# Module Handbook COM5003

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**Module Handbook**

**Faculty of Business, Computing and Digital Industries**

**School of Computer Science**

***Further Software Development: COM5003***

**2024-25**

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**Module Welcome**

Hello

Welcome to COM5003: Further Software Development!

I hope you find this Module Handbook helpful in supporting your studies, providing all the essential information about the module. This module builds proficiency in computer programming and mobile app development, setting technical skills in realistic commercial contexts. You’ll advance your understanding of higher-level programming and mathematical concepts, enabling you to design and implement large-scale object-oriented programs across diverse platforms.

We’ll focus on key principles and processes of programming in higher-level languages, including the use of an IDE, standard libraries, data structures, abstract data types, algorithms, higher-order functions, and object-oriented design. Additionally, you'll gain an overview of native mobile app development (Android), design patterns, and Domain Driven Design (DDD) terminology.

This module connects with the rest of your degree by providing a solid foundation in computer science. The handbook outlines how you will be assessed in the intended learning outcomes, and the graduate attributes (skills and behaviours) you’ll develop. It also explains how the learning, teaching sessions, and assessments will support your progress.

The assessments are aligned with the programme outcomes to help you meet the goals of your academic level. The learning approach combines hands-on, guided activities anchored in theoretical foundations, with three stages: preparation, delivery, and practice. Pre-session tasks, such as reading and software setup, ensure active participation, while interactive activities during sessions and follow-up tasks afterward reinforce learning and self-reliance.

Throughout the module, you'll complete two pieces of assessed work, with deadlines provided separately to help you plan efficiently. Upon completing the module, you’ll be able to demonstrate transferable skills such as working independently, digital confidence, adaptability, resilience, effective communication, and awareness of ethics, diversity, and sustainability. These skills will be invaluable as you pursue career opportunities.

Best wishes

**Dr Antesar Shabut**

**Module Leader**

**Module Guide**

## **Module Code and Title**

**Module Code: COM5003**

**Module Title:** **Further Software Development**

## **Module Leader Contact Details and Availability**

**Dr Antesar Shabut**

**Phone:** 0113 517 2179

**Email:** A.Shabut@leedstrinity.ac.uk

**Office hours:** Check my booking page [here](https://outlook.office365.com/owa/calendar/Bookwithme@leedstrinity.ac.uk/bookings/)

## **Module Teaching**

Please see your timetable for the latest version.

## **Module Intended Learning Outcomes**

Upon successful completion of this module students will be able to:

1. Demonstrate capacity to code effectively in an object-oriented language to meet a given specification.
2. Select and apply appropriate data structures and algorithms to a given problem.
3. Critically evaluate a computer program with regard to robustness, usability, security, maintainability, readability and efficiency.
4. Test and evaluate the efficiency of an implementation relative to a given problem.

## **Summary of Content**

This module builds proficiency in computer programming and mobile app development, setting the technical skills within realistic commercial contexts. It draws upon foundational knowledge and understanding to develop the higher-level programming skills and mathematical understanding required to design and implement large scale object-oriented programs across diverse platforms.

The module seeks to further your knowledge of the fundamental principles and processes of programming in higher-level computer languages, such as: the use of an IDE and standard libraries, fundamental data structures, abstract data types and algorithms, higher order functions and object-oriented design.

The module also provides an overview of mobile app development, cloud hosting, testing and security principles.

## **Assessment and Deadlines**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Component form** (e.g. Essay *or* Online test) | **Magnitude** (e.g. 2,000 words *or* 2 hours) | **Weighting and/or Pass/Fail** | **Assessment Deadline** | **Feedback Date** | **Module Intended Learning Outcome(s) assessed** (e.g. 1, 2) |
| Case Study | 1500 word equiivalent | 50 | end S2 | 15 days | End of Sem 1 |
| Project Artefact | 1500 word equiivalent | 50 | end S2 | 15 days | End of Sem 2 |

This is an indicative summary of the assessments for this module. Full assessment briefs with marking schemes will be provided on Moodle.

**Case study:** Design and implement a solution for a business problem and evaluate the brand resilience for potential scaling against competitor products.

**Project Artefact:** The assessment comprises the following:

• Development and implementation of the software artefact (mobile application);

• A test;

• A reflective evaluation of the software artefact, its design and workability.

The marking reflects excellence in the awareness of the key issues, rather than whether ‘everything’ is executed in the app.

Referencing: please use APA 7th - refer to [the guide on the university website](https://library.leedstrinity.ac.uk/apa-referencing-guide).

