

IE3100R Systems Design Project (SDP)

Module Outline AY2008/2009

Modular Credit	8
Hours per Week	10hrs (Sem 1) and 10hrs (Sem 2)
Duration	2 semesters
Pre-requisite	ISE Eng. 3 & 4 standing (For students matriculated in AY2006/07 onwards)
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Website	B.Eng. (ISE) Students Website http://www.ise.nus.edu.sg/beng_students

IMPORTANT INFORMATION

The Module Outline (this document) gives the student important information about the module, guidelines, assessments, schedules and project allowance.

Note that important general information including announcements, forms and guidelines is available on the B.Eng. (ISE) Students Website
< http://www.ise.nus.edu.sg/beng_students >

Revised on 31 July 2009

I. MODULE DESCRIPTION

Pre-requisites: IE2100, IE2110, IE2140

Co-requisite : IE2101

The objective of Systems Design Project is to provide an opportunity for students to gain practical design experience in an actual industry setting. The students will also experience a broader scope of industrial engineering by applying a range of IE- related concepts rather than concentrating on one particular subject area.

The Systems Design Project module is carried out over two semesters. It is offered at the beginning of every academic year. This module provides the students opportunity to:

- (1) study, formulate and analyze an actual industrial problem with the goal of recommending a design solution that is practical.
- (2) apply knowledge learnt in the classroom to an actual problem assigned.
- (3) acquire intangible attributes such as working in a team and practical experience that cannot be taught in a classroom environment.
- (4) practise and improve the skills of technical report writing and oral presentation.

After completing the module, students should have improved their skills in the following:

(1) Systems analysis and design

This includes the ability of the student to:

- (i) define a problem and plan a study
- (ii) collect and analyze relevant data
- (iii) formulate the model of the problem
- (iv) identify and apply appropriate methodologies
- (v) develop, evaluate and select suitable and effective alternatives that meet the objectives

(2) Team work

This includes the ability of the student to:

- (i) interact with people from diverse backgrounds
- (ii) resolve conflict when disagreement arises
- (iii) co-ordinate and plan activities
- (iv) delegate responsibilities
- (v) work harmoniously with people of different seniorities/functions in company

(3) Technical report writing

This includes the ability of the student to:

- (i) acquire effective written and communication skills
- (ii) document, interpret and explain the results

(4) Communication

This includes the ability of the student to:

- (i) present in a clear, concise and convincing manner
- (ii) "sell" the ideas with rationale
- (iii) respond to questions with proper justifications
- (iv) handle company and project information with professionalism

Formation of Project Teams and Selection/Allocation of Projects:

Depending on the number of students who have indicated their intention to register for the module, the Department will propose a certain number of projects with companies identified as case studies.

Please see the Schedule on the last page and refer to the Department SDP webpages accordingly.

Students will be requested to form themselves into teams of their choice and a team leader should be appointed. A nominal team size should be at least 5. Team choices will be made known through the Department SDP website. For early consideration, the available projects are also make known on the website.

The Department will then proceed to finalize the team formation, including students who may have no particular team preference. Such students may let the Department module administrator (as indicated herein).

Once this is done, the teams may proceed to make their project choices online. Up to 7 choices are allowed to enable final allocation of projects to teams. The choices are naturally in order of priority.

The Department will then carry out a balloting exercise. It reserves the right to allocate projects based on project complexity and its corresponding expected efforts.

Based on the balloting, the Department will then announce the results of the selection and the students are given time to exchange teams among themselves if they so wish.

A group of faculty advisors will oversee the progress of the project team. These faculty advisors will initiate contact with the companies. Each company will assign a contact person to the respective team. The team is thereafter expected to liaise with the contact person and carry out the project independently. The role of the faculty advisors is generally to provide advice and direction during the course of the project. There should be regular meetings, at least on a bi-weekly basis, to report on the team's progress and intentions.

II. IMPORTANT DOCUMENTS

Please note that students are to submit the following documents on the stated submission dates to ISE department. All forms can be downloaded from the B.Eng. (ISE) Students Website.

1. Form Of Undertaking Of Confidentiality & Non-Disclosure
Each student must submit a Form Of Undertaking Of Confidentiality & Non-Disclosure before the start of the project to honor any valid disclosure or use restrictions on confidential information between the student and the participating company.
2. IE3100R Peer Evaluation Form
Each student must complete an evaluation form to evaluate themselves and their team members so as to ascertain their personal contributions and their team members' contributions to the project. Do not discuss your evaluation with your team

members prior to submitting the form. The form must be completed in confidence and submitted personally to the ISE Department at the end of the final oral presentation. Details of the form would be kept confidential although the supervisor/s may discuss general observations and recommendations with you and your team members.

