Subject Description

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>Mathematics Ia (Compulsory)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject Code</td>
<td>AMA203</td>
</tr>
<tr>
<td>Level of Study</td>
<td>2</td>
</tr>
<tr>
<td>Hours Assigned</td>
<td>Lecture 28 hours, Tutorial 14 hours</td>
</tr>
<tr>
<td>Pre-requisites</td>
<td>Nil</td>
</tr>
<tr>
<td>Credits</td>
<td>3</td>
</tr>
</tbody>
</table>

Objectives:

To introduce the Higher Diploma students to the fundamentals of engineering mathematics. The emphasis will be on the application of mathematical methods to solving engineering problems.

Keyword Syllabus:

- Linear algebra: Matrices and determinants, vector spaces, elementary algebra of matrices, eigenvalues and eigenvectors, normalization and orthogonality.
- Calculus and functions of several variables: Infinite series, power series, Fourier series, partial differentiation, maxima and minima, Lagrange multiplier, Taylor’s theorem.

Textbooks:


Method of Assessment:

<table>
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<tr>
<th></th>
<th>Continuous Assessment</th>
<th>Examination</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30%</td>
<td>70%</td>
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To pass this subject, students are required to obtain Grade D or above in both the Continuous Assessment and the Examination components.
Subject Description

Subject Title : Mathematics IIa (Compulsory)
Subject Code : AMA204
Level of Study : 2
Hours Assigned : Lecture 28 hours
                 Tutorial 14 hours
Pre-requisites : Mathematics Ia (AMA203)
Credits : 3

Objectives :
To introduce the Higher Diploma students to the fundamentals of engineering mathematics. The emphasis will be on the application of mathematical methods to solving engineering problems.

Keyword Syllabus :
Complex variables: Elementary functions, continuity, complex derivatives and Cauchy-Riemann relations, analytic functions, contour integrations, Cauchy’s integral theorem and formula, singularities and residues.


Statistics: Probability and random variables, probability distributions, sampling distributions of means, estimation and hypothesis testing, linear regression.

Textbooks :

Method of Assessment :
Continuous Assessment 30%
Examination 70%
Total 100%

To pass this subject, students are required to obtain Grade D or above in both the Continuous Assessment and the Examination components.
Subject Description

Subject Title: College Chinese (Compulsory)
Subject Code: CLC201
Level of Study: 2
Hours Assigned: Seminar 42 hours
Pre-requisite: Nil
Credits: 3

Objectives:

After completing the course, students are expected to:

(i) master the basic writing skills to produce fluent and precise writings for vocational purposes;
(ii) be able to apply the relevant language and presentation skills for narrative, descriptive and argumentative writings;
(iii) be able to write various kinds of practical writing in relation to business planning, promotion, administration and management;
(iv) possess the ability to read and analyse essays of different styles; and
(v) be able to learn independently.

Aims:

This course aims at fostering students’ competence in written expression including general and practical writings through practice, commentary and discussion.

Reading Lists:

1. 胡裕樹主編《大學寫作》，復旦大學出版社，1985。
2. 史文周主編《現代漢語》，陝西師範大學出版社，1991。
3. 劉新宇，譚季正主編《現代漢語》，廣州中山大學出版社，1986。
4. 戈弋，劉文義主編《漢語現代寫作》，北京語言學院，1987。
5. 張會思、曾祥芷主編《文章學教程》，上海教育出版社，1995。
6. 張繼繼《寫作技巧八講》，中國青年出版社，1986。
7. 陳耀南《書面中文的本質與應用》，香港大學出版社，1991。
8. 陳樂旌、張振華《現代漢語寫作指導》，上海教育出版社，1993。
9. 孫元魁、孟慶忠編著《論語研究與實用》，山東教育出版社，1992。
10. 上海文藝出版社編《中國現代散文》，上下冊，1980。
11. 子成鶴等《現代應用文》，復旦大學出版社，1996。
12. 李欣主編《公務文書寫作概述》，高等敎育出版社，1996。
13. 刊播大學《中國實用文體大全》，上海文化出版社，1984。
14. 陳少棠《銀行應用文》，香港三聯書店，1997。
15. 張春義《應用文》，文史哲出版社，1994。
16. 福式《現代應用文手冊》，中流出版社，1995。
17. 現代應用文編寫組《現代應用文》，星洲日報、天地圖書有限公司、萬里機構出版有限公司聯合出版，1989。
18. 法定語文事務署《政府公文寫作手冊》，1996。
19. 周錫骏《中文應用寫作教程》，香港三聯書店，1996。
20. 姚思軍《新聞寫作：藝術與技巧》，北京中國廣播電視出版社，1994。
21. 香港貿易發展局中文事務組編《中國貿易應用文》，香港三聯書店，1994。
22. 香港管理專業協會編《最新國內商業信札》第二版，香港勤 + 緣出版社，1994。
23. 許高德譯、黎瑞文校《新聞寫作教程》，北京新華出版社，1986。

