Student Manual

For

Final year Individual Research Project

CS7019/IT8029/IS8029

BSc (Hons) in Computer Science, BSc (Hons) in Computer Engineering
BSc (Hons) in Software Engineering, BSc (Hons) in Information Technology and BSc (Hons) in Information Systems

Contents

1. Introduction

Individual Research Project is a 9 GPA credit compulsory module, that is the most important course module of the entire degree program. Under this module, students undertake a research investigation/development (software and/or hardware) under the direct supervision of the faculty staff and or if required indirect supervision of the non-faculty members. The aim of this course is to give undergraduate students exposure to research undertaken individually and to achieve a specific objective within a fixed time independently. Additionally, this course allows undergraduate students to conduct research in one of his degree programs such as computer science, computer engineering, software engineering, Information technology and Information systems, with applying techniques learned throughout the program, including the technical skills of analysis, design and implementation. However, according to the variation of each degree Individual research project has some benchmark.

2. Learning Outcomes

At the end of the module, students will be able to

1. Construct an **innovative** and/or a **creative product** as a solution to a **real-world problem**
2. Synthesize **information, ideas** and **practices** to provide the solution together with an **evaluation** of the **solution against other alternatives**
3. Employ current and appropriate **theoretical, practical and analytical knowledge** relevant to the field of specialization to develop the solution
4. **Design, review, implement, test and verify** the solution giving due considerations to professional, ethical, security, and social responsibility, legal issues pertaining to the solution, and industry norms and best practices
5. **Communicate effectively and efficiently** with a range of audiences using appropriate technologies
6. Critical **self-evaluation** of the process

Notes:

1. Students have to justify the **commercial viability of the product under LO1**, since that is an evidence for innovativeness or creativity of the product
2. Students must show their **effective time management skills under LO4**
3. Since this is an individual project “the ability to self-manage a significant piece of work” is already addressed.

3. Generic Skills

On completion of the Individual Research Project, students should have developed the following generic skills:

1. Could demonstrate advanced independent critical enquiry, analysis and reflection
2. Have a strong sense of intellectual integrity and the ethics of scholarship
3. Have in-depth knowledge of their specialist discipline(s)
4. Reach a high level of achievement in writing, project activities, problem-solving and communication
5. Be critical and creative thinkers, with an aptitude for continued self-directed learning
6. Be able to examine critically, manufacture and evaluate knowledge across a broad range of computing disciplines
7. Have a set of flexible and transferable skills for different types of employment in computing.

4. Time Commitment Details

Students are required to undertake approximately 900 hours of investigative work, over a 36-week period, for the total of 9 GPA credit.

5. Assessments

Assessments are done through the project proposal presentation, first progress review (Interim report + Presentation), second progress review (Interim report + Presentation), Thesis and Final VIVA. Final grade of the individual research project should decide through;

1. Project Proposal + presentation (10 % of the Total Marks)
2. Progress Review 1(10 % of the Total Marks)
3. Progress Review 2 (10 % of the Total Marks)
4. Thesis (30 % of the Total marks)
5. Research Paper (10 % of the Total Marks)
6. Final presentation+ VIVA (30 % of the Total marks)

The following table shows each assignment are mapped with ILOs.

Assessments	ILO1	ILO2	ILO3	ILO4	ILO5	ILO6
Project Proposal	20%	30%	10%	20%	10%	10%
Progress Review 01	10%	25%	20%	25%	10%	10%
Progress Review 02	10	10%	10%	40%	20%	10%
Final VIVA	10%	10%	10%	30%	30%	10%
Final Thesis	10%	20%	10%	30%	20%	10%
Research Paper	10%	20%	10%	30%	20%	10%

Table 1: ILO Mapping with Assignments

6. Activities and Procedures

Throughout this course module students required to attend the following activities.

1. Project norm submission
2. Project proposal submission
3. Project proposal presentation
4. Apply for final year research project
5. Supervisor meetings
6. Interim report 1 submission
7. Progress Review 1
8. Interim report 2 submission
9. Progress Review 2
10. Publish your research work
11. Draft thesis submission
12. Final presentation + VIVA
13. Final Thesis submission

1. **Project Norm Submission**

   As the initial step of the individual research project student should require submitting their one-page project norms including problem, solution, technology and the area of the research project. **Appendix 1** shows the sample project norm submission form. This should be done in the first week of the first semester. At this point, a student should able to present their project ideas including Suitable title of the project, problem solution and area of the research.

   Note: After evaluating the project norm suitable supervisor(s) will assign to the project The allocation is based on availability and research interest of the staff members and the student request. Then students should require meeting their supervisor(s) and submit a complete project proposal by incorporating the supervisor's comment and relevant signatures.

