**Minor Project- Guidelines**

**M Tech RAU**

**Third semester**

**General Guidelines**

1. Projects will be assigned by the HOD/Project Co-ordinator, indicating the corresponding Guides.

2. Project work has to be initiated and progressed under the supervision/guidance of the respective guides. Internal marks will be given for discussions and meeting with the guides.

3. All project work should be carried out in the Dept. and work done outside will not be considered and will affect the project adversely.

4. The assignments for minor project and dissertation are to be clearly mentioned - whether it is a separate project or a part of the Master’s Thesis, software part or hardware part etc. An project timeline is to be prepared with time schedules and milestones and approved by the respective guides and HOD, before initiation of the project work.

5. For final review, at least a simulation based demo should be presented.

6. Components and materials required for the projects are to be procured on time. Long-lead items and items to be purchased through the Dept. are to be planned in advance to avoid delay in receiving these items.

7. If sufficient progress is not made in the project in the stipulated time, the respective guide can modify the assignments after necessary approval from the HOD.

8. Internal Review:

a) Internal review will be conducted in every month.

b) An engineering note-book is to be maintained by every student for the project work and weekly reviewed and signed by the respective guides.

c) Each internal review will be carried out by a team of reviewers in which the guide and co-guide of the students can be silent observers.

d) For preparation of the final project report, the specified format (LATEX) should be used and soft copy should be submitted to the guides at least 15 days before the final review date for necessary corrections.

e) The corrected final soft copy of the project report is to be approved by the respective guide before the final review.

f) A technical demo of the project should be presented at the time of final review.

g) Final internal review for the Minor Project will be conducted tentatively by second week of December 2015.

9. All work done for the final presentation of the project should be approved by the respective guides, including the project report.

10. Students who are unable to attend any of the reviews with valid reasons should have sought permission in writing to the HOD and obtained necessary approval. Absence without prior permission (or intimation in case of emergency) will be treated as serious offence.

11. Minor project hours should be utilized for identification of research area, literature survey, finding research gaps, problem formulation, innovative solution etc.

12. Attendance for the Minor project is compulsory and prior permission should be taken from the respective guide and project coordinator.

**Reviews:**

As part of Minor Project, three monthly reviews and one final internal review will be conducted.

The tentative dates for the reviews are scheduled as follows:

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| **FirstMonthly Review** | **: September 19, 2015** |
| **Second Monthly Review** | **: October 17, 2015** |
| **ThirdMonthly Review** | **: November 11-12, 2015** |
| **Code Review & Demo** | **: December 1-2, 2015** |
| **Final Internal Review** | **: December 7-8, 2015** |

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| --- | --- | --- |
| Review | Focus |  |
| FirstMonthly Review | Problem Definition (scope of the project), Literature Survey, Innovation, Social Impact, Project timeline and management. |  |
| Second Monthly Review | Literature Survey, System Description/Architecture, Proposed solution to the research challenge, innovation, component identification, deliverables and project progress on timeline. |  |
| ThirdMonthly Review | Detailed design and description of the project, algorithms, software and hardware implementation, publication details (list of conferences along with submission dates) |  |
| Final Internal Review | Complete evaluation of the project including code evaluation , demo, project report |  |

Zeroth Review:

Before starting the monthly reviews, there should be a review which focuses on your understanding of the area of the topic, which emphasis mainly on the motivation, problem definition, objective and research challenges.

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| Review | Date | Focus |  |
| Zeroth Review | August 11-12, 2015 | Background Study, Motivation, Problem Definition, Objectives, Research Challenges, Minor Project, Major Thesis, Project timeline, Weekly Meeting Details, Synopsis |  |

**Monthly Reviews:**

The aim of the monthly review is to monitor the progress of the work and to provide proper directives for improvement. So, for each review one or two keen aspects will be given more emphasis. For the first monthly review the emphasis is on the literature survey and identification of the problem. For the second monthly review, the main evaluation criterion will be your proposed design of the system and innovation. For third, more emphasis is given in the area of system implementation and evaluation. The final internal review emphasizes on demo and code evaluation. The template for the contents of each review will be intimated prior to each review. For each review you will be given 15 minutes for presentation.

FirstMonthly Review:

The main focus on the first review

* Project Proposal – Submit the document one week before the review.
* Literature Review Document - Submit the document before your review. It should contain all the research papers with a summary of each paper. The conclusion should provide a summary of your findings from the literature review and also explain which research gaps you are going to focus and how your future research will fill the gaps. Also, attach a soft copy of the complete research papers that you have reviewed.
* Introduction and Motivation - Background study of the area. What made you select this project
* Problem Definition – Clear description of the problem you are going to solve. (Research problem should not be defined too broadly). List all constraints you will meet
* Research Challenges - Main challenges you expect to face while doing the project
* Literature Survey – Critical analysis of relevant research work done thus far in the area of investigation
* Innovation - a new idea, device or process
* Deliverables – You should state it clearly. Once you commit to it, you should make sure that you can deliver it at the end of your Minor project.
* Reviewer's comments – List the previous review comments of your reviewer’s and how you have incorporated those comments.
* Software/Hardware Requirements - List and progress towards its procurement (whether you already have it or you have placed the order)
* Project Timeline - Everyone should use **Microsoft Excel or Ganterr** for preparing the project timeline. It should have the detailed timeline listing all the tasks and subtasks.
* Weekly Meeting Details - Details of weekly meeting with your project advisor.
* Documentation- Soft copy of the document

Code Review & Demo:

The main focus is on reviewing the programming code, evaluating the correctness of deliverables, and checking the working of the system by the guide and co-guide.

