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Final Year Research Project (IS 42853) Guidelines

For Students, Supervisors

And Examiners

Acknowledgements

Content

1.1 About the Research Project

The students who are enrolling in following degree program:

- B. Sc. (Hons) in Information Systems

should conduct a compulsory research project relevant to Information Systems with 8 credits work load. A project should be an in-depth study of an issue or topic in Information Systems. Topics can be selected by students with prior approval of the supervisor or the coordinator of this course unit will assign students for relevant topics. The selected or assigned topics should be directly relevant to a current topic in Information Systems and the students are expected to apply the knowledge gained throughout the study program.

Students are advised to plan the research project early in their first semester of fourth year. The research project is equivalent to 8 credits and the students are expected to conduct a proposal defending presentation, mid-term progress review presentation (by the supervisor), carry out the project and write a thesis under the guidance of a supervisor within a period of 4 – 5 months. At the end, students should present their research as oral and poster presentations. This research project is designed to
- improve individual analyzing and working ability under minimum supervisor guidance,
- practice scientific writing in accordance with acceptable standard,
- conduct and complete the project in given timelines with proposed deliverables
which is an essential skill in industry.

These guidelines provide information on the scope of projects and what students should aim to achieve, how to plan the project, important considerations, and what examiners will be looking for.

1.2 How does a project fit into your degree?

The project provides an opportunity for a range of different types of research. For example, students could study the current topics or existing knowledge gap of information systems related subject area using a range of different data sources, design an intervention and evaluate it, complete a small survey, or study client use of other services. The research may focus on primary and secondary data sources provided it has relevance to national or international information systems related problems.

This project is used to increase the students' critical thinking ability in particular problem domain, identify knowledge gaps and define research problems, come up with a conceptual framework for addressing the identified research problem by applying learnt theory and research methodologies and eventually conclude the project with deliverables. Further, this will be an opportunity for students to develop their decision making skills and negotiation skills especially with supervisor's and examiners' interactions.

1.3 Objectives of the project

While projects vary in their aims, scope and design, they should be designed so as to allow student to demonstrate their ability to apply the principles of research at an undergraduate level. In reporting on the project, Students should show that they can:

- Identify and define a significant issue relevant to information system related topic
- Systematically collect relevant up-to-date information about the issue, either directly or from published studies or publicly available data
- Analyse, interpret and discuss the information in accordance with standard academic and Information Technology (IT) industry practice
- Politely defend the need, motivation and proposed methodology of the research, while complying with supervisor's and examiner's recommendations
- Draw conclusions and make recommendations relevant to the issue that will contribute to current knowledge and practice in IT industry
- Write and present the study in accordance with academic standards at an undergraduate level.

1.4 Benefits of doing a research project

After completing this research project, students will be able to

- Learn to read and interpret other researcher's work critically while doing their own (This gives them an insight into the effects of practical difficulties and theoretical debates on published research)

- Learn to develop a conceptual framework to address the identified knowledge gaps applying learnt research methodology concepts and technical theories

- Publish the work as peer-reviewed research papers (This will add additional value to students' CV in academic and industrial careers)

2.1 Guidelines for students, supervisors and examiners

This project is an in-depth research study of an issue relevant to the field which is significantly differs from pure software development project. Final outcome of this project would be a conceptual framework or a working software prototype which inputs quantitative or qualitative measures about the issue. Students are expected to contribute something new to existing knowledge about the research topic while conducting their own work. The contribution should be original and free from plagiarism (The students will be penalized for such attempts).

2.2 Process

1. The fourth year students under B.Sc. (Hons) in Information System should conduct this research project in first and second semester in connection with Research Method (IS 41247). Students are notified the supervisors' interested subject areas and their students ceiling at the beginning of the semester by the course coordinator. At that time, students are able to discuss with supervisors and get further knowledge about the topic.

2. The tentative title and the outline of the project and the assignment of the supervisor (having pre-approval for the topic from supervisor) must be notified by students to the course coordinator on a pre-given date (usually within 2-3 weeks). At that time, any students who do not have a topic or supervisor, the coordinator will assign him/her a topic and a supervisor. However, students are recommended to find supervisors by themselves.

