Subject Description Form

Subject Code	EIE3106
Subject Title	Integrated Project
Credit Value	3
Level	3
Pre-requisites	EIE2101 Basic Circuit Analysis Or EIE2110 Basic Circuit Analysis and Electronics EIE2264 Computer Programming Or EIE2111 Computer Programming And EIE3373 Microcontroller Systems and Interface
Co-requisite/ Exclusion	Nil
Objectives	This subject is to be taken upon successful progression to mid-stage of the programme. Covering different topics, this subject plays the role of applying knowledge acquired in preceding core subjects in an integrated manner. While the emphasis will mainly be placed on the technical challenges that may encompass circuit design or system integration, software development and troubleshooting, students will also need to address typical non-technical issues involved in conducting a project of product-development.
Intended Subject Learning Outcomes	**Upon completion of the subject, students will be able to:** Category A: Professional/academic knowledge and skills 1. Integrate and apply knowledge acquired in previous subjects. 2. Design under cost constraints and with component limitations/tolerances in mind. 3. Locate and resolve practical problems on project development. Category B: Attributes for all-roundedness 4. Search, self-learn and try untaught solutions. 5. Exercise discipline and time-planning to meet deadlines. 6. Present ideas and findings effectively. 7. Work with others in a team collaboratively.
Subject Synopsis/ Indicative Syllabus	**Submissions/ deliverables:** The project(s) is of engineering/software development, with objectively defined milestones (or **Subtasks**). The scope to be covered shall either include mechanical work, embedded software development and circuit design, or multimedia and network system design. The project(s) shall not be close-ended in nature and shall provide ample headroom for the more enthusiastic students to excel. Students shall work in small groups of two or three. Each **Subtask** will be given a certain period of time to complete. Each student will have a chance to play the role of Team Leader to lead the group in accomplishing a subtask assigned. Progress will be measured by functional **Demonstrations**, and written **Progress Reports**. Upon the completion of the project, each group should give a demonstration/presentation of the completed product or system and submit a **Final Report**. Students are required to individually keep a **Logbook** on the work performed during the entire period. The logbooks are to be evaluated and signed by the supervisor /assessor on a periodic basis.

Lectures:

Most of the lectures are to be conducted at the beginning of the semester. During these lectures, the instructor shall give clear explanation on the functional and technical requirements, with a schedule for submitting deliverables. Concepts specific to the project(s), which are not yet learnt by the students, are to be covered in these lectures. Concepts behind critical use of tools and equipment will also be strengthened. Copies of supplementary/reference material shall be distributed, or, links to on-line material shall be provided for self-paced learning.

Guided Laboratory Experiments:

The project will normally require the students to learn to use specific tools and/or equipment. Laboratory demonstrations and exercises will be arranged in the early weeks. Below are some examples:

1. Troubleshooting and measurement techniques using typical equipment.
2. Use of project-specific development tools, software and hardware.
3. Use of specialized equipment for project-specific measurements.

Self-Paced Work:

The class could well be composed of a good mix of students with different timetables. Multiple sessions of laboratory, inevitably some evening slots, will be scheduled to cater for self-paced work in the laboratory, particularly during the second half of the semester.

Teaching/Learning Methodology

Teaching and Learning Method	Intended Subject Learning Outcome	Remarks
Lectures	1, 2, 3	Principles and key concepts of the project are explained to students. Uses of tools are demonstrated. The goals are specified. The various problems to be encountered are explained.
Supervised Laboratory sessions	1, 2, 3	Students need to learn to use the provided hardware or software modules and expand them to accommodate new functionalities.
Extended self-paced laboratory work	1, 2, 3, 4, 5, 6, 7	Students will work in teams of two or three to construct a product or system. They need to learn to use the provided modules and expand them to accommodate new functionalities.

Assessment Methods in Alignment with Intended Subject Learning Outcomes

Specific Assessment Methods/Tasks	% Weighting	Intended Subject Learning Outcomes to be Assessed (Please tick as appropriate)						
		1	2	3	4	5	6	7
Continuous Assessment								
1. Exercises	2%	✓		✓				
2. Tests	20%	✓		✓				
3. Project demonstrations	60%	✓	✓	✓	✓	✓		✓
4. Project logbook	8%	✓	✓	✓	✓	✓	✓	✓
5. Project report and presentation	10%	✓	✓	✓	✓	✓	✓	✓
Total	100%							

Student Study Effort Expected	**Class contact (time-tabled):**	
	• Lecture	15 Hours
	• Tutorial/Laboratory/Practical Classes	20 Hours
	• Tests/Quizzes	3 Hours
	• Demonstration	2 Hours
	Other student study effort:	
	• Lecture: preview/review of notes; homework/assignment; preparation for test/quizzes/examination	10 Hours
	• Tutorial/Laboratory/Practice Classes: preview of materials, revision and logbook/report writing	25 Hours
	• Project Development	25 Hours
	Total student study effort:	**100 Hours**
Reading List and References	**Reference Books:** *To be specified by the subject lecturer for each project.*	
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Prepared by	Dr Lawrence Cheung	