Aims:
The lectures aim to provide the students with an integrated knowledge required for the understanding and application of mathematical concepts and techniques. To develop students’ ability for logical thinking and effective communication, tutorial and presentation sessions will be held.

Learning Outcomes:
The subject aims to introduce students to some fundamental knowledge of higher mathematics and graph theory. The emphasis will be on the application of mathematical methods to solving practical engineering problems.

Upon satisfactory completion of the subject, students are expected to be able to:

1. apply mathematical reasoning to analyse essential features of different engineering problems;
2. apply appropriate mathematical techniques to model and solve problems in engineering;
3. search for useful information in solving problems;
4. undertake continuous learning.

Syllabus:

1. Functions
   Linear, logarithmic and exponential functions; Trigonometric and periodic functions; Limits and continuity of functions.

2. Calculus
   Plane curves; Tangents and normals; Rate of change and derivatives; Techniques of differentiation; Maxima and minima; Curve sketching; Definite and indefinite integrals; Fundamental Theorem of Calculus; Techniques of integration; Geometric and physical applications; Partial differentiation; Higher order derivatives.

3. Matrices
   Matrix algebra; Square matrices of orders 2 and 3; Singular and non-singular matrices; Determinants and their simple properties; Linear transformations and their applications in two-dimensional geometry.

4. Sequences and series
   Monotonic sequences and limits to infinite sums; Fourier series.

5. Graph theory
   Basic terminology; Types of graphs; Paths and circuits; Trees and networks; Adjacency matrices.

Method of Assessment:

Continuous Assessment: 40% Examination: 60%

To ensure that students learn and reflect continuously, Continuous Assessment is an important element and students are required to obtain Grade D or above in both the Continuous Assessment and the Examination components. The continuous assessment comprises of assignments, in-class quizzes and tests. The assignments are used to assist the students to reflect and review on their progress. The end-of-semester examination is used to assess the knowledge acquired by the students and their ability to apply and extend such knowledge.
Textbooks and Reference Books:

SUBJECT DESCRIPTION FORM

Subject Title: College Chinese  
Subject Code: CLC201  
Number of Credits: 3  
Hours Assigned: Seminar 42 hours

Pre-requisite: nil  
Co-requisite: nil  
Exclusion: nil

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

Objectives:
After completing the course, students are expected to:

1. master the basic writing skills to produce fluent and precise writings for vocational purposes;
2. be able to apply the relevant language and presentation skills for narrative, descriptive and argumentative writings;
3. be able to write various kinds of practical writing in relation to business planning, promotion, administration and management.
4. possess the ability to read and analyse essays of different styles; and
5. be able to learn independently.

Indicative Content:
Unit 1 Basic writing and organization skills training
Unit 2 Setting up a business: letter of intention and proposal
Unit 3 Marketing and promotion: letter of direct-sale
Unit 4 Business management: report writing
Unit 5 Business administration: official letter
Unit 6 Comprehensive language skills training and self-learning strategies

Method of Assessment:
Coursework: 60%  
Term-end Test: 40%

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

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《寫作概論》，陝西師範大學出版社，1991
3. 劉孟宇，諸孝正主編《寫作大要》，廣州中山大學出版社，1986
4. 戈弋，劉文義主編《漢語及寫作》，北京語言學院，1987
5. 張會恩、曾祥芹主編《文章學教程》，上海教育出版社，1995
6. 張繼緬《寫作技法八講》，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. 陳鍾梁、張振華《說明文寫作指導》，上海教育出版社，1993
9. 孫元曦、孟慶忠編著《議論文研究與鑒賞》，山東教育出版社，1992
10. 上海文藝出版社編引《中國現代散文》，上下冊，1980
11. 于成鯤等《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》，高等教育出版社，1996
13. 刊授大學《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. 張仁非《應用文》，文史哲出版社，1994
16. 馮式《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《中文應用寫作教程》，香港三聯書店，1996
20. 姚里軍《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. 高德譯、黎瑞文校《新聞寫作教程》，北京新華出版社，1986
**SUBJECT DESCRIPTION FORM**

<table>
<thead>
<tr>
<th>Subject Title:</th>
<th>e-Commerce and Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject Code:</td>
<td>COMP238</td>
</tr>
<tr>
<td>Number of Credits:</td>
<td>3</td>
</tr>
<tr>
<td>Hours Assigned:</td>
<td>Lecture 28 hours</td>
</tr>
<tr>
<td></td>
<td>Tutorial 14 hours</td>
</tr>
</tbody>
</table>

**Pre-requisite:** nil  
**Co-requisite:** nil  
**Exclusion:** nil

**Role and Purpose:**
This subject enables students to understand the concepts and applications of electronic commerce.

**Objectives:**
Upon completion of this subject, students will:

1. understand the infrastructure for electronic commerce;
2. learn the major business models and applications;
3. learn the strategy formulation, implementation and assessment;
4. understand the practical aspects of electronic commerce.

