NANYANG TECHNOLOGICAL UNIVERSITY

School of Electrical & Electronic Engineering
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Final Year Project

Full-Time Student Guidelines

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Compiled by

FINAL YEAR PROJECT COMMITTEE, 2008-

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1. INTRODUCTION

As part of NTU's curriculum, all final year students of the School of EEE are required to undertake a project, supervised by one or two academic staff. This project will involve an in-depth study, investigation, construction of hardware and/or development of software and testing in any of the areas of specialized courses offered in a final year option group, and spread over the whole academic year. Students are required to submit a formal report, carry out a project demonstration and also make an oral presentation on completion of the project.

The Final Year Project Committee of our School is entrusted with the task of overseeing the coordination of all the final year projects. The Committee has prepared this set of guidelines so that all students are aware of the various project requirements in terms of project schedules, project report and presentation.

1.1 Eligibility for FYP

Students must be of of Year 4 Standing AND have earned at least 86 AU (excluding GER and UE AU) for A-level students and 59 AU (excluding GER and UE AU) for Poly students. Please take note that final year projects cannot be carried out concurrently with IA/IO/EIA/IRA during the whole FYP period except for ABP students.

1.2 Project Duration

Students are allocated 9 hours per week for the project, spread over two semesters. Their time table includes 3 sessions per week, each session being 3 hours long. In practice, the students spend considerably more time than the allocated hours.

1.3 Project Proposals

Staff members propose projects and act as supervisors. Every project proposed will contain details of various aspects of the project, including a 50-word description of the scope, objectives etc. Projects proposed are in one of the following categories:

Type A : Internally generated project - Individual Staff Projects/Staff 's Applied Research/A*STAR Projects

Type B : Externally generated Projects - Normal Industry Sponsored Projects (ISP)/ Projects proposed for Special Manpower Program SMP for IC design/Projects proposed by Research Institutes (RI)

The Final Year Project Committee will compile a final list of all projects, indicating the titles, name(s) of supervisor(s) and project descriptions, which will then be distributed to all students.

1.4 Project Selection and Allocation

Two methods are used for the FYP project allocation. The first method is defined as pick-and-pull-by-supervisor and the second method is pick-random-minimized .

1.4.1 Pick-and-pull-by-supervisor

Students pick their preferred projects from the list of proposed projects in the FYP web and approach the respective project supervisors for discussion. During the project selection period, if the supervisor decides to offer a project to a particular student, the main supervisor will go through StaffLink and select the allocation option to pull the project for the student(s). Once this has been done, the student(s) will be allocated to that particular project and the database will then be updated to keep the other students informed. The project will only be allocated after the supervisor have completed the pick-and-pull process. **Note that allocated students are not allowed to drop out after the phase of pick-and-pull by supervisor is over.**

1.4.2 Pick-random-minimized

A student can select up to 10 projects. The program allocates projects based on the order of preference from students from their 1st to 10th preferences. Projects that are chosen by only one set of student(s) as the first preference will be assigned straight away to the respective set of student(s). If there is more than one set of student(s) choosing a particular project as the first preferences, the program will give preference to the student who put in more choices. If all the students put in 10 choices then a random number will be generated. This random number ranges from 1 to the total number of student sets that have chosen that project as the first choice. That particular project will be temporarily assigned to a particular set according to the generated random number. After processing the first preferences of all the students, the same method is repeated for all the remaining unassigned students starting from their 2nd preference up to the 10th preference. At the end of this allocation cycle, the configuration of the project assignment and the number of the unassigned student groups are recorded.

A subsequent allocation cycle is repeated in exactly the same way as the previous cycle. A new project assignment together with the new number of the unassigned student groups are obtained and compared with the number of the unassigned student groups in the previous cycle. The program always keeps the configuration of project assignment that has a lower number of the unassigned students. Through processing of more than a thousand allocation cycles, the project assignment which has the minimum number of unassigned students is thus obtained. For the remaining unassigned students a second round list containing all the remaining projects is then listed on Web and the unassigned students will be invited to select another 10 choices. Allocation is again made on the basis of the preferences and the same allocation process is repeated. In the second round processing, all the students will be allocated a project of their choices.

1.5 Laboratory Allocation for Projects

Project supervisor(s) are responsible for finding suitable laboratory, equipment and computer, etc. for their projects. Students should check laboratory placement with their supervisor(s).

2. PROJECT ASSESSMENT

There are three components for the assessment of a project: Interim Assessment, Main Assessment and Oral Presentation. An interim assessment of the project is done at the end of the first semester by the project supervisor(s), when the project is half way through. The main assessment and oral presentation are done at the end of the second semester. To ensure proper moderation in the assessment, the Dean, School of EEE, will appoint a moderator for each project. Both the moderator and the supervisor(s) for the project perform an independent evaluation of the main and oral presentation assessments.