Method of Assessment:

<table>
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<tr>
<th>Coursework</th>
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</tbody>
</table>

Attendance:

If attendance of the subject falls below 70%, only 80% of the total mark would be counted towards the final grade.
# Subject Description

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>Electronic Circuits I (Compulsory)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject Code</td>
<td>EIE251</td>
</tr>
<tr>
<td>Level of Study</td>
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</tr>
<tr>
<td>Hours Assigned</td>
<td>Lecture/Tutorial 33 hours</td>
</tr>
<tr>
<td></td>
<td>Laboratory 9 hours</td>
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<tr>
<td>Pre-requisites</td>
<td>Nil</td>
</tr>
<tr>
<td>Credits</td>
<td>3</td>
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</tbody>
</table>

**Objectives:**

(i) to provide students with knowledge of the basic properties of electronic circuit elements and methods of circuit analysis.

(ii) to familiarize students with the fundamentals of bipolar and field-effect transistors characteristics and circuits.

(iii) to introduce the concepts of amplifier, feedback, and oscillator.

**Keyword Syllabus:**

- Passive and energy storage components, AC circuits, network theorems, circuit analysis techniques; fundamentals of semiconductor diodes, bipolar and field effect transistors; load-line analysis, d.c. bias and small-signal analysis of amplifiers; characteristics and applications of ideal operational amplifiers; concepts of feedback and oscillation.

**Textbooks:**


**References:**


**Method of Assessment:**

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<th>Component</th>
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</thead>
<tbody>
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<tr>
<td>Examination</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
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</tbody>
</table>

**Note:** To pass this subject, students must obtain grade D or above in BOTH the coursework and the examination.
Subject Description

Subject Title : Electronic Circuits II (Elective)
Subject Code : EIE252
Level of Study : 2
Hours Assigned : Lecture 33 hours
Laboratory 9 hours
Pre-requisites : Electronic Circuits I (EIE251)
Credits : 3

Objectives :
To familiarize students with the fundamentals and design of basic electronic circuits/sub-systems, including power amplifiers, high frequency amplifiers, wideband amplifiers, oscillators, and d.c. power supplies. The design will be illustrated with the application of practical ICs where appropriate.

Keyword Syllabus :
Hybrid-π equivalent circuit, frequency response of small-signal amplifiers, wide band amplifiers; classification and design of power amplifiers; types and characteristics of negative feedback circuits; feedback oscillator circuits, multivibrators, signal generators; d.c. power supplies; series, shunt and switching regulators; power control devices and applications.

Textbook :

References :

Method of Assessment :

<table>
<thead>
<tr>
<th>Coursework</th>
<th>Examination</th>
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<tbody>
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</table>

Note : To pass this subject, students must obtain grade D or above in BOTH the coursework and the examination.
Subject Description

Subject Title : Electronic Design Practice (Elective)
Subject Code : EIE259
Level of Study : 2
Hours Assigned : Laboratory 42 hours
Pre-requisites : Nil
Co-requisites : Electronic Circuits II (EIE252)
Credits : 3

Objectives :

(i) to familiarize the student with the printed circuit board layout technique of analogue circuits and the fabrication of printed circuit boards;
(ii) to familiarize the student with the use of equipment and the practical aspects of electronic circuit applications;
(iii) to provide the student with design and fault-finding experience through mini-projects.