3. The student will undertake the project under the guidance of the supervisor. The course coordinator may arrange a group seminar for the presentation of project outlines and literature survey within 8-10 weeks of assigning the projects. At the time, students should be able to defend their research topic in front of an appointed panel of examiners. This panel includes supervisor, two lecturers (At least one senior lecturer) and an external examiner from other department.

4. The student and the supervisor will meet periodically, to review the progress of the project.

5. If there are problems encountered in adhering to the time frame and other constraints, students should contact course coordinator without delay

6. The student will present the status of his/her project, at a mid-term Progress Review (Group) arranged by the supervisor about 5 months after assigning the projects.

7. The student will complete the project and write a draft thesis and submits it to the supervisor for comments / corrections in 15th week of the second semester. The number of pages of this thesis should be not less than 50 pages and students are expected to read and follow the instructions and guidelines given in section 2.7 when preparing their thesis.

8. The student will submit a soft copy of the final thesis to the department on or before the notified deadline by the course coordinator. The submitting thesis should be the final version of the thesis and all corrections, given by the supervisor should be done in the thesis.

9. The project thesis will be evaluated by the supervisor and after receiving his/her recommendations, an oral examination and poster session will be arranged for the student to present and defend the project thesis. The presentation slides and poster should be reviewed and corrected by the supervisor.

10. The research project and oral/poster presentation will be evaluated.

2.3 Responsibilities of students

The students carrying out a final year research project are expected to undertake the following responsibilities:

1. It is a requirement that the students engage in their project work at least 120 hours and complete it (including the thesis) within a period of **an academic year**.

2. Students should have preliminary discussion with supervisors before starting the project.

3. This project is a compulsory course module, hence it is required to meet and discuss the project related matters regularly having prior appointment with the supervisor. Contacting through official channels such as emails is also recommended.

4. The student should maintain a work diary and need to update the diary regularly with important decision after meeting with the supervisor

5. Students are highly encouraged to refer library and other academic journals, while they are conducting literature search and research tasks. If any research paper is inaccessible, students can request it from supervisor. Supervisor may get necessary actions to provide the paper in his/her best.

6. The students should keep informed supervisor and course coordinator, if any problem is raised interrupting their research work.

7. The students should maintain friendly environment with supervisors and colleagues in laboratories. If the student requires to access university assets such as computers, routers, sensors, and etc., they need a prior approval through proper channel. In such occasions, students should be responsible for the assets and should avoid misusing them.

8. The students should make 10-minute presentations for defending research proposal and the progress of his/her project at the mid-term Progress Review Seminar, arranged by the Project Coordinator.

9. The students should get necessary actions to finish composing research thesis, presentation slides and posters providing enough time to review by supervisors (at least a week ahead). Students need to make all marked corrections by supervisor prior to submit the final thesis

2.4 Role of A Supervisor

The supervisor is expected to help the student, under their supervision by following ways to complete the final research project.
1. Guide students to formulate an appropriate project proposal and outline of the project thesis
2. Conduct meeting regularly.
3. Inform students the progress of their work whether it is satisfactory or not
4. Advise students to improve the research activities, composing thesis and presentations
5. Guide students to publish their work in peer-reviewed conferences or journals
6. Review the draft of research project thesis, presentation slides and poster and provide suggestions to improve them
7. Act as one of the examiners on submission of the project.

2.5 Finalising research project proposal

Research project proposal is the most important document at the beginning of research project. This proposal guides students to conduct research effectively though out course duration. When the students prepare a research proposal, few important factors should be taken into account such as scope of the project, motivation and possibility to complete by given time frame. The project proposal should not exceed 3-5 pages and key components of the project proposal are as follows.