**Keyword Syllabus:**
Electronic Commerce Infrastructure; Business Models and Applications; Electronic Marketing; Electronic Advertisement; Electronic Payment; and Special Topics.

**Teaching Approach:**
Theory and concepts will be taught in lectures. Exercise and case study will be given to students in tutorials to enhance their understanding of concepts.

**Method of Assessment:**
- Assignments: 40%
- Quiz: 20%
- Project: 40%

**Indicative Reading List:**
SUBJECT DESCRIPTION FORM

Subject Title: Fundamentals of Programming and Data Structures

Subject Code: COMP239

Number of Credits: 3

Hours Assigned: 
  Lecture 28 hours
  Tutorial/Laboratory 14 hours

Pre-requisite: nil

Co-requisite: nil

Exclusion: nil

Role and Purpose:
This subject enables students to understand and to use a high level programming language and basic data structures. It also helps students to develop good habit in writing structured and properly documented programs.

Objectives:
Upon completion of this subject, students should be able to:

1. write structured programs with a High level language (HLL), e.g., C;
2. understand basic data structures and apply them to problem solving;
3. write simple application programs using an HLL, e.g., C.

Keyword Syllabus:
Basic Computing Concept; Structured Program Development; Program Control; Modular Structure; Pointers; Array Processing; File Processing and Formatted Input/Output; Object-Oriented Programming in C++; Searching and Sorting Algorithms; and Data Structures.

Teaching Approach:
Theory and concepts will be taught in lectures. Exercises will be carried out in tutorials to illustrate the concepts. Students will practice in the laboratory what they have learned in the lectures.

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

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

Indicative Reading List:
Subject Title: Multimedia Workshop  
Subject Code: EIE271  
Number of Credits: 3  
Hours Assigned: Laboratory 42 hours

Pre-requisite: nil  
Co-requisite: nil  
Exclusion: nil

Role and Purpose:
With the extensive application of multimedia technology in modern information systems, many tools have been developed to ease the system designers in handling, creating or editing multimedia information. The objective of this subject is to allow students to understand the concepts behind those tools and to be proficient in their use.

Objectives:
Upon completion of this subject, students will:

1. understand the basic techniques used in multimedia editing, production, streaming and application development;
2. be proficient in the use of Adobe Premiere in multimedia editing;
3. be proficient in the use of Macromedia Director in multimedia production;
4. be proficient in the use of Ulead 3D studio in multimedia production;
5. be proficient in the use of RealSystem in multimedia streaming.

Keyword Syllabus:
Multimedia Fundamentals; Multimedia Editing; 2D & 3D Multimedia Production; Multimedia Streaming Systems.

Teaching Approach:
A hands-on approach will be used in teaching the subject and be supplemented with self study material on fundamentals of multimedia software. Small projects will be set up to provide training in solving real-life problems in the areas of multimedia editing, production, streaming and application development.

Method of Assessment:
Coursework: 100%

Note: The self-study material should cover concepts only to a depth needed to support practice. Apart from home assignments and tests, other forms of assessment, e.g. surveys, development projects, should also be employed as far as possible.

Indicative Reading List:
SUBJECT DESCRIPTION FORM

Subject Title: Internet Programming  
Subject Code: EIE272
Number of Credits: 3  
Hours Assigned: Lecture 28 hours  
Tutorial/Laboratory 14 hours

Pre-requisite: Fundamentals of Programming and Data Structure  
Co-requisite: nil  
Exclusion: nil (COMP239)

Role and Purpose:
This subject covers a broad range of Web technologies that enable students to build Internet-based and Intranet-based applications. It equips students with basic skills needed to apply Internet technologies to solve E-Commerce problems.

Objectives:
Upon completion of this subject, students will:

1. understand the concepts of dynamic HTML;
2. understand the key software technologies behind the World Wide Web;
3. be able to build Web-based applications using the key software technologies.

Keyword Syllabus:
Introduction to HTML; Cascading Style Sheet; Introduction to Java Programming; JavaScript; Dynamic HTML.