All modules will include a session which unpacks the assessment brief, providing opportunities for you to clarify any questions you have about the assessment task. The assessment criteria and rubric will be examined in these sessions to support your understanding of the expectations of the task(s). Your module tutor will provide generic feedback on what a good assessment looks like, common misconceptions, pitfalls, construction of arguments, format, spelling and referencing. You are encouraged to bring selected sections of your work or a one-page plan to assessment support sessions for verbal feedback and where appropriate, peer discussion. Your module tutor will not give any indication of mark or classification for any draft work presented. Where you have received previous feedback, your tutors will encourage you to reflect on this to support your acquisition of knowledge and academic skills development. Feedback on a full draft of an assessment for submissions, prior to the submission deadline, is not normally permitted.

Use the Assignment Preparation Checklist on the final page of this document before you submit your work.

## **Use of Generative Artificial Intelligence in This Module**

* You may use generative AI such as ChatGPT to assist you in the process of undertaking the assessment in the following ways: brainstorming, research, planning, feedback, editing.
* All use of generative AI must be explicitly acknowledged, and any artificially generated content (e.g. images) explicitly labelled, with the source of the AI tool referenced using current APA referencing conventions You can find further guidance on the library website on their [AI webpage](https://library.leedstrinity.ac.uk/artificial-intelligence)).
* In submitting your assignment, you agree to disclose the extent to which you have used generative AI in preparing this work and include evidence of your AI use in your appendices (e.g. dated screen shots of your use of this tool or copy and paste your AI chat into Word).
* Failure to disclose your generative AI use may result in a 0 for your assignment and a referral for academic misconduct (see the Student Academic Misconduct Policy under Essential Info in the MyLTU app).

**Include one of the following statements on your assignments:**

Either:

* This assignment used generative AI in the following ways for the purposes of completing the assignment (choose 1 to 5 of the following): brainstorming, research, planning, feedback, editing.

Or:

* This assignment did not use generative AI for the purposes of completing the assignment.

## **Assessment Criteria**

The following section will provide generic marking criteria for undergraduate courses. The assessment criteria will be contextualised to fit each assessment and will be shared in the assessment brief.

## **Assessment Criteria Grid**

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## **Resources**

The full list of the recommended reading for this module is available on your library reading list. Here are two resources from that list:

Griffiths, D. Griffiths, D. (2017). Head First Android Development. (2nd ed.). O’Reilly Media, Inc.

Deitel J. P. (2017). Java How to Program, Early Objects. (11th ed.). Pearson.

More information will be available on Moodle, which will be used as a key repository for learning materials for all of your modules.

## **Academic Support**

* Please use the module handbook and the Computer Science Teams site as a source of information. Do try and find the answer out yourself before reaching out for help.
* Support will be provided via Microsoft Teams and email. You can also ask questions during your timetabled sessions or academic office hours. You may request a one-to-one meeting with a tutor during their published academic office hours.
* Feedback is given at multiple points across the duration of the module, in different modes. You should expect, and recognise, that feedback can be given by your peers, verbally in sessions, feedback might be given to the whole module cohort during teaching sessions, and it might also be given in conversation with your tutor.
* Formative feedback doesn’t have a grade attached; it will often be given in your teaching sessions. Formative feedback is valuable as it allows you to improve your subject knowledge for your summative assessment(s) as well as allowing you to practice the type of assessment that you will count towards your final grade for the module.
* You will receive feedback on all summative assessments, these are the graded assessments in your module. You might receive summative feedback during an assessment session, as audio or written feedback.
* Feedback will focus on what you are doing well, and how you can continue to improve your work.

## **Action Taken and Changes Made in Response to Student Feedback**

We have taken onboard feedback through various student voice mechanisms and have made a number of changes to our programmes in response, so that you get the best students experience possible.

## **Essential Library and Learning Resources**

The library has group study rooms to book, quiet and silent study spaces and a tranquillity space if you need to take some time out. We also provide computers, printing and photocopying facilities.

We have all the books on your reading lists, and online resources, guides and tutorials to help you develop your research and referencing skills. Our friendly team are based at the library helpdesk and are here to help you make the most of the library.

Website: <https://library.leedstrinity.ac.uk/home>

Email: [libraryenquiries@leedstrinity.ac.uk](mailto:libraryenquiries@leedstrinity.ac.uk)

Tel: 0113 2837244

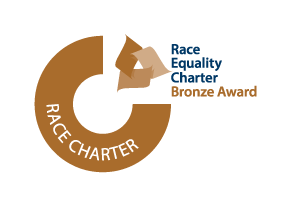
Your Liaison Librarian, Sarah Cohen, can offer support and advice on using the library including help with finding information for your assignments and referencing and each subject area has its own dedicated Library Guide.