Keyword Syllabus :

Construction practices; printed circuit board layout technique of analogue circuits; fabrication methods of printed circuit boards; use of test equipment.

Mini-projects: vertical oscillator of video monitor; audio power amplifier; programmable power supply; sound effect generator; sine wave generator.

Textbooks/References :


Method of Assessment : Coursework 100%
Subject Description

Subject Title: Logic Design (Compulsory)

Subject Code: EIE261

Level of Study: 2

Hours Assigned: Lecture/Tutorial 33 hours
Laboratory 9 hours

Pre-requisites: Nil

Credits: 3

Objectives:

To provide first year students with a broad view in both hardware and software aspects of computer engineering, and enable them to gain understanding and skills that will be used in later computer-related courses. Emphasis will be placed on the following topics:

(i) analysis and synthesis techniques for logic systems,
(ii) use and applications of programmable logic devices,
(iii) synchronous sequential logic design for simple state machines,
(iv) organization of a small computer system,
(v) assembly language programming.

Keyword Syllabus:

Digital representation of analogue quantities; binary number systems; Boolean variables and logic gates; TTL and MOS logic families; Boolean functions; canonical forms; K-map; combinational logic design; flip-flops; trigger methods; asynchronous clear and preset; synchronous sequential logic; state machines; state tables and excitation tables; registers, counters and RAM; memory addressing and access time; programmable logic devices (PLD); internal organization of a typical microprocessor; memory space; programming model; addressing modes; machine code and assembly code; instruction fetch and execution; assembler directives; debugger; assembly language programming techniques.

Textbooks:


References:


Method of Assessment:

Coursework 40%
Examination 60%
Total 100%

Note: To pass this subject, students must obtain grade D or above in BOTH the coursework and the examination.
Subject Title: Computer Programming and Basic Software Engineering (Compulsory)

Subject Code: EIE262

Level of Study: 2

Hours Assigned: Lecture/Tutorial/Laboratory 42 hours

Pre-requisites: Nil

Credits: 3

Objectives:

To introduce to the student

(i) the syntax and semantics of the C++ language;
(ii) techniques for writing structured and documented computer programs.

Philosophy:

The language C++ has been selected as the basis for this course as its well-defined structure is considered well suited for teaching programming techniques to engineering students. Individual features of the language will be introduced with extensive examples. Equal emphasis will be placed on program design approaches and techniques. The students will be expected to spend approximately 50% of the assigned time on programming assignments in the tutorial/terminal room.

Keyword Syllabus:

Introduction to computers and computing; the resolution of problems by digital computer; introduction to terminal operation; the language C++; elementary C++ programming; flowchart; pseudocode; flow of control; executing, debugging and testing programs; structured data types; functions and procedures; modular programming and top-down design; recursion; files; pointers; software engineering approach to the construction of large scale programs; object-oriented programming concepts.

Textbook:


Reference:


Method of Assessment: Coursework 100%
**Subject Description**

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>Electronic Instrumentation and Measurement (Elective)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject Code</td>
<td>EIE263</td>
</tr>
<tr>
<td>Level of Study</td>
<td>2</td>
</tr>
<tr>
<td>Hours Assigned</td>
<td>Lecture/Tutorial 33 hours Laboratory 9 hours</td>
</tr>
<tr>
<td>Pre-requisites</td>
<td>Nil</td>
</tr>
<tr>
<td>Credits</td>
<td>3</td>
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</tbody>
</table>

**Objectives**

To understand the principles, applications, and limitations of basic electronic instruments for measuring electrical quantities. To understand the principle of operation and application of transducers commonly used in industry.

**Keyword Syllabus**

Basic laboratory instruments - principle of CRT and DSO; universal counter timer; time-base and trigger modules; bandwidth and rise-time; probe compensation; error analysis; A/D converter; average, peak and True RMS sensing meters; four terminal resistance measurement; DMM specifications. Choice of signal source for measurement excitation; instrumental error and experimental error; error reduction techniques; types of transducers and characteristics; signal conditioning, impedance matching, signal isolation, filtering, linearization, gain control, differential mode input; programmable instruments, the IEEE488 bus standard, interface and simple programming.