2.1 Interim Assessment

The interim assessment is done by the supervisor(s) only and will be based on a 2-3 page Project plan/strategy submitted by each student about one month from the start of the project, its implementation and on a short interim progress report submitted by each student towards the end of the first semester. The supervisor(s) will grade each student individually to gauge his or her progress and contributions at the end of the first semester.

2.1.1 Project Plan/Strategy

During the course of the project the students' progress will be closely monitored by the supervisor(s) through meetings and/or progress reports. In the case of Projects with our external partners, the supervisor(s) may arrange for meetings with the students and the external counterparts. A short project plan/strategy report (2-3 pages) is required from each student about one month from the start of the project. This may be a summary describing the main objectives of the project, the student’s proposed way of carrying out the project and a proposed weekly schedule in a chart form.

2.1.2 Interim Report

It is compulsory for each student to submit a short interim report at the end of the first semester. The report will highlight the progress made by the student towards meeting the objectives laid out in the project plan/ strategy and will be limited to a maximum of 4-5 A4 pages.

2.2 Main Assessment

The main assessment is conducted at the end of the second semester. It has two components: (a) Assessment of final project report and project demonstration, which is done independently by both the project supervisor(s) and the moderator for the project, and (b) Assessment of each student’s ability to complete the requirements of the project, through a proper project management. This includes an assessment of the log book, draft copy of the project report and personal qualities of the student, and is assessed by the supervisor(s) only.

2.2.1 Project Report

A formal, type-written final report in one-and-a-half spacing is required from each student. The main body of the report must be limited to a maximum of 100 pages. If this guideline is not complied with, the students may be asked to resubmit their report.

A copy of the detailed guidelines on the format of the report and other requirements for the project, is attached in Appendix A.

2.2.2 Project Demonstration

Each student is expected to make arrangements for the moderator to view a demonstration of the project. This should be done within the specified period (see detailed schedule) after the submission of the Final Report. For those projects which are research oriented or exploratory in nature, for which a project demonstration may not be possible, the moderator would interview the student to gauge how well he/she has understood the work.

2.2.3 Project Management

This assessment includes components such as log book, draft copy of the project report, user manual, if any, and personal qualities of students. Each student must ensure that a good record of the work done by him/her throughout the year is maintained in a log book. A log book is particularly useful for continuing projects. The purpose of a draft copy of the project report is for the supervisor(s) to suggest changes/modifications, if any, to poorly structured reports, key concepts, ideas, results, etc., indicated in the report, and also to point out any violations like plagiarism. It must be left to the students to incorporate the changes at appropriate locations in the report. The students must be asked to exercise care and responsibility in producing a good report. This will alleviate the problem of unfair grading due to different degree of help received from the supervisor(s). Personal qualities like ability, independence, responsibility, efficiency and effectiveness are also assessed by the supervisor(s) as they are thought to contribute to the successful completion of the project.

2.3 Oral Presentation

In addition to the final report, an oral presentation by each student will be required. During the oral presentation each student will make a presentation. The supervisor(s) and the moderator will attend and assess the presentation. The time for oral presentation will be 25 minutes for each student. Each student will be given 15 minutes of presentation time and 10 minutes for the question/answer session. Questions will be directed at each student to assess his/her understanding and knowledge of the project.

2.4 Assessment Summary

A summary of the various assessments made by supervisor(s) and moderator is shown in the Table below.

Component	Assessor
1. Interim Assessment	Supervisor(s)
2. Report and Final Assessment	Supervisor(s)
3. Oral Presentation	Supervisor(s)
4. Final Report & Demonstration	Moderator
5. Oral Presentation	Moderator

The assessment criteria for the various assessments are given in Appendix B.

2.5 Submission deadlines

Please refer to the FYP website for deadlines and note that late submissions will be penalized according to the following scheme:

Delay	Maximum Marks	Penalty
On Time	100%	0%
Less than 1 week	70%	30%
1 to 2 weeks	50%	50%
More than 2 weeks	0%	100%

APPENDIX A

1. The main body of the report (excluding charts, diagrams, appendices, tables, references, etc.) must be limited to a maximum of 100 pages. You may have to resubmit a condensed version of your report if you exceed this limit.

2. Your report should meet these typing and layout requirements:

Component	Assessor
Page	White A4 size bond paper of at least 80g /m2. Only one side of the paper must be used for printing.
Margins	35mm margin on the left hand side and 30mm on the top, bottom and right hand sides of each page.
Typing	The same font and pitch for the whole report except when highlighting important matters.
Spacing	One-and-a-half spacing.

3. You should first submit one ring bound copy of your final report to each of your supervisor(s) and moderator. This will be assessed by your supervisor(s) and moderator separately.

4. After your oral presentation, you should submit one hard-cover bound or ring bound copy of the final report to your supervisor. In order to enable you to prepare the bound final report with the original text and the corrected text respectively, it is important that you collect back the copy of the report that you earlier submitted to your supervisor(s) and moderator, immediately after the oral presentation. This should be done even if there are no corrections specified by the supervisor(s) and moderator.

