



## **INTRODUCTION**

The European Project Semester promotes international student teamwork. Cross-cultural and multidisciplinary project groups of four to six international students work together to execute an integrated design-implementation-and-business project. During the first four weeks students participate in short, intensive and project-supportive courses. Simultaneously the project groups start to discuss and negotiate their project proposal. About 65 % of the EPS semester is devoted to international teamwork, which requires a collective effort and a collective performance of specialists with different kinds of expertise. Each international team of students works together to achieve a set of shared objectives. A major part of the importance of the project work is derived from the team's own planning and navigation of the project process from beginning to end. The focus is on the overall product/project realisation process, rather than on any specific topic or skill.

One or more academic supervisors are allocated to each team. During compulsory weekly meetings, issues such as project development, teamwork problems, communication problems as well as cognitive and political problems are discussed as required. From these meetings students learn good meeting techniques and disciplined behaviour. Further they learn how to run and chair a meeting, to make a good agenda and how to produce good minutes. Abilities such as self-confidence, responsibility and communication in English are improved. Also the ability to listen actively, to discuss and negotiate putting solutions in place is developed. In brief we pay great attention to the PROJECT, the PROCESS, and the PEOPLE involved. Students participating in this semester have varying educational skills. Ideally each project group or team will have one or more students from Engineering, Business and Technology. Company advisors from the project provider sometimes participate in the weekly team meeting if their busy timetable allows. Once a month all supervisors meet to discuss matters of concern.

**The main contribution of the academic supervisor is to help students to understand the content of their project and to ensure that they are making progress. It is also to nurture and facilitate the group work and the group process. The supervisor must make sure that the advantage of working together in groups is sustained.**

Social and psychological research shows that the advantages of working together in groups are often lost because of faulty group processes, which degrade the cognitive and political activity of the group. Cognitive problems arise because team members have to organise their intellectual activity so that they think clearly about the issues and develop a shared understanding of what is happening and why. Political problems arise because team members have to accept direction and give up some of their autonomy. The political process needs to be organised so that the team members develop shared commitments and work collectively to achieve objectives that are agreed.



The aims and objectives of the industrial team-based design project can be described as follows:

### **AIMS**

1. To train students in teamwork and emphasize realistic and real life situations.
2. To demonstrate the ability to use modern design tools and techniques.
3. To demonstrate the ability to plan and run a team-based project.
4. To show the ability to communicate clearly in writing (a proper project report) as well as by other means.

The work has to be completed within the time schedule and to be presented at an assessment meeting simulated as a board meeting. Great attention is paid to the ability to plan, delegate, communicate and co-operate as a team towards a common objective.

### **OBJECTIVES**

After completing the course, the student should be able to:

1. Contribute actively as an individual in the group work.
2. Work alone, independent of the group, yet in context and co-operation with the team.
3. Distinguish between competition and co-operation.
4. Appreciate and understand that established and acknowledged teamwork is a committed contract.
5. Understand the professional responsibilities of the design engineer in context with different industries nationally as well as in an international society.
6. To appreciate the influences that government and other authorities have or dictate through legislation, standards or other means.
7. To demonstrate understanding and appreciation of safety, product liability, environmental matters and other related issues.

### **PROJECT PERFORMANCE**

It is recommended that team members act, in turn, as project manager leading the project process, keeping track of the work being done and encouraging the group members to hand in their contributions in accordance with the team agreement. It is compulsory that each team makes a Log Book / Wiki, a Project Folder and an Information Folder.



### **LOG BOOK / WIKI**

All decisions made, plans and revisions have to be described and stored in the Log Book. Also information about meetings such as agenda, minutes and reports should be placed in the Log Book / Wiki. The team works out the format or, alternatively, uses electronic tools, e.g. DokuWiki (<http://www.dokuwiki.org/>), Blogger (<http://www.blogger.com>), etc.

### **PROJECT FOLDER**

It is required that each team makes his own Project Folder containing individual contributions to the group project report. It will contain the initial Project Proposal description, the agreed project formulation/statement, investigations made, and development of the product design specification, concept design, detailed design, manufacture, marketing and sales. All analysis, calculations, drawings and sketches are also placed in the Project Folder. All papers are formatted as agreed by the group and should contain at least headlines, date, page number and name of author.

### **INFORMATION FOLDER**

It is sometimes convenient and practical if teams share an Information Folder. The folder contains collected brochures, articles, notes, etc.

The Log Book / Wiki and the other folders mentioned should be accessible to the leading staff and supervisors at any time throughout the course.

### **ASSESSMENT**

#### **MIDTERM ASSESSMENT**

As indicated in the EPS Timetable, an **interim report** is submitted half way through the semester. This gives each team a chance to present and discuss their project work with their supervisor(s). Each team member must be prepared to answer in writing the following four questions:

1. What is your professional contribution to the work done?
2. What is your opinion of the group performance?
3. What is your social contribution to the work done?
4. What is your opinion of the work done?

#### **INTERIM REPORT**

In this document the objectives are re-stated, possibly expanded and a review of the background information or project history is presented, together with a résumé of progress made. The project plan, which was actually used, should be presented together with an evaluation of whether the objectives are realistic. Any changes to the structure, i.e. to the plan, in the light of this evaluation,



should be included. If some of the material has not yet been typed, neat handwritten text is acceptable at this stage, but the version incorporated in the final documentation should be typed.