**Textbook**


**Method of Assessment**

<table>
<thead>
<tr>
<th>Coursework</th>
<th>Examination</th>
<th>Total</th>
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</table>

**Note**

To pass this subject, students must obtain grade D or above in BOTH the coursework and the examination.
Subject Description

Subject Title : Information Systems (Elective)
Subject Code : EIE281
Level of Study : 2
Hours Assigned : Lecture 28 hours
                Tutorial/Practical 8/12 hours
Pre-requisite : Nil
Credits : 3

Objectives :
To introduce students to the fundamentals of information systems, information systems technology, including computers, telecommunications, and database management, and their applications in managerial decision support.

Keyword Syllabus :
Information systems, IS roles, resources, and activities. Hardware and software for computer systems. Telecommunication network and telecommunications alternatives. The Internet and World Wide Web. Data resource management, database approach and software, database structures and database development.

Textbooks :

References :

Method of Assessment :

<table>
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<tr>
<th>Coursework</th>
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<tr>
<td>Examination</td>
<td>60%</td>
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<td>Total</td>
<td>100%</td>
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</table>

Note : To pass this subject, students must obtain grade D or above in BOTH the coursework and the examination.
Subject Description

Subject Title : GUI Design and Programming (Elective)
Subject Code : EIE364
Level of Study : 3
Hours Assigned : Lecture/Tutorial/Laboratory 42 hours
Pre-requisites : Computer Programming and Basic Software Engineering (EIE262)
Credits : 3

Objectives :

The objective of this module is to explain the methodologies of GUI design and the practical aspects of the state-of-the-art GUI development tools. Students will also learn the practical skills in window programming. After taking this course, students are expected to know and understand the issues for a good GUI design.

Keyword Syllabus :

Objectives of user interface design, usability, user centered design; evolution of GUI design processes; Norman’s theory of human-computer interaction, user mental model, implication of human cognition; GUI design processes, task analysis, user object modeling, style guide definition, usability evaluation; GUI environment and window programming techniques, desktop, windows, menus, dialog boxes, interaction and feedback; windowing systems and GUI development tools.

Textbooks :


Reference :


Method of Assessment :

Coursework 60%
Examination 40%
Total 100%

Note : To pass this subject, students must obtain grade D or above in BOTH the coursework and the examination.
Subject Description

Subject Title: English for Academic Purposes (Compulsory)
Subject Code: ELC205
Level of Study: 2
Hours Assigned: Seminars 42 hours
Pre-requisites: Nil
Credits: 3

Objectives:

In general, to help students study effectively in the University’s English medium learning environment.

More specifically, to help students to improve and develop their English language proficiency within a framework of academic contexts.

In working towards the achievement of the two interrelated objectives, attention will be given to helping students develop the core competencies identified by the University as vital to the development of effective life-long learning strategies and skills.

Subject Description:

The subject is designed to enable students to use English effectively in the academic contexts they will encounter in their studies. The main emphasis is on improving students’ confidence and competence in using English in these contexts. As far as possible, the subject will address the specific language needs of students’ ability levels and subject specialisms.

The study method is primarily based on seminars and these will include interactive learning techniques such as discussions and role-plays. Use will also be made of video and tape recordings, relevant Web-based materials/activities and our Centre for Independent Language Learning. Students in need of additional help will be required to attend a supplementary English programme organised by the English Language Centre.

Teaching and Learning Materials:

Material specially prepared by English Language Centre staff will be used throughout the course. In addition, teachers will recommend additional reference materials as required.

Keyword Syllabus:

This syllabus is indicative. The balance of the components, and the weighting accorded to each will be based on the specific needs of the students.

To work towards the accomplishment of its objectives, the syllabus is specified under a single heading consisting of four interrelated strands.