1. **Title** : The title of the project, should not exceed 10 words
2. **Proposer** : Name of the investigator and the student registration number
3. **Research Problem** : The description of the problem which the student is going to solve from the research project
4. **Hypothesis**: A statement of the hypothesis which are being tested, or the research question which are endeavored to answer, there should be at least one research question or maximum three research questions.
5. **Background**: A summary of the key relevant literature, references, or needs analysis that justifies the project
6. **Aims**: A statement of the expected outcomes of the project, and how they will help to address the problem
7. **Objectives**: An outline of the specific strategies or steps by which students intend to achieve the research aims
8. **Methodology:** A more detailed outline (sometimes called 'project protocol') of the actual research, data collection and analysis
9. **Time Frame**: A timetable or plan of the key activities or stages of the project
10. **Ethics (if available):** An appreciation of any ethical issues raised and how they will be addressed
11. **References**: Students should follow IEEE guidelines

2.6 Project Time Frame

The students are expected to conduct and complete the research project on time. Hence, they need to manage their available time consciously and deliver the outcome in the suggested time frame. The suggested time frame for this project is an academic year and the project time frame is as follows. When students propose a time frame to their research proposal, they should take these major timelines in to account and make proposal accordingly.

Suggested Time Frame	Activity
2- 3 weeks	Finding a supervisor, preliminary discussions with the supervisor and literature survey; submitting the project outline; planning and starting the project
6-7 weeks	Proposal defending presentation at a seminar
7-15 weeks	Carrying out the project, analysis of data, preliminary conclusions
16 -17 weeks	Presentation of work carried out at the Mid-term Progress Review Seminar
17 -30 weeks	Continue the project
31 week	Completion of project work, preparation and submission of the draft thesis to the supervisor (The supervisors are expected to return the corrected project thesis within 1-2 week)
32 week	Preparation and submission of the final draft (loose bound form) of the project thesis to the department
33-34 week	Oral and Postal Presentation

2.7 Structuring your project thesis

Thesis is the most important document for this course and it should be in a form of a document of 50 pages and about 5000 -7000 words. It is recommended to use any text editor to compose the research project. When the students are composing the thesis, following structure may help to make high-quality project thesis.

- Title Page
- Acknowledgements
- Abstract
- Main text
  - Introduction
  - Literature Review
  - Methods
  - Results
  - Discussion
  - Conclusion

- o Recommendation
- References
- Appendices (If available)

The brief guide for each components of the project thesis is as follows.

- **Acknowledgement** – The students should acknowledge the assistance given by their supervisors, and any other person or organisation that has helped then in the planning, conduct, analysis or reporting of the project.

- **Abstract** - This is a outline of the study question, aims and objectives, background literature, methods, results, key conclusions and recommendations. This should be 250–300 words long and should be very clear and easy to follow. It is recommended to include quantitative or qualititative outcomes which drawn from the research in brief.

- **Introduction -** This section is basically used to introduce the research problem or knowledge gap, outline of aims and objectives and the motivation to conduct the particular study.

- **Literature review –** This section is used to demonstrate student's investigation ability in particular research problem considering different potential dimensions. Students are expected to conduct thorough literature review on current work of the research problem and structure the review with a smooth flow as to make easy to understand by the reader. It is required to cite appropriately when the students draw conclusion out of current works.

- **Methods –** This section includes the methodology of the research. It can be a form of the study design , the study population, sampling frame and numbers, sampling method , survey design, survey or data collection instruments, protocol for obtaining data , ethical issues and how they are addressed, data management and analysis methods and statistical analysis and tests.

- **Results –** This section includes the entire outcomes from the research project. This section includes qualititative or quantitative measures in form of figures, graphs and tables. All tables, figures and graphs, should be numbered consecutively throughout the whole thesis, and labelled with a clear and concise descriptive title. Students should pay special attention about the effective presenting techniques while drawing figures and graphs.

- **Discussion –** The proper interpretation of the findings presents in this section. Any limitations in the research methodology should also be referred to here. Examiners expect students to acknowledge these limitations as an integral part of the evaluation of the project.

- **Conclusion -** This section summarises the key results and the conclusions that the student can draw from these results. It also needs to reflect what the initial project aims and objectives were.