Teaching Approach:
In this subject, lectures, demonstrations and intuitive examples will be presented to students concurrently. In particular, new concepts will be presented via complete and working programs. Through modifying, testing, and running these programs, students will be able to appreciate the capability of different Web programming technologies. Students will work in a team project to develop a dynamic Web page. Each team will be required to give an oral presentation and write a technical report.

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

Indicative Reading List:
SUBJECT DESCRIPTION FORM

Subject Title: Computer Architecture and Operating Systems
Subject Code: EIE273

Number of Credits: 3
Hours Assigned: Lecture 28 hours, Tutorial/Laboratory 14 hours

Role and Purpose:
This subject provides students with a broad technical background in both hardware and software aspects of computer systems. It enables them to learn further concepts and skills that will be introduced in later computer-related subjects.

Objectives:
Upon completion of this subject, students will:

1. understand the basic analysis and synthesis techniques for logic systems;
2. appreciate the organization and structure of a small computer system;
3. be able to identify the important features of an operating system and basic system utilities;
4. understand the component parts of a digital computer and their inter-relationships; and
5. appreciate the microprocessor as a digital computing and/or controlling device.

Keyword Syllabus:
Binary system, logic gate, flip-flop, counter, register, microprocessor, programming model, addressing mode, instruction execution, computer system configuration, peripheral interface, functions of Operating Systems, start-up sequence, OS function call, system utility, multi-tasking, file protection, user interface.

Teaching Approach:
Subject content will be presented to students during lectures. Reference books will be recommended for further studies. In tutorial sessions, students will be given exercises to enhance their understanding of subject material. Students will work with practical systems during the laboratory sessions in order to gain real experiences dealing with logic circuits and computer systems.

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

Indicative Reading List:
SUBJECT DESCRIPTION FORM

Subject Title: Multimedia Technology I
Subject Code: EIE276
Number of Credits: 3
Hours Assigned: Lecture 28 hours
               Tutorial 8 hours
               Laboratory 12 hours

Pre-requisite: nil
Co-requisite: nil
Exclusion: nil

Role and Purpose:
This subject enables students to understand the concepts and practices of basic multimedia technology through the study of devices and methodologies for processing multimedia signals and data.

Objectives:
Upon completion of this subject, students will:

1. understand the fundamentals of multimedia signals and devices;
2. learn the methods of acquisition, transmission and storage of multimedia signals and data;
3. learn the principles of multimedia technologies;
4. appreciate the implementation of a multimedia system.

Fundamental topics are covered under “Basics of Multimedia Signals” and “Digital Multimedia” of the syllabus. Topics in storage devices, data transmission and display devices will evolve to reflect the latest development in multimedia technology.

Keyword Syllabus:
Basics of Multimedia Signals; Digital Multimedia; Multimedia Display Devices; Multimedia Storage Devices; High-speed Multimedia Data Transmission.

Teaching Approach:
Students will be taught the techniques and methodologies in multimedia technology. In tutorial sessions, students will be given exercises to enhance their understanding and appreciation of multimedia devices and systems.

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

Indicative Reading List:
SUBJECT DESCRIPTION FORM

Subject Title: Multimedia Technology II
Subject Code: EIE277
Number of Credits: 3
Hours Assigned: Lecture 28 hours
Tutorial 14 hours

Pre-requisite: Multimedia Technology I (EIE276)
Co-requisite: nil
Exclusion: nil

Role and Purpose:
This subject enables students to understand the concepts and practice of multimedia system design and implementation techniques.

Objectives:
Upon completion of this subject, students will:

1. understand the important design and implementation issues for operating systems supporting multimedia systems;
2. learn the application of network technology for the support of multimedia transmission;
3. learn different kinds of multimedia applications.

Keyword Syllabus:
Multimedia Computing/Processing; Operating System Issues; Multimedia Communications; Real-time Delivery Protocol; Video Conferencing; Digital Audio; Digital TV; Interactive Media; and Applications of Multimedia Technology in Information Systems.

Teaching Approach:
Students will be taught different design techniques, which will be subsequently used in various multimedia applications. As the main objective of the lectures is to present the basic system design principles, mathematical derivations will be limited to those that are essential to the understanding of these principles.

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

Indicative Reading List:
SUBJECT DESCRIPTION FORM

Subject Title: Information Technology Workshop
Subject Code: EIE278
Number of Credits: 3
Hours Assigned: Lecture 14 hours, Tutorial/Laboratory 35 hours

Pre-requisite: nil
Co-requisite: nil
Exclusion: nil

Role and Purpose:
Modern information systems involve a combination of computing systems and communication networks. The objective of this subject is to provide foundation knowledge and more importantly sound skills to students related to the aforementioned two areas. Emphasis will be put on learning and understanding through practices in a workshop.