English language development in academic contexts

1. **Spoken academic communication**: recognising the purposes of and differences between spoken and written communication in English in academic contexts; identifying and practising interactional and linguistic aspects of participation in seminar discussions; discussing issues requiring the development and application of creative and critical thinking; preparing and delivering oral presentations.
2. **Written academic communication**: identifying and writing functions common in written academic discourse; note-taking from reading and listening inputs; understanding and applying principles of academic text structure; developing paraphrasing, summarising and referencing skills; improving editing and proofreading skills; achieving appropriate tone and style in academic writing.

3. **Reading and listening in academic contexts**: understanding the content and structure of information delivered both orally and in print form; reading and listening for different purposes e.g. as input to tasks, and for developing specific reading or listening skills; using a dictionary to obtain lexical, phonological and orthographical information.

4. **Language development**: improving and extending relevant features of students’ grammar, vocabulary and pronunciation.

**References**:

1. **Spoken Academic Communication**

2. **Written Academic Communication**

3. **Reading and Listening in Academic Contexts**

4. **Language Development**

**Method of Assessment**: Coursework 100%
Subject Description

Subject Title : Semiconductor Devices (Elective)
Subject Code : EIE302
Level of Study : 3
Hours Assigned : Lecture/Tutorial 33 hours
                Laboratory 9 hours
Pre-requisites : Electronic Circuits I (EIE251)
Credits : 3

Objectives :

To familiarize the student with the fundamentals of semiconductor materials, and the main concepts underlying the operation and design of common semiconductor devices used in electrical circuits.

Keyword Syllabus:


Textbook :


References :


Method of Assessment :

| Coursework | 40% |
| Exam | 60% |
| Total | 100% |

Note : To pass this subject, students must obtain grade D or above in BOTH the coursework and the examination.
Subject Description

Subject Title: Higher Diploma Project (Compulsory)
Subject Code: EIE350
Level of Study: 3
Equivalent Hours of Study: Project Work 210 hours (inclusive of contact hours, private study, etc.)
Pre-requisites: Nil
Credits: 6

Objectives:
The final project is intended as a focal point, where students are expected to integrate knowledge from various subject areas to accomplish a task with a given specification. The task may be the design of a product, the characterization of a process, or the investigation of an engineering problem. Other factors encountered in real engineering, e.g., costing, scheduling should be taken into consideration when carrying out the project if appropriate. The student will work in group projects with two students in each group, but each student will be assigned different tasks to be accomplished. Group projects have the advantage of allowing a student to learn to interact with other people to simulate a real working environment.

Method of Assessment:
Each student should be made responsible for a significantly non-overlapping subtask specified by the supervisor. However, each student is expected to understand their partner's work in sufficient depth to answer reasonable technical questions. Two hard copies and one soft copy of the final report, and the daily logbook are to be submitted at the end of the second semester. In both the report and in the presentation, students are required to state their individual contributions to the project work and the report. As far as practically possible, the supervisor will assess each student individually and award grades that commensurate with the student's individual contributions.

The assessment of the project will be performed by the supervisor with considerations to following:

Nominal weighting
1. The quality of work and the individual daily logbook (60%)
2. The quality of the report (30%)
3. The quality of the presentation (10%)

A maximum of 10% of the total mark will be given to the language component of the final report.

Operation:
Typically, two students will work as a team on a project. Project Plans, Daily Logbooks and Mid-session Progress Reports are means to demonstrate/monitor progress. Each student is required to give a short presentation of his/her work to peers in the Oral Presentation.

Schedule:
Participate in the Project Selection/Assignment Exercise at the end of the first year.
Update the Daily Logbook regularly.
Submit a Project Plan to the supervisor within the first month of their final year of study.
Attend the Report-writing Workshop assigned in the first semester.
Submit a Progress Report before the second semester.
Attend the Report-writing Mentoring Session assigned in the second semester.
Submit the Final Report and Daily Logbook before the end of week 13.
Give an **Oral Presentation** right after the final semester’s examination period.
Subject Description

Subject Title : Analogue and Digital Integrated Circuits (Elective)
Subject Code : EIE351
Level of Study : 3
Hours Assigned : Lecture/Tutorial 33 hours
                 Laboratory 9 hours
Pre-requisites : Electronic Circuits I (EIE251)
                Electronic Circuits II (EIE252)
                Logic Design (EIE261)
Credits : 3

Objectives:
To familiarize students with
(i) fundamental design principles and applications of analogue and digital ICs;
(ii) the analysis and design techniques of circuits commonly used in operational amplifiers and
digital ICs;
(iii) the use and awareness of the role and value of CAD in the design process.