- **Recommendation -** It is good research practice to make recommendations or to suggest directions for further research or actions as a result of the project findings.

- **References –** As a professional researcher, students are expected to avoid plagiarism and if any other researcher's work is considered or based in the project, it is required to properly refer these works with original researcher details. This is a list of all such references and sources which were used in the literature review, methodology and discussion. The references can be books (monographs), journal articles, letters, abstracts, patents, conference and symposium papers, media articles, and any form of published literature or comment both offline and online forms. It is important that every claim of scientific fact the students make is supported by a valid, relevant, accessible reference, and that every idea or argument, and every verbatim quotation or paraphrase of someone else's work, is correctly attributed to its source. Students are advised to follow IEEE guidelines for creating References.

- **Appendices - Students** may include the external resources which were used to conduct the research in this section. Those resources can be any questionnaires or evaluation instruments used, covering letters, participant information and ethics approvals, statistical formulas, mathematical proofs or additional explanations.

2.8 Preparing Oral/Poster presentation

2.8.1 Oral Presentation Guidelines

Students are notified the date and venue for the oral presentation through course coordinator after submitting the final version of the thesis.

This presentation includes two sessions: students presenting session which stands for 12 minutes and panel questioning session which stand for 8 minutes. Students should be vigilant about the time constraints when creating the presentation slides and students will be penalized if he/she could not finish the presentation in allocated time. Students are notified the time by a bell. The bell will be rung in 10th minute at first time and secondly at 12th minute. At that time, students should finish the talk without delay.

The presentation slides can be organized the same flow which has been used for the project. In the first slide, title, supervisor name and student index number should be clearly shown. Students should pay special attention to the best practices for making an effective presentation. The recommended structure for the presentation is as follows

- First slide with title, supervisor name and student index number
- Introduction
- Research Problem
  - Aims & Objectives
- Motivation
- Literature Review
- Proposed Methodology
- Results
- Discussion
- Conclusion
- Recommendation
- References

2.8.2   Poster Presentation Guidelines

Students are notified the date and venue for the poster presentation through course coordinator after submitting the draft version of the thesis. When the students design a poster, following list of facts should be followed.

- The poster should be 4' wide by 3' high
- Posters should be created using software programs
- The title of the poster, the name of the student and supervisor name should appear at the top of the poster.
- Appropriate headings should be given to structure the poster and the text of the poster should be legible
- The poster should explain both visually and verbally the relevance and/or importance of the research and should aim to catch the interest of the viewers quickly and effectively.
- The presented text should be clear and concise, explaining the purpose of the project, the research conducted, and the results and conclusions.
- Text should be kept to a minimum with most of the information being presented by means of graphics and/or visual images. [Visuals can be in forms of tables, charts, figures, drawings, and/or photographs. All visuals should be labeled with a caption that explains/interprets the content of the graphic.]
- Background colors or images should complement, and not distract from the poster's topic, text and graphics. The poster should be free of spelling and grammatical errors.

3.1 Evaluation Criteria

This section is addressed to supervisors and examiners. It provides information on general considerations and assessment criteria for the project. It also provides guidance to students about what examiners will be looking for in examining projects.

The evaluation is conducted throughout the course in several phases such as project proposal presentation (10%), Mid-term Progress Review Seminar (15%), Final thesis (40%), Oral Presentation (25%) and Poster Presentation (10%). Each assessment carries weighted mark (as stated) to the final result of the project.

While the projects may vary one to another in scope and way of presenting the facts, examiners and supervisors may wish to consider the following points:

- Are the project aims (including research problem, research questions, boundaries and desired outcomes) well formulated?

- Are the background conditions and motivation described in sufficient detail to provide a rationale for the project?

- Are relevant concepts and empirical studies in open literature critically reviewed?

- Is the methodology fit with aims and the stated problems of the study appropriately?

- Is the methodology consistent and reflecting an adequate amount of effort for an undergraduate student?

- Are the findings and experiences well summarised?