### **CONSIDERATION OF SELF AND PEER ASSESSMENT**

During the course we follow the teamwork closely to make sure that the advantage of working in a group is sustained. Assessment of the course has the following elements:

1. Individual project execution (teamwork) and oral presentation (50 %);
2. Team submission of project report, which details the proposed design solution to the problem given (50 %).

The difficulty lies in apportioning credit for the team submission to individual team members. In an ideal situation, equal credit is given to each member of the team. In practice however, each team member's individual contribution will vary in both quality and in quantity. For this reason a system of peer appraisal is used to accomplish this apportioning of credit and achieving a fair spread of marks. It is important to follow and assess the group process, but this is a difficult task. A weekly meeting is held between a project group and its supervisor(s). This gives the supervisor(s) the opportunity to work closely with the team. Minutes are made of all meetings and a copy is kept in the group Log Book / Wiki. Every month during the semester the supervisors meet to discuss matter of concern experienced with the project groups.

The following seven questions are asked twice during the course. Students are asked to circle the numbers from 1 (lowest) to 5 (highest) that most accurately reflect their opinion of themselves and their peers:

1. Technical contribution in major field (quality)	1	2	3	4	5
2. Technical contribution in major field (quantity)	1	2	3	4	5
3. Willingness to build upon the idea of others	1	2	3	4	5
4. Understanding of the team process	1	2	3	4	5
5. Leadership at the appropriate times	1	2	3	4	5
6. Positive attitude	1	2	3	4	5
7. Initiative shown	1	2	3	4	5

The assessment has the following elements:

- Individual contributions to the group report (the PRODUCT) question 1 and 2;
- Individual contributions in teamwork (the PROCESS executed) question 3, 4, 5, 6 and 7.

### **INDIVIDUAL CONTRIBUTIONS IN TEAMWORK (THE PROCESS EXECUTED)**

After the group report has been submitted, each team is asked to distribute 100 points among themselves to reflect the workload contribution. Also the team supervisor(s) is asked to distribute 100 points among the team members. A weighting factor is worked out based on these assessments. The weighting factor is used to adjust the final mark for individual contribution in



teamwork. Teamwork counts 35 % of the total mark. **This distribution of marks must be given to the supervisor(s) on the same day as the final report is submitted i.e. the final report deadline.**

### **FINAL EXAMINATION**

The agenda for the final examination, where the report submitted is discussed in detail, has the following content: 1. Oral Presentation; 2. Technical Discussion; 3. Communication Value; 4. Process Execution (Teamwork). The session is formed as a board meeting, lasting two hours for a group of four students or three hours for a group of six students.

### **FINAL REPORT**

This document contains a description of the completed project, tests carried out, results obtained, evaluation of results, conclusions reached and suggestions for further work, presented in a manner that enables others to make use of the work. The report must indicate clearly each individual contribution to the group report. In addition, the team will keep a Log Book, which will be available for inspection at the final exam if necessary.

### **STYLE OF DOCUMENTATION**

Templates will be provided for all documents: report, presentation, poster and paper.

### **REPORT STRUCTURE**

The **final report** should be in typed form, with 1.5 lines spacing leaving a left hand margin of 35 mm and a right hand margin of 15 mm. The final report should be placed in ring folders, obtainable at the ISEP Book Store. The **interim report** and the **final report** must both have a list of **Contents** and a list of **Illustrations (Figures)**, together with a **Synopsis** or **Abstract**. The chapters/sections of all documentation submitted should follow a standard format of Introduction, main body and Conclusions.

The Introduction states the purpose, provides the necessary background and indicates the structure of the chapter/section. The main body of the chapter/section should provide all relevant information, in a clear and concise manner and may, in turn, be further divided into subsections, which also follow a similar format. The Conclusions should be short and should include a Summary of the purpose of the project. The conclusions should be listed and, preferably, numbered. Remember at all times to lead the reader through the text and not to waste the reader's time.

All Figures and Tables **must** have a reference number and title. They must **always** be referenced from the main body of the text. It is normally preferable and more practicable to put the Figures and Tables at the end of the text and to number them with a chapter prefix for example Fig. 1.1, Fig. 1.2, etc. If you then decide to add or remove an illustration, the numbering system for only



one chapter is affected. The illustrations should be placed immediately after the literature references and before any Appendices.

Detailed information, for example program listings, data sheets, etc. are often necessary but do not help the reader to grasp the essential aspects of the project. Such material should be inserted into Appendices and referenced from the main text.

Although a number of documentation requirements have to be satisfied, it should nevertheless, be born in mind that the complete documentation set should be concise and to the point. The total number of text pages, excluding details relegated to appendices, should be approximately 30 A4 pages per person.

**Many documents will need to refer to previously published work. A list of References should be inserted after the final conclusion but before any illustrations and Appendices. Each paper, article or book must be referenced from the main text.**

The documentation set should contain a main section describing, in a clear and easy understandable language, the work carried out. An external reader should by continuous reading be able to grasp the context of the work carried out.

It should be emphasized that all documentation should be presented in clear and well-constructed English.

#### **PAPER**

This document contains a description of the completed project, tests carried out, results obtained, evaluation of results, conclusions reached and suggestions for further work in a concise technical-scientific format.

#### **POSTER**

This document presents the highlights of the completed project, namely, the goals and results in a visual appealing format.

#### **VIDEO**

The video documents the project and should include a demo.

#### **USER MANUAL**

The prototypes are always handed-in to the client together with a User Manual where the operation and maintenance of the equipment is explained.

Original: Arvid Andersen. IHK, September 2, 2002

Modified: DAVI. IHK, July 2007; MBM, ISEP, February 2011 and January 2012.