Keyword Syllabus:
Differential pairs, current mirrors, MOS switches; 741 Op Amp circuit, design and analysis of
analog subsystems; applications of practical operational amplifiers; Nyquist criterion,
compensation networks, gain and phase margins.

Structure, operation and design of TTL, MOS, BiCMOS, and ECL logic gates; design and
application of storage elements and memories; causes of malfunctioning and hazards; faults
and tests, test generation, design for testability.

Textbooks:

References:
2. Geiger, Allen, and Strader, VLSI Design Techniques for Analog and Digital Circuits, McGraw-Hill,
   1990.

Method of Assessment:
Coursework 40%
Examination 60%
Total 100%

Note: To pass this subject, students must obtain grade D or above in BOTH the coursework and the
examination.
Subject Description

Subject Title: Computer System Fundamentals (Compulsory)
Subject Code: EIE361
Level of Study: 3
Hours Assigned: Lecture/Tutorial 33 hours, Laboratory 9 hours
Pre-requisites: Logic Design (EIE261)
Credits: 3

Objectives:
This module provides an introduction to the fundamental knowledge of
(i) the organisation and structure of a small computer system,
(ii) the important features of an operating system and basic system utilities,
(iii) the component parts of a digital computer and their inter-relationships, and
(iv) the microprocessor as a digital computing and/or controlling device.

Keyword Syllabus:
- Computer system configuration; supporting elements; computer arithmetic;
- microprogramming technique; memory organization; serial and parallel interfacing techniques;
- interrupt and DMA;
- Single-user disk operating system: functions and structures; start-up sequence; files and directory; command interpreter; device driver; software interrupts and OS calls; system utilities; file manipulation.

Textbook:

References:

Method of Assessment:
Coursework 40%
Examination 60%
Total 100%

Note: To pass this subject, students must obtain grade D or above in BOTH the coursework and the examination.
Subject Description

Subject Title : Linear Systems (Compulsory)
Subject Code : EIE362
Level of Study : 3
Hours Assigned : Lecture/Tutorial 33 hours
                 Laboratory 9 hours
Pre-requisites : Mathematics Ia (AMA203)
Credits : 3

Objectives :
(i) to provide students with basic concepts and techniques for the modelling and analysis of linear continuous-time and discrete-time signals and systems;
(ii) to provide students with an analytical foundation for further studies in Communication Engineering, Control Engineering, and Digital Signal Processing.

Keyword Syllabus :

Textbook :

References :

Method of Assessment :
Coursework 40%
Examination 60%
Total 100%

Note : To pass this subject, students must obtain grade D or above in BOTH the coursework and the examination.
Subject Description

Subject Title: Data Structures and Databases (Elective)
Subject Code: EIE366
Level of Study: 3
Hours Assigned: Lecture/Tutorial 33 hours
Practical Work 9 hours
Pre-requisite: Computer Programming and Basic Software Engineering (EIE262)
Credits: 3

Objectives:

To learn the fundamentals of data structures, access algorithms and databases;

To acquire the skills for data modelling, relational database implementation and database management;

After the completion of this subject, students should understand the methods for organizing, reorganizing, moving, exploring, and retrieving data in digital computer systems.

Keyword Syllabus:

Lists; trees; sorting; algorithm analysis and design; file structures; data models; entity-relationship; architecture of database information systems; relational database design; functional dependency and normalization; data definition and manipulation; structured query language; database administration; concurrency control; database security and recovery; case studies on database management systems.