Email: [s.cohen@leedstrinity.ac.uk](mailto:s.cohen@leedstrinity.ac.uk)

Library Guides: <https://library.leedstrinity.ac.uk/computer-science>

## **Race Equality**

We acknowledge that racism is ingrained across our society, institutionalised within the higher education sector and our university. We recognise that racism is not always overt and manifests in the everyday life of our staff and students; the impact of which is significantly harmful to individuals and our community. We hold ourselves accountable and empower everyone to be anti-racist, challenge all forms of racism and work to dismantle structures that perpetuate racism including challenging ourselves. We are committed to eliminating racial inequality and will take systematic action to address racial inequities. We expect all staff, students, and all members of our university community including partners and stakeholders to embody these values and behaviours.

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## **Your Module at a Glance – Teaching and Assessment**

*To be confirmed*

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Module Code | | COM5003 | | | | Module Title | Further Software Development | | | |
| Module Leader | | Dr Antesar Shabut | | | | Semester/Term | Semester 1 | | | |
|  | | | | | | | | | | |
| Module Learning Outcomes | | | Upon completion of this module students should be able to: | | | | | | | |
| 1. Demonstrate capacity to code effectively in an object-oriented language to meet a given specification. | | | | | | | |
| 1. Select and apply appropriate data structures and algorithms to a given problem. | | | | | | | |
| 1. Critically evaluate a computer program with regard to robustness, usability, security, maintainability, readability and efficiency. | | | | | | | |
| 1. Test and evaluate the efficiency of an implementation relative to a given problem. | | | | | | | |
| **Weeks** | | | | **Pre** (on-demand learning – available to all students on Moodle) | | **Live** (live learning – face-to-face on campus) | | | **Post** (on-demand learning – available to all students on Moodle) | |
|  | *Weekly topic overview* | | | *Learning resource sets (Guided & Independent learning activities)* | *Hours* | *Face-to-face sessions on campus* | *Online sessions* | *Hours* | *Learning resource sets (Guided & Independent learning activities)* | *Hours* |
| 1 | Introduction to the module | | | Read the module handbook | 1 | Presentation, interactive individual & group activities |  | 3 | Guided and independent Lab exercises; Quiz to test understanding | 1 |
| 2 | Java language fundamentals | | | Watch a video/read the language documentation | 1 | Presentation, interactive individual & group activities |  | 3 | Guided and independent Lab exercises; Quiz to test understanding | 1 |
| 3 | Java OOP, classes and objects | | | Watch a video/read the language documentation | 1 | Presentation, interactive individual & group activities |  | 3 | Guided and independent Lab exercises; Quiz to test understanding | 1 |
| 4 | Java OOP, Inheritance, Polymorphism, and Interfaces | | | Watch a video/read the language documentation | 1 | Presentation, interactive individual & group activities |  | 3 | Guided and independent Lab exercises; Quiz to test understanding | 1 |
| 5 | Design Pattern and Principles | | | Watch a video/read the language documentation | 1 | Presentation, interactive individual & group activities |  | 3 | Guided and independent Lab exercises; Quiz to test understanding | 1 |
| 6 | Data Structure | | | Watch a video/read the language documentation | 1 | Presentation, interactive individual & group activities |  | 3 | Guided and independent Lab exercises; Quiz to test understanding | 1 |
| 7 | SQL Database & ODBC Driver | | | Watch a video/read the language documentation | 1 | Presentation, interactive individual & group activities |  | 3 | Guided and independent Lab exercises; Quiz to test understanding | 1 |
| 8 | File I/O And Streams | | | Watch a video/read the language documentation | 1 | Presentation, interactive individual & group activities |  | 3 | Guided and independent Lab exercises; Quiz to test understanding | 1 |
| 9 | Test Driven Development & JUnit | | | Watch a video/read the language documentation | 1 | Presentation, interactive individual & group activities |  | 3 | Guided and independent Lab exercises; Quiz to test understanding | 1 |
| 10 | Assignment progress check | | | Watch a video/read the language documentation | 1 | Presentation, interactive individual & group activities |  | 3 | Guided and independent Lab exercises; Quiz to test understanding | 1 |
|  |  | | |  |  |  |  |  |  |  |
|  |  | | |  |  |  |  |  |  |  |
| **Total Guided Learning Hours** | | | | | Approximately 50 hours per semester | | | | | |
| **Independent learning hours** | | | | | Approximately 100 hours per semester | | | | | |
| **Overall module learning hours** | | | | | Approximately 300 hours per year | | | | | |