Objectives:
Upon completion of this subject, students will:

1. familiarize the basic concepts on computing and computer networking;
2. be able to demonstrate practical skills in setting up computer systems and designing data networks;
3. be able to integrate and configure applications that provide basic information technology services.

Keyword Syllabus:

Teaching Approach:
A hands-on approach will be used in teaching the subject. All lectures will be held in a laboratory, and students will be given ample time to put the learned materials into practice immediately after explanations have been given by the lecturer. Small projects in the areas of computing and networking will be arranged to provide training in solving real-life problems.

Method of Assessment:
Coursework: 100%

Note: The lectures will only cover concepts to a depth needed to support the practical work. Apart from home assignments and tests, other forms of assessment, e.g. surveys, short quizzes and development projects, should also be employed as far as possible.

Indicative Reading List:
SUBJECT DESCRIPTION FORM

Subject Title: Fundamentals of Data Communications and Networks  
Subject Code: EIE279

Number of Credits: 3  
Hours Assigned: Lecture 33 hours  
Tutorial/Laboratory 9 hours

Pre-requisite: nil  
Co-requisite: nil  
Exclusion: nil

Role and Purpose:
This subject provides the students with the fundamental knowledge about data communication and networking so that they can understand the general principles and concepts of Local Area Network and Internet technology.

Objectives:
Upon completion of this subject, students will:

1. understand the principles of data communication;
2. get acquainted with common networking devices;
3. understand the basic principles of TCP/IP protocols;
4. know how to set up a structured cabling system.

Keyword Syllabus:
OSI model; LAN and WAN standards; structured cabling system; network layer and routing; TCP/IP protocol; network administration/management.

Teaching Approach:
The subject will be taught in conventional lectures that are supplemented by case studies, hands-on exercise, and tutorials.

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

Indicative Reading List:
SUBJECT DESCRIPTION FORM

Subject Title: English for Academic Purposes  
Subject Code: ELC205

Number of Credits: 3  
Hours Assigned: Seminars 42 hours

Pre-requisite: nil  
Co-requisite: nil  
Exclusion: nil

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,
Method of Assessment:
Coursework: 100%

References:

1. **Spoken Academic Communication**

2. **Written Academic Communication**

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

4. **Language Development**
# SUBJECT DESCRIPTION FORM

<table>
<thead>
<tr>
<th>Subject Title:</th>
<th>China Studies</th>
<th>Subject Code:</th>
<th>GEC2801</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Credits:</td>
<td>2</td>
<td>Hours Assigned:</td>
<td>Lecture 28 hours</td>
</tr>
</tbody>
</table>

| Pre-requisite: | nil                   | Co-requisite: | nil |
| Exclusion:     | nil                   |               | nil |

## Role and Purpose:
The objective of this subject is to arouse students' interest in pursuing an understanding of China and to help students acquire a broad-based knowledge about China.

## Learning Outcomes:
Upon completion of the subject, students shall be able to develop interest in:
1. the understanding of China, including its culture, legal system, social and political institutions, economy and business, science and technology, etc.;
2. the relationship and linkage of the past and the present Chinese Mainland; and
3. the latest development and trends of the Mainland that shape the future of China.

## Teaching/Learning Approach:
The teaching purpose is to provide students with some overall threads about the aspects of development or institutions of the Mainland. The aim is to present a framework for analysis and understanding as well as some learning guidelines on the topic for the students to go on learning after the lectures. The starting point for the lectures is the present, from which students will be introduced to the historical evolution that has shaped the present and upon which students may be helped to learn about the various factors that would affect the future and how the future might unfold under the interplay of these factors.

Learning should mean thinking, not force feeding of facts and information. Students will not be required to do prerequisite reading, but after the lectures they are encouraged to pursue the topic further by the help of the reference lists and more importantly by the use of relevant web-sites of databanks on the topics. During the lectures, time will be reserved, as an integral part of the lectures, for interaction between students and lectures through Q & A.