Textbooks:


References:


Method of Assessment:

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</table>

Note: To pass this subject, students must obtain grade D or above in BOTH the coursework and the examination.
Subject Description

Subject Title: Interface and Embedded Systems (Elective)
Subject Code: EIE372
Level of Study: 3
Hours Assigned: Lecture/Tutorial 33 hours
Laboratory/Demonstrations 9 hours
Pre-requisites: Logic Design (EIE261)
Computer System Fundamentals (EIE361)
Credits: 3

Objectives:
To provide students with the concepts and techniques in designing embedded software and hardware interfaces.

Keyword Syllabus:
Microcontroller architecture, interrupt timer, pulse measurement and generation, sensing and generation of analogue signals. Industrial I/O interfaces/buses: transaction protocols, timing specifications and arbitration. Memory devices interfacing and application-specific memory. CPU bus interfacing techniques: timing analysis; buffer control. Embedded software architectures for real-time applications. Real-time OS concepts; task scheduling, CPU utilization, task latency analysis. Development and debugging tools.

Textbooks:

References:

Method of Assessment:

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Note: To pass this subject, students must obtain grade D or above in BOTH the coursework and the examination.
Subject Description

**Subject Title**: Communication Fundamentals (Compulsory)

**Subject Code**: EIE381

**Level of Study**: 3

**Hours Assigned**: Lecture/Tutorial 28/5 hours
Laboratory 18 hours

**Pre-requisites**: Mathematics I (AMA203)
Mathematics II (AMA204)

**Credits**: 3

**Objectives**: The subject aims to introduce

(i) the fundamental techniques for the analysis of signals and systems;
(ii) measure of information and channel capacity,
(iii) theories and performance of analog communications systems;
(iv) pulse modulation techniques.

At the completion of the subject, the student is equipped with the basic principles of communication engineering. The fundamentals introduced in this subject are necessary for study of higher level subjects in the field of communication engineering.

**Keyword Syllabus**: Classification of signals and systems; Fourier series; singularity functions; impulse response; Fourier transform; Parseval’s theorem; convolution; energy and power spectral density; auto-correlation and cross-correlation; entropy; channel capacity; Double-sideband suppressed carrier; double-sideband large carrier (AM); single-sideband modulation; vestigial-sideband modulation; FDM; Narrowband FM; wideband FM; phase modulation; generation and demodulation of AM and FM signals; Noise in communication; S/N ratios for AM and FM reception; PAM; quantization and coding; PCM; delta modulation; TDM.


**Method of Assessment**: Coursework 40%
Examination 60%
Total 100%

**Note**: To pass this subject, students must obtain grade D or above in BOTH the coursework and the examination.
Subject Description

**Subject Title** : Electromagnetics (Elective)

**Subject Code** : EIE382

**Level of Study** : 3

**Hours Assigned** :
- Lecture/Tutorial : 33 hours
- Laboratory : 9 hours

**Pre-requisites** :
- Mathematics I (AMA203)
- Mathematics II (AMA204)

**Credits** : 3

**Objectives** :

The subject aims to introduce students with the following topics:

(i) static electric and magnetic field;
(ii) Maxwell’s equations and wave propagation;
(iii) fundamentals of antennas;
(iv) basic concept of transmission line.

At the completion of the subject, the student is equipped with the basic electromagnetic theory and its applications which are necessary for the subject development in the next level option.

**Keyword Syllabus** :

Static electric field; Gauss’ law; electric potential; method of images; solutions of Poisson’s and Laplace’s equations; steady electric current; static magnetic field; Biot-Savart law and Ampere’s circuital law; Faraday’s law; Maxwell’s equations; wave equations; time-harmonic fields; propagation of plane wave; Poynting vector; reflection and refraction of plane wave; radiation of Hertzian dipole; antenna patterns; thin linear antennas; receiving antennas; radar cross section; Friis transmission formula and radar equation; uniform and terminated transmission lines; Smith chart and impedance matching.