3. Payment Voucher (Refer to section III below)
Students may claim purchases on consumables for the purpose of research for the project. Claims must be accompanied by original receipts and submitted to the ISE Department **by the end of each month** for crediting into the payee's bank account within one month of the claim unless notified otherwise.
4. Transport Claim Form (Refer to section III below)
Students may claim for travelling expenses for the purpose of research for the project. Claims must be accompanied by original receipts and submitted to the ISE Department **by the end of each month** for crediting into the payee's bank account within one month of the claim unless notified otherwise.

III. PROJECT ALLOWANCE

Students are allocated a maximum sum of **S\$200 per team** for local transport claims and reimbursements for materials used during the research and for the completion of the project. **Please attach original receipts to the forms and submit your claims by the end of each month** for crediting into the payee's bank account within one month of the claim unless notified otherwise.

Students may claim for expenses directly related to the project, such as travel, photocopying of journal papers, surveys forms, mailing, etc. However, students **cannot** claim expenses on the photocopying and binding of copies of the project proposals. These cost should be borne by the students.

Other costs and expenses not stated here will be dealt with on a case by case basis and is subjected to Department's approval. The Department's decision is final.

Guidelines for transport claims:

1. Claim for Transport

Students may claim for travelling expenses incurred for the journey made from NUS to place of research and then back to NUS. Students may not claim for travelling expenses incurred during routine journeys between their homes and NUS. Note that claims can be made only for trips to companies for meetings and carrying out project works.

The optimal route and mode of transport should be used so that expenditure may be kept to a minimum while allowing students to perform their research effectively and efficiently. When making a claim for transport, the claimant should state precisely the time and place of the start and finish of each trip; and ensure that all street names are stated in the Transport Claim form.

a) Students may claim according to bus fare or MRT fare rates if they use public transport. No receipt is required for travel by bus and MRT.

b) Students may be reimbursed for taxi fares for a journey if the Supervisor is satisfied that travelling by taxi will result in greater efficiency and effectiveness. For SDP, when it is necessary to take taxi, members of the group are expected to travel together. Therefore, only one taxi receipt can be submitted per trip unless the group members are more than four. Please compile all your receipts and submit your claims as a group to the ISE Department at the end of each month. Note that booking fee for taxi is not claimable.

2. Claim for Consumables

Students may claim for purchase of materials used during the research and for the presentation of the project. Please attach receipts to the Request for Payment form and submit to the ISE Department at the end of the month.

Students may claim for expenses of consumables such as surveys forms, mailing, etc. Printed materials should be solely for the purpose of research for the project. However, students cannot claim expenses on the printing and binding of SDP report, FYP thesis, making copies of report or thesis and making draft copies of thesis for examination. Budget is meant to help the students to defray the costs of conducting research for the project and does not include cost of putting up the thesis report.

Please be informed that claims are only for items which are required for research and to be used for the duration of the project. All claims are subjected to the Department's approval. Co-payment or partial claim is not permitted. Items which can be re-used or re-cycled are to be returned to the ISE Department at the end of the project.

IV. EVALUATION OF PROJECTS

The assessment of the project proposal comprises of two parts:

1. *Preliminary Examination (10%)*

Interim Report

Students are required to submit an interim report to their supervisor/s and examiner according to the schedule below.

The objective of the report is to determine how well you have understood the problem and to assess the practicality of your proposed approach.

Guideline to Interim Report

Contents

- Composition of Team Members
- Background of Company
- Problem Definition
- Proposed Approaches
- Milestones and Project Timeline

Report Format

- Report should be written clearly and concisely, with the objectives stated and terms defined.
- Report should be typed on one single side of A4 or 8 x 11 inch good quality white paper, double-spaced throughout, including the reference section. The report should not be more than 10 pages.
- Section headings should be numbered sequentially, using a decimal system for sub-sections.

Preliminary Oral Presentation

Teams are required to give a preliminary oral presentation on the progress and status of your project. Each team will be given 20 minutes for the presentation of the project and another 10 minutes for question and answer. **Each team member is required to present.** Teams are advised to adhere strictly to the time limit to avoid penalty.

A LCD projector and a PC/notebook will be provided in all examination rooms. Teams may bring their own notebook but they must ensure that it is compatible with the projector provided. Please save the presentation materials in a thumbdrive or save it in the equipment provided before the start of the presentation round.