2. **Project Proposal Submission**

   After allocating a supervisor, the student should require submitting their project proposal including Introduction to project, the area of the research with some motivation, problem, solution, the significance of the project, aim and objectives, requirements, action plan and ethical clearance. At the end of the research student should able to present innovative and/or a creative product as a solution to a real-world problem. The proposal is also the first document that should require describing proposed activities clearly. Note: You should get comments from supervisors before preparing your proposal. Your proposal should limit to less than 800 words. The following order can be used to prepare your proposal.

   - Title page:
     Title of the project student name, supervisor name, Index number and stream of the program.
   - Introduction
     Start with the general area of the project and narrow down to specific including motivation.
   - Related works
     Should explain related work with some comparison
   - Aim and Objectives
   - Methodology
   - Hypothesis, Features, Limitations …
   - Requirements
   - Timeline
   - References
   - Any appendix (if required)

3. **Project Defense presentation**

   The student should able to present their project proposal with incorporating the supervisor's comments. The scope of the project and the suitability (Ethical concern etc.) will consider in the proposal evaluation. Project proposal should evaluate by two examiners with supervisor observation. Total marks allocate to the project proposal is 10 marks. Evaluation sheet of the Project proposal is attached in **Appendix 02**. If the proposed project is not in the proper stranded, student should able to re-submit another proposal and evaluation panel can be decided whether student able to re-present or not.

4. **Apply for final year research project**

   After accepting the project proposal student and supervisor should require submitting dually completed project proposal application to the project coordinator for further approval. After getting this approval student not allow to

do any modifications. Sample application for the final year research project attached in the **appendix 3**.

5. **Supervisor meetings**
   After project proposal presentation student must require meeting their supervisor regularly (at least once per 2 weeks) and handle a research diary to collect all the required materials. The student also needs to maintain supervisor signed student feedback form. Sample student feedback form is also attached in the **appendix 4**. Note that student require to present this feedback form for cordinators and examiners when they required.

6. **Interim Report 1**
   Student required to submit first interim report including introduction, Lecturer Review, approach, Design and discussion chapters. The supervisor should correct the report and handover to the student at the progress review. Use the final thesis format as the interim report format and which is given in the **appendix 7**.

7. **Progress Review 1**
   Student required to present his progress for the panel with the supervisor. Up to this point, the student needs to complete and present their review, approach and system design. In addition to the above, student should require demonstrating prototype system. Evaluation form of the 1st progress review is attached in **Appendix 5**. Total marks allocated for the first progress review is 10. Time allocate for the progress review 10 min presentation+ 5 min demonstration + 10 min discussion.

8. **Interim Report 2**
   Student required to submit their second interim report including introduction, Lecturer Review, approach and Design, Technology, Implementation, Evaluation (in complete) and discussion chapters. The supervisor should correct the report and handover to the student at the second progress review. Use the thesis format as the interim report format. (Note that, the student required to write only technology, implementation, and evaluation chapters. The other chapters already submitted in the first progress review).

9. **Progress Review 2**
   Student required to present his progress for the panel with supervisor Up to this point student need to complete implementation and some part of the system

evaluation. Evaluation form of the 2nd progress review is attached in **Appendix 6**. In the second progress review student should able to demonstrate their complete system demonstration. Total marks allocated for the second progress review is 10. Time allocate for the progress review 5 min presentation + 10 min demonstration + 10 min discussion.

10. Publish you Research work

The student can publish their research work according to the supervisor comments. According to the content of the research paper and the index value of the publication marks are given for the publications. Total 10 marks allocated for research publication(s). Note that, a student can publish a review paper, conference paper or journal paper. If it is unpublished work some marks are deducted.

11. Draft Thesis submission

The student should able to submit 2 copies of their draft thesis with a Soft copy (MS-Word or Latex) and the complete source code of the project with project demonstration video (10 minutes). Thesis guideline and sample temple for MS-Word and Latex is also given to the student. The general guideline for the thesis preparation is attached in **Appendix 7**. Note that word limit of the thesis is 15000 ± 10% words.

Thesis evaluation:

2 copies of the thesis are evaluated by the supervisor and the examiner. The final mark calculated through the average mark of both examiner results. Thesis evaluation form is attached in **Appendix 8**. Accepted plagiarism level of the thesis is less than 20% and total marks allocated for the final thesis is 30.

12. Final Presentation +VIVA

The student should able to present their completed project work on the final viva. Evaluation sheet of the Final presentation is attached in **Appendix 9**. The final presentation should have held before the second-semester examination. Total marks allocated for the final VIVA is 30. Time allocate for the progress review 10 min presentation + 10 min demonstration + 30 min. VIVA.

13. Final Thesis submission

Student able to submit their 3 copies of hard bind final thesis with CDs including soft copy and the complete source code with project demonstration video (Maximum 5 min). The guideline is also given to the student.

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