**Textbook** :


**References** :


**Method of Assessment** :

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**Note** : To pass this subject, students must obtain grade D or above in BOTH the coursework and the examination.
Subject Description

Subject Title: Control Systems (Elective)
Subject Code: EIE384
Level of Study: 3
Hours Assigned: Lecture/Tutorial 33 hours, Laboratory 9 hours
Pre-requisites: Linear Systems (EIE362)
Credits: 3

Objectives:
This subject is to introduce concepts and techniques for the analysis and design of analog and digital control systems. Emphasis is given to useful theoretical background for applications as well as the use of modern computer aided analysis and design software tools.

Keyword Syllabus:
Example control systems; system performance specification. Basic design methodologies: unstable systems; Routh criterion; Nyquist and Bode plots; basic root-locus techniques; time-domain and frequency-domain design approaches. Consideration of nonlinear effects. Phase plane analysis. Example sampled-data systems; sampling and discretization techniques. Analog and digital compensators: lead and lag compensators; analog and digital PID controllers. Computer-aided design tools; application examples.

Textbooks:

References:

Method of Assessment:

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Note: To pass this subject, students must obtain grade D or above in BOTH the coursework and the examination.
Subject Description

Subject Title: Data Communications (Elective)
Subject Code: EIE399
Level of Study: 3
Hours Assigned: Lecture/Tutorial 33 hours, Laboratory 9 hours
Pre-requisites: Communication Fundamentals (EIE381)
Credits: 3

Objectives:
To provide students with the basic knowledge about data communications and computer networking. The discussions will be based on the TCP/IP model. The characteristics of the lower three layers, namely the physical, network access and internet layers are discussed in details.

Keyword Syllabus:

Textbook:

References:

Method of Assessment:
Coursework 40%
Examination 60%
Total 100%

Note: To pass this subject, students must obtain grade D or above in BOTH the coursework and the examination.
Subject Description

Subject Title : Engineering Management A (Compulsory)
Subject Code : ENG305
Level of Study : 3
Hours Assigned : Lecture 28 hours
                 Tutorial 14 hours
Pre-requisites : Nil
Credits : 3

Objectives :
To improve the students' knowledge of the basic principles involved in the organization of engineering activities that provide goods and services. To provide an appreciation of legal aspects in relation to contracting and tendering, patents, and product reliability. To make students aware of the importance of quality management.

Keyword Syllabus :

Method of Assessment :
Coursework 30%
Examination 70%
Total 100%
Subject Description

Subject Title : Industrial Centre Training (Compulsory)
Subject Code : IC203
Level of Study : 2
Hours Assigned : (i) Technology Training 30 hours/week for 8 weeks (ii) Engineering Drawing 30 hours and Computer Graphics (iii) Industrial Safety 15 hours
Pre-requisites : Nil
Training Credits : 9

Objectives :

(i) The integrated training provided by The Hong Kong Polytechnic University Industrial Centre is intended to equip students with practical skills, techniques and technologies which are general and essential in the practice of electronic and information engineering. The integrated training also provides training in computer software. On completion of the training, student should acquire fundamental skills in computer graphics and animations, Web authoring and Internet search, database and spreadsheets, basic scientific computing and general computer and network skills.

(ii) Engineering Drawing and Computer Graphics provides an opportunity for student to learn and use technical graphics as a media to express ideas and describe objects. The emphasis is put on practicing the principle and interpretation of technical drawing and to communicate design idea using simple sketch and computer graphics. In addition to computer based technical graphics, students are expected to be familiar with using electronic design automation (EDA) software to capture and design electronic circuit boards.

(iii) Industrial Safety provides students with an understanding of industrial hazards and their control in practicing engineering in industry.

Keyword Syllabus :

Computer software for scientific computing, data processing, presentation, multimedia contents creation, web site creation, computer networking, client-server computing practise; practical electronics; embedded controller programming, engineering drawing; computer modeling; electronic design automation; industrial safety.

Training Pattern :

(i) Technology Training : 3 - 4 weeks Non-block Release in Year 1 term time. 4 - 5 weeks Block Release in Year 1 Summer.

(ii) Engineering Drawing and Computer Graphics : 30 hours in Year 1 term time.

(iii) Industrial Safety : 5 morning sessions each of 3 hours in Year 1 term time.