addresses the requirements of the brief. Learning outcomes are met.	Demonstrates an excellent breadth and depth of knowledge and understanding of theory and practice for this level. Demonstrates in-depth understanding of key areas in different contexts.	Presents an excellent appraisal of findings through the critical analysis of information sources. Draws clear, systematic, justified and perceptive conclusions. Demonstrates creative flair, a high level of originality and initiative. Demonstrates a critical understanding of problem-solving approaches and applies excellent problem-solving skills.	Provides excellent reflection and self-awareness in relation to the outcomes of own work and personal responsibility.	A wide range of relevant reference sources selected and drawn upon. Sources cited accurately in both the body of text and in the Reference List/ Bibliography.	Writing style is clear and appropriate to the requirements of the assessment. An excellently well written answer with competent, spelling, grammar and punctuation. For example, paragraphs are well structured and include linking and signposting. Sentences are complete and different types are used. A wide range of appropriate vocabulary is used.	The presentational style and layout are correct for the type of assignment. Evidence of planning and logically structured. Where relevant, effective inclusion of, and reference to, figures, tables and images.
Class II/i (Very Good Quality) 60% - 69%	Work is relevant and addresses most of the requirements of the brief. Learning outcomes are met.	Demonstrates a thorough breadth and depth of knowledge and understanding of theory and practice for this level. Demonstrates very good understanding of key areas in different contexts.	Presents a perceptive appraisal of findings through the critical analysis of information. Draws clear, justified and thoughtful conclusions. Demonstrates a very good level of creativity and originality. Demonstrates a critical understanding of problem-solving approaches and applies strong problem-solving skills.	Provides very good reflection and self-awareness in relation to the outcomes of own work and personal responsibility, as required by the assessment.	A range of appropriate reference sources selected and drawn upon. Sources cited accurately in the main both the body of text and in the Reference List/Bibliography.	Writing style is clear and appropriate to the requirements of the assessment. A very well written answer with competent spelling, grammar and punctuation. For example, paragraphs are well structured and include linking and signposting. Sentences are complete and different types are used. A range of appropriate vocabulary is used.	The presentational style and layout are correct for the type of assignment. Evidence of planning and logically structured in the main. Where relevant, effective inclusion of, and reference to, figures, tables and images.
	Relevance Learning outcomes must be met for an overall pass	Knowledge and Understanding	Analysis, Creativity and Problem-Solving	Self-awareness and Reflection	Research/ Referencing	Written English	Presentation and Structure

Class II/ii (Good Quality) 50% - 59%	Work addresses key requirements of the brief. Some irrelevant content. Learning outcomes are met.	Demonstrates a sound breadth and depth of knowledge and understanding of theory and practice for this level. Demonstrates sound understanding of key areas in different contexts.	Presents a logical appraisal of findings through the critical analysis of information. Draws clear and justified conclusions. Demonstrates creativity and originality. Demonstrates a critical understanding of problem-solving approaches and applies effective problem-solving skills.	Provides valid reflection and self-awareness in relation to the outcomes of own work and personal responsibility, as required by the assessment.	Relevant reference sources selected and drawn upon. Most sources accurately cited both the body of text and in the Reference List/Bibliography.	Writing style is mostly appropriate to the requirements of the assessment. Grammar, spelling and punctuation are generally competent and minor lapses do not pose difficulty for the reader. Paragraphs are structured and include some linking and signposting. Sentences are complete. A range of appropriate vocabulary is used.	The presentational style and layout are correct for the type of assignment. Logically structured in the most part. Inclusion of figures, tables and images but not all relevant or referred to.
Class III (Satisfactory Quality) 40% - 49%	Work addresses the requirements of the brief, although superficially in places. Some irrelevant content. Learning outcomes are met.	Demonstrates a sufficient breadth and depth of knowledge and understanding of theory and practice for this level. Demonstrates understanding of a range of key areas in different contexts.	Presents valid appraisal of findings in parts following a critical appraisal of information. Interprets a number of matters and ideas but with some descriptive passages evident which lack clear purpose. Demonstrates creativity and originality in places. Demonstrates a critical understanding of problem-solving approaches and applies sufficient problem-solving skills.	Provides some reflection and self-awareness in relation to the outcomes of own work and personal responsibility, as required by the assessment.	Some relevant reference sources selected and drawn upon. Some weaknesses in referencing technique.	Writing style is occasionally not appropriate for the assessment. Grammar, spelling and punctuation are generally competent, but may pose minor difficulties for the reader. Some paragraphs may lack structure, and there is limited linking and signposting. Some appropriate vocabulary is used.	The presentational style and layout are largely correct for the type of assignment. Adequately structured. Inclusion of some figures, tables and images but not all clear, relevant and/or referred to.
Borderline Fail 35% - 39%	Work addresses some of the requirements of the brief. Irrelevant and superficial content. One or more learning outcomes have not been met.	Demonstrates a lack of knowledge and understanding of theory and practice for this level. Demonstrates insufficient understanding of a range of areas in different contexts.	Presents a descriptive overview of findings following some analysis of information. Some passages lack clear purpose. Demonstrates scant creativity or originality. Demonstrates a lack of critical understanding of problem-solving approaches and insufficient problem-solving skills.	Provides limited reflection and self-awareness in relation to the outcomes of own work and personal responsibility, when required.	Sources selected are limited and/or lack relevance. Poor referencing technique employed.	Writing style is unclear and does not match the requirements of the assessment in question. Deficiencies in spelling, grammar and punctuation makes reading difficult and arguments unclear in places. Paragraphs are poorly structured.	For the type of assignment the presentational style, layout and/or structure are lacking. Inclusion of figures, tables and images but not clear, relevant and/or referred to.
Fail <34%	Work does not address the requirements of the brief. Irrelevant and superficial content. One or more learning outcomes have not been met.	Demonstrates inadequate knowledge and understanding of theory and practice for this level. Demonstrates insufficient understanding of relevant areas.	Presents a descriptive overview of findings with little consideration of the quality of information drawn upon. Demonstrates little or no creativity. Demonstrates a lack of understanding of problem-solving approaches and limited problem-solving skills.	Provides inadequate reflection and self-awareness in relation to the outcomes of own work and personal responsibility, when required.	An absence of academic and relevant sources selected and drawn upon. Poor referencing technique employed.	Writing style is unclear and does not match the requirements of the assessment in question. Deficiencies in spelling, grammar and punctuation makes reading difficult and arguments unclear. Unstructured paragraphs.	For the type of assignment the presentational style, layout and/or structure are lacking. Inclusion of figures, tables and images but not clear, relevant and/or referred to.