For hard-cover bound, the binding should be in dark blue with gold lettering. The use of NTU logo is recommended. To maintain consistency, all students are advised to follow the same format for the cover page, a sample of which is attached. Samples of the title page and table of contents are also attached.

5. The Standard International System of Units (SI) should be used.

6. The contents of the report should be in this order:

(a) title page (see attached)
(b) table of contents (see attached)
(c) abstract of not more than one page
(d) acknowledgement page to give recognition of any advisory or financial assistance received in the course of the work on which the report is based
(e) list of tables (if any)
(f) list of figures (if any)
(g) list of graphs (if any)
(h) list of symbols (if any)
(i) introductory chapter
(j) text chapters(k) references
(l) appendices (if any)

7. Each reference, be it from a journal, text book or conference proceedings, should be listed consistently, as in the example below.

REFERENCES

1. Breuer, M A, and Friedman, A, 1976, Diagnosis and Reliable Design of Digital Systems, Computer Science Press, Potomac Md.
2. Wakerly, J F, 1976, 'Microcomputer reliability improvement using triple-modular redundancy', Proceedings of the Institute of Electrical and Electronic Engineers, Vol. 64, No 3, March, pp 889-895.
3. Hata, M Kinoshita, K, and Hirade, K, 1981, 'Evaluation of diversity effects on mobile radio system design', The Transactions of IECE of Japan, Vol. 64, No 5, May, pp 31-33.
4. Comer, D J, 1990, Digital Logic and State Machine Design, 2nd ed. San Francisco, Saunders (HRW), section 7.1B.
5. Mano, M M, 1988, Computer Engineering Hardware Design. New York: Prentice-Hall, sections 5.2 and 5.3, ch. 7.
6. Tanenbaum, A S, 1990, Structured Computer Organization, 3rd ed. Englewood Cliffs, NJ: Prentice-Hall, section 4.2.1.
7. PAL Device Data Book, 1990, Advanced Micro Devices.

9. The Final Year Project Report is an important component in the assessment of the final year project. It is written for these main readers: the supervisor(s) and the moderator for the project. The moderator is an independent party appointed by the Dean to assess the project. Very often the project report is the main instrument the moderator uses to judge the project. He/she may not be aware of the many hours the students may have spent on the project. The credit given to the students will be based mainly on their understanding of concepts and knowledge shown in each report. So a poorly or carelessly written report, presented after months of hard work by each student, may not be received well by a moderator.

In a project report, one generally looks for the following:

a) a clear idea of the scope, objectives and background of the project.

b) analysis of all factors in the project, noting dependency of constraints. A clear and concise presentation of any theory required must be made.

c) use of references which gives evidence of the students having read about the related subject. A list of references alone is insufficient. Any work, not done by the students, but included in the report, must be duly referenced. It is to be noted that plagiarism is a serious violation.

d) results, discussions and suggestions for further work to assess the understanding of technical concepts and the perception of the value of the work done. Results must be appropriately presented with tables, graphs, charts, etc., wherever possible and must be linked to the objectives of the project. Interpretation and discussion of results must be put into the context of the work.

e) a logical organization of the report to allow readers to grasp the contents readily. It is not always necessary that the information be organized chronologically. The students should put effort into thinking of the best way to present the information for the convenience of their readers. There must be a logical sequence of chapters, links between chapters, and sequence and links within chapters.

f) a good standard of written English, proper format and layout of the report.

10. For more information on project report writing, it is suggested that the students refer to the following:

Dorothy Cheung, Lai Phooi Ching, John S T Cheung, 1992, "What Every Engineering Student Should Know About Project Report Writing," 2nd Edition, Longman Singapore.

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APPENDIX B

ASSESSMENT CRITERIA

1. Interim Assessment

    1.1 Setting of Clear Objectives and Work Plan
    1.2 Enthusiasm and Responsibility
    1.3 Interim Report
    1.4 Achievement & Results
    1.5 Clear Action Plans for Future Work

2. Report and Final Assessment
    2.1 Management of Project
        2.1.1 Draft Report
        2.1.2 Log Book
        2.1.3 User Manual or Equivalent Documentation
        2.1.4 Ability and Independence
        2.1.5 Responsibility
        2.1.6 Efficiency and Effectiveness
    2.2 Final Report
        2.2.1 Introduction and Information Gathering
        2.2.2 Structure and Organization
        2.2.3 Theory, Design and Implementation
        2.2.4 Results and Discussions
        2.2.5 Recommendation & Conclusion
        2.2.6 Presentation
    2.3 Achievement and Project Demonstration
        2.3.1 Project Completed According to Specifications
        2.3.2 Contribution to Teaching/Research/Industrial Applications
        2.3.3 Level of complexity

3. Oral Presentation Assessment
    3.1 Contents and Organization
    3.2 Effective Presentation
    3.3 Accurate rebuttals to questions.

APPENDIX C

Submit Full Text Report (Softcopy) to the Library through Digital Repository @ NTU

For instruction, please go to the link http://repository.ntu.edu.sg/drntu/procedure.htm