## **Your Module at a Glance – Employability**

*To be confirmed*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Module Code** | COM5003 | **Module Title** | | Further Software Development | |
| **Module Leader** | Dr Antesar Shabut | **Semester** | | Semester 1 | |
|  | | | | | |
| **Assessment** | | | **Leeds Trinity University**  **Graduate Attributes and Skills Framework** | | **Skills and Attributes Group** |
| ***Component*** | | | **DIGITAL CONFIDENCE** | | **Effective Learning** |
| All Assessments | | | **Digital Tools and Software** | |
| All Assessments | | | **Data Analysis** | |
| All Assessments | | | **Digital Citizenship** | |
|  | | | **RESEARCH AND THINKING CRITICALLY** | |
| All Assessments | | | **Analysis and Evaluation** | |
| All Assessments | | | **Problem Solving** | |
| All Assessments | | | **Critical Thinking** | |
|  | | | **WORKING INDEPENDENTLY** | |
| All Assessments | | | **Initiative** | |
| All Assessments | | | **Planning and Organising** | |
| All Assessments | | | **Active Listening** | |
|  | | | **RESILIENCE** | | **My Development** |
| All Assessments | | | **Positive Mindset** | |
| All Assessments | | | **Self-Awareness** | |
| All Assessments | | | **Motivation and Purpose** | |
|  | | | **ADAPTABILITY** | |
| All Assessments | | | **Managing Change** | |
| All Assessments | | | **Coping with Ambiguity** | |
| All Assessments | | | **Flexibility** | |
|  | | | **PROFESSIONAL OUTLOOK** | |
| All Assessments | | | **Career Information** | |
| All Assessments | | | **Articulating your Skills** | |
| All Assessments | | | **Graduate Identity and Social Intelligence** | |
|  | | | **ETHICS, DIVERSITY, SUSTAINABILITY** | | **Making an Impact** |
| All Assessments | | | **Social Justice and Responsibility** | |
| All Assessments | | | **Inclusivity** | |
| All Assessments | | | **Cultural Awareness** | |
|  | | | **EFFECTIVE COMMUNICATION** | |
| All Assessments | | | **Emotional Intelligence** | |
| All Assessments | | | **Networking and Collaborating** | |
| All Assessments | | | **Leadership and Working with Others** | |
|  | | | **ENTERPRISE AND ENTREPRENEURSHIP** | |
| All Assessments | | | **Innovation** | |
| All Assessments | | | **Commercial and Business/Sector Awareness** | |
| All Assessments | | | **Negotiating and Influencing** | |

## **Assessment Preparation Checklist**

This brief assignment checklist is designed to help you avoid some of the most common mistakes made in coursework. You can sometimes lose marks by forgetting some of the more straightforward elements of your assignments. We recommend that you consider the list below and “tick off” each of the points as you prepare your work for submission. If you need any help you can ask your module tutor questions relating to the assessment criteria and brief.

|  |  |
| --- | --- |
| ☐ | Have you read and understood the assessment criteria and assessment brief? |
| ☐ | Have you addressed the learning outcomes? You will do better in your assessment if this is clearly demonstrated in your work. |
| ☐ | Have you kept to the expected length (word count or other guideline)? |
| ☐ | Have you formatted your assessment based on module guidance?  (consistent and appropriate use of font, colour, style, line spacing and margins) |
| ☐ | Have you proof-read your work and used spellcheck software to check your spelling and grammar? |
| ☐ | Have you formatted your assessment based on module guidance? |
| ☐ | Can you confirm that the work submitted is your own and not plagiarised? |
| ☐ | Do you know the deadline date/time for submitting your work? |
| ☐ | Do you know how and where to submit your work? |
| Have you demonstrated academic writing by: | |
| ☐ | Supporting your arguments using academic literature? |
| ☐ | Presenting ideas and information which challenges thinking? |
| ☐ | Offering discussion points which extends your own or others’ viewpoints? |
| Have you maintained an academic tone throughout your work by: | |
| ☐ | Avoiding repeating the same words? |
| ☐ | Using the technical language of your subject area? |
| Have you properly referenced the sources you have used by: | |
| ☐ | Using academic sources e.g. library books, journal articles, policy papers, and official sources as recommended by your module leader? |
| ☐ | Referencing sources from your reading list, as well as wider sources relevant to the subject area? |
| ☐ | Checking that referencing in your assignment is in line with your course requirements (APA-7th)? |
| ☐ | Paraphrasing and citing the sources correctly? |
| ☐ | Clearly marking any use of generative artificial intelligence (AI) been clearly marked from that source? (if appropriate/allowed) |