- Are the findings well discussed and are the implications valid for candidate's own situation and conditions?

- Is it an original work of the student and what is the contribution to the area of research?

- Does student maintain minimum expectations from a scientific writing including style of writing, presentation, and grammatical expression?

- Is the study potential to publish in peer-reviewed journals or conferences?

3.2   Assessment criteria for the project proposal presentation

The first evaluation is conducted at the project proposal presentation. This assessment carries 10% marks to the final results of the final year research project. The evaluation criteria are as follows:

Criteria	Marks Allocation
Appropriateness of the selected project title to final year research project for a fourth year undergraduate student	10%
Significance of the selected research project including Motivation, Aims and Objectives	15%
Well formulated research aims and research questions	15%
Through investigation of the literature	15%
Suitability of methodology to achieve aims of the project	20%
Feasible Time Frame and deliverables	15%
Quality of the presentation including presentation skills, clarity, spelling and grammar of the content	10%

3.3   Assessment criteria for the Mid-term Progress Review Seminar

The second evaluation is conducted at the mid-term progress review seminar. This assessment carries 15% marks to the final results of the final year research project and it usually conducts as an oral presentation of a student and feedbacks from the supervisor to validate whether student is satisfactory progressing. The evaluation criteria are as follows:

Criteria	Marks Allocation
Student's active participation of meeting with supervisor regularly	10%

Appropriateness Student's oral presentation to demonstrate his progress : What actions he has implemented	25%
Quality of oral presentation: Presentation Style and Time Management	10%
Implementation of Methodology: What extent the student has implanted the methodology, what are the encountered problem and limitations	25%
Student progress in line with suggested time frame	20%
Supervisor's feedback about the student	10%

3.4   Assessment criteria for the Final research project thesis

The third evaluation is conducted at the final phase as reviewing submitted research project. This assessment carries 40% marks to the final results of the final year research project. The evaluation criteria are as follows:

Criteria	Marks Allocation
Background and problem Identification	20%
Maintaining the structure and flow of the thesis	20%
Results and analysis/Quality improvement	30%
Quality of expression and clarity : Writing Style, Spelling and Grammar correctness	20%
Completeness and validity of the solution	10%

3.5 Assessment criteria for the research project defending oral presentation

The fourth evaluation is conducted at this phase after submitting the research project. This assessment carries 25% marks to the final results of the final year research project. The evaluation criteria are as follows:

Criteria	Marks Allocation
Identification of research problem and validity of the solution to address the problem	10%
Appropriateness of literature search	10%
Appropriate Implementation of the methodology	15%
Implementation of suggestions in prior evaluation phases	5%
Achievement of project objectives and aims with proposed deliverables	10%
Results and discussions	15%
Novelty of the solution and contribution to the research area	10%
Project completeness in accordance with suggested time frame	10%
Potential to publish the work	10%
Quality of oral presentation: Presentation Style and Time Management	5%

3.6   Assessment criteria for poster presentation of the research project

The fifth evaluation is conducted at the poster presentation session. This assessment carries 10% marks to the final results of the final year research project. The evaluation criteria are as follows:

Criteria	Marks Allocation
Layout and Design : Graphical illustration enhance meaning , Capture viewers attention, Arouse interest in the topic, Neat and presentable (uncluttered), Aesthetically pleasing	5%
Presentation of Methodology : Graphical presentation of methodology	20%
Technical Competency: Demonstrate knowledge gain from the project, Able to answer correctly to questions related to the presented facts, theories and process	15%
Content Accuracy: Items presented are related to the project, Highlight key issues/contribution, Use precise language	15%
Presentation of results and conclusion: Presentation of results using graphs and figures	20%
Innovativeness/novelty/patentability/commercialization potential publication : Project and finding are novel, Product and process can be patented, Ideas presented are new and unique, The product or discovery have great commercialization potential or publish in peer-reviewed publications, Findings/products/process can benefit the society	20%
Overall Presentation Mechanics: Linguistically correct (no grammatical and spelling errors), clarity and easily understandable	5%