**Project Timeline:**

You have to prepare a project timeline well before the first review and for each review you should be able to present the progress of work with reference to the project timeline. The project timeline format should be self- explanatory and same for all students. For each review, the work completed after the previous review should be highlighted along with implementation of reviewer’s comments. The progress of your work with respect to the timeline will be a criterion for evaluation.

**Engineering Notebook:**

You have to keep a detailed record of work done and discussions carried out with the respective guides and it should be signed by guides periodically. This carries marks for each review.

**Documentation:**

This is to be taken up with due importance. Documentation should go in parallel with the work i.e. for each presentation; you have to document the work you have completed so far. You have to quantify the progress in documentation work at the time of your presentation and will be considered for internal marks. You should be ready with the soft copy of the documentation for each review and minor modifications can be made later. The final report in Latex format is to be submitted to your guide in the end of November. After incorporating the suggestions, if any, you have to submit the final copy of your report for the final internal review. The project report should be subjected to plagiarism check. The project report can be an expanded version of your research paper with annexures explaining details you have left out from the research paper.

**Publication:**

Publication is mandatory. At the time of third review, you should be ready with the research paper draft and list of conferences where you want to submit the paper. Submit the hard copy of your final research paper at the time of your final review. You need to get the consent of your guide before the registration and camera ready submission of your paper in a conference.

**Appendix**

**Problem Statement**

A problem statement is a concise description of the problem or issue that need to be addressed. In general, a problem statement will outline the basic facts of the problem, explain why the problem matters, and pinpoint a solution as quickly and directly as possible.

It is a single sentence that summarizes your entire argument, boiling it down to its bare essentials. A good problem statement identifies both the problem and the solution as succinctly and clearly as possible.

When writing a problem statement, you have to make sure of the below points.

* Be concise.
* Don’t use jargon without defining it.
* Stick to a narrow, defined problem.
* Remember the "five Ws" (who, what, where, when, and why), and how.
* Use a formal voice.
* Always proofread for errors.

For more information, refer “How to Write a Problem Statement”, <http://www.wikihow.com/Write-a-Problem-Statement>

**Literature Survey**

A literature survey, or literature review, is a study and review of relevant literature materials in relation to a topic. It is a clear and logical presentations of the relevant research work done thus far in the area of investigation. The purpose of such a survey is to identify and highlight the important variables, and so to document the significant findings from earlier research that will serve as the foundation on which the theoretical framework for the current investigation can be built and the hypothesis developed, and also to show that the researcher is knowledgeable in the area of expertise and has done the preliminary homework that is necessary to conduct the research, the theoretical framework will be structured on work already done and will add to the solid foundation of existing knowledge. It helps the researcher to bring background information into full scope and also leads logically to a good problem statement. It also reduces chances of repetition of research on similar topic.

Tips for Writing a Literature Survey:

1. Do not include the literature that is not very useful for your research. More references do not mean a better list of references. Useless references only confuse and make you lose credibility.
2. Identify the approach (es)/method(s) for solving problem(s), and compare this/these with what you already know.
3. Identify which approaches and/or methods you will use.
4. After you feel satisfied that you know all or most of the existing approaches/methods, for each one:
   * List out all the approaches/methods, in a logical sequence (perhaps in chronological order), including both those you will use and those you will omit
   * For each approach/method:
     + Describe how it works and what its components are
     + Tell what kinds of problems it is good at solving
     + Tell what kinds of problems it is poor or limited at solving
     + Mention other strengths and/or weakness of each approach
     + Tell if you will use or omit the approach for your project and why or why not
5. For more information, see

* [Literature Review](http://www.masterpapers.com/literature_review.php) by Masterpaper.com

<http://www.masterpapers.com/literature_review.php>

* Guidelines for a Literature Survey and an Annotated Bibliography by Trinity College, University of Toronto

<http://www.trinity.utoronto.ca/library_archives/theological_resources/Theological_guides/literature_survey_bibliography.html>

* How to write a review of literature

<http://www.writing.wisc.edu/Handbook/ReviewofLiterature.html>

* Writing a Literature Review

<https://ctl.utsc.utoronto.ca/twc/sites/default/files/LitReview.pdf>

* The Research Problem

<http://www.public.asu.edu/~kroel/www500/The%20Research%20Problem.pdf>

**Publication**

Publishing a research paper in a journal or conference is an important activity within the academic community.

Refer the below links to get more information about writing a research paper

* [Writing a Research Paper](http://owl.english.purdue.edu/owl/resource/658/01/)’ by Purdue University's Online Writing Lab (OWL) <https://owl.english.purdue.edu/owl/section/1/>
* How to write a paper for publication <http://www.pacifichealthvoices.org/files/how_to_write.pdf>
* Basics of Research Paper Writing and Publishing

<http://dbis.rwth-aachen.de/~derntl/papers/misc/paperwriting.pdf>

* [How to Publish a Research Paper](http://www.wikihow.com/Publish-a-Research-Paper)

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