2. Final Examination (90%)

The final assessment of the project includes the following items:

- (i) individual working attitude (25%; awarded by supervisor/s only; feedback from participating company will be solicited and taken into consideration)
- (ii) project execution and achievement (25%; feedback from participating company will be solicited and taken into consideration)
- (iii) report writing and case study development (20%)
- (iv) final oral presentation (10%)
- (v) project poster (5%)
- (vi) peer evaluation (5%)

Guideline to Final Report

Contents

- Executive Summary
- Background of Company
- Problem Description
- Methodologies / Approaches
- Comparison of Design Alternatives
- Recommendations and Conclusion
- References
- Appendices

Report Format

- Report should be written clearly and concisely, with the objectives stated and terms defined. The proposals and arguments should be substantiated with good supporting evidence such as sound data analysis and experimental designs.
- Report should be typed on one single side of A4 or 8 x 11 inch good quality

- white paper, double-spaced throughout, including the reference section.
- Main report should not be more than 25 pages (excluding references and appendices). Executive summary should not exceed one page.
 - Section headings should be numbered sequentially, using a decimal system or sub-sections.

A case study is required. A briefing will be conducted to inform and guide students with regards to this.

Guideline to Project Poster

Each team is required to submit an A1-sized (594mm x 841mm) poster about your project. Your poster should be a summary of your project, enhanced with high-resolution pictures, graphics or tables.

Please ensure that your poster includes the following:

- Project title
- Names of group members
- Names of supervisor/s
- Department name
- Module title (i.e. Systems Design Project)
- Company/Organisation name & logo (if any)
- NUS logo (Download from: <http://www.nus.edu.sg/identity/>)

Please ensure that the company has approved the content of the poster to be suitable for public display. A softcopy of the poster (Powerpoint or jpg format) must be presented during the final oral presentation and submitted in a CD-ROM. You are not required to print the poster.

Submission of Final Report and Electronic Copy for Examination

Each team is required to submit a final report upon approval by your supervisor/s according to the schedule below. Please ensure that **each supervisor and examiner receives a copy**. Depending upon prior arrangements, copies of the project may have to be submitted to the company concerned through the supervisor/s.

In addition, an electronic version of the project proposal in pdf format, presentation slides, posters and other relevant materials must be saved in CD-ROM and submitted to the ISE Department.

Final Oral Presentation and Peer Evaluation

Each team will be given 30 minutes for the presentation of the project and another 15 minutes for question and answer. **Each team member is required to present and they will be graded individually.** Teams are advised to adhere strictly to the time limit to avoid penalty. A LCD projector and a PC/notebook will be provided in all examination rooms. Teams may bring their own notebook but they must ensure that it is compatible with the projector provided. Please save the presentation materials in a thumbdrive or in the equipment provided before the start of the presentation round.

Each team member must submit a peer evaluation form to the ISE Department Office after their presentation. Peer evaluation forms should be kept confidential.

V. FAILURE IN DISSERTATION

If teams fail to achieve a pass mark in the dissertation, they will be required to re-write the report and/or perform further research (depending on the recommendation of the supervisor/s and examiner). They must then re-submit the report for examination.

SCHEDULE FOR IE3100R SYSTEMS DESIGN PROJECT AY2009/2010

1.	Selection Exercise I: Announcement and Group Formation by Students	Sat, 1 Aug – 1200h, Tue, 4 Aug 2009
	Selection Exercise II: Final Group Allocation by Department	Wed, 5 August 2009
	Selection Exercise III: Project Bidding	Thu, 6 Aug – Tue, 11 Aug 2009
	Selection Exercise IV: Project Balloting	Wed, 12 Aug 2009
2.	SDP Introductory Briefing (Note: Attendance is compulsory)	Thu, 13 Aug 2009 at EA-06-03 1600h
3.	Submission of Form Of Undertaking Of Confidentiality & Non-Disclosure	Fri, 14 Aug 2009
4.	Progress Report Submission of interim report to supervisor/s and examiner	Thu, 14 Jan 2010
	Preliminary Oral Presentation	Mon, 18 Jan – Fri, 22 Jan 2010
5.	Final Report & Poster Submission Submission of project posters	Wed, 31 Mar 2010
	Submission of final report and case studies for grading to supervisor/s and examiner	Thu, 8 Apr 2010
6.	SDP Student Showcase SDP Student Showcase event and poster display	Fri, 9 April 2010
7.	Final Presentation & Submissions Final oral presentation and submission of evaluation forms	Mon, 10 May – Fri, 14 May 2010
	Submission of SDP materials in softcopy to ISE Department.	Fri, 14 May 2010

** Please observe the above deadlines strictly unless advised otherwise.*