## Indicative Content:
The subject will have 10 theme lectures, each for 4 hours, as follows:

| Theme 1: | Recent Development of Chinese Economy 中國經濟最新發展 |
| Theme 2: | Business Environment in China 中國商貿環境 |
| Theme 3: | Economic Geography of China 中國經濟地理 |
| Theme 4: | Legal System and Laws of the PRC 中國法律體制 |
| Theme 5: | Political System and Institutions of the PRC 中國政治制度及組織架構 |
| Theme 6: | Science and Technology in China 中國科技發展 |
| Theme 7: | Contemporary Chinese Society 當代中國社會 |
| Theme 8: | Topics in Chinese Traditional Culture 中國傳統文化 — including but not limited to: |
|          |    a. Architecture and Design 建築及設計 |
|          |    b. Food and Cuisines 飲食文化 |
| Theme 9: | Evolution of Chinese Characters 漢字演變 |
| Theme 10: | Chinese Philosophy: Confucianism, Buddhism, and Taoism 中國哲學：儒釋道 |

(Note 1: For Theme 8, students need to choose either 8a or 8b for submission of the reflective writing/ worksheet. Only one of them will be counted towards the minimum 5 submissions.)
**Method of Assessment:**

To complete the subject, students are required to:
1. achieve at least 70% attendance, that means to complete at least 5 out of the 7 theme lectures selected;
2. submit and pass a brief reflective writing or pass a quiz, for each of these 5 themes lectures (see Note 1 below); and
3. submit an essay (about 2,500 characters for essay written in Chinese) on one selected theme at the end of the semester and get a pass.

**Grading:** Pass/Fail

**Learning Support:**

1. General Education Centre's Project Room (located at A529)
2. Online resources database accessible via PolyU campus network
SUBJECT DESCRIPTION FORM

Subject Title: Fundamentals of Database Systems
Subject Code: COMP335
Number of Credits: 3
Hours Assigned: Lecture 28 hours, Tutorial/Laboratory 14 hours

Pre-requisite: Fundamentals of Programming and Data Structures (COMP239)
Co-requisite: nil
Exclusion: nil

Objectives:
Upon completion of this subject, students will be able to:

1. adopt the database approach to systems development;
2. describe the generalised architecture of a database system;
3. distinguish the differences among hierarchical, network and relational data models;
4. map an ER diagram to the hierarchical, network and relational data models and subsequently implement a simple database in a DBMS;
5. identify the functions of database administration in the information systems department.

Keyword Syllabus:
Database Approach and its Objectives; Architecture of a Database System; Database Design; Database Models; Physical Data Structure; and Database Implementation.

Teaching/Learning Approach:
On completion of this subject, students should be able to design, develop, implement and maintain simple databases. Suitable RDBMS will be selected to implement the database design. Comparisons of each logical data model will be drawn up during discussion sessions. The evolution of database data models will be appreciated. Other database features such as access techniques, security, recovery, data dictionaries will be covered in the practical work. Students are required to work in groups on a mini-project to gain the practical experience in implementing a simple database.

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

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

Indicative Reading List:
SUBJECT DESCRIPTION FORM

Subject Title: Multilingual Computing
Subject Code: COMP341
Number of Credits: 3
Hours Assigned: Lecture 28 hours, Tutorial 14 hours
Pre-requisite: Fundamentals of Programming and Data Structures (COMP239)
Co-requisite: nil
Exclusion: nil

Role and Purpose:
This subject enables students to understand the concept and technology of multilingual computing and emphasizes on system design requirements for applications involving multiple languages, the coexistence of applications for different languages, and information exchange in multi-lingual environments.

Objectives:
Upon completion of this subject, students will be able to:

1. Provide students with the fundamentals for multilingual Computing and the general principles of multi-lingual computing as well as how they can be applied specific bi-lingual computing for Chinese and English environments.
2. Guide students in understanding the current technologies in relation to practical applications on both traditional text processing and in the internet age.
3. Provide practical exercises for students to develop multilingual applications.

Keyword Syllabus:
Language and Scripts; Character Encoding; Input Methods; Typography; Global Design; Multilingual Environments; and Design Issues.

Teaching Approach:
Lectures and tutorials.

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

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

Indicative Reading List:
SUBJECT DESCRIPTION FORM

Subject Title: User Interface Design  
Subject Code: COMP342

Number of Credits: 3  
Hours Assigned:  
Lecture 28 hours  
Tutorial 14 hours

Pre-requisite: Fundamentals of Programming and Data Structures (COMP239)  
Co-requisite: nil  
Exclusion: nil

Role and Purpose:
This subject enables students to understand the concepts and practice of the fundamental issues in design of human-computer interfaces.

Objectives:
Upon completion of this subject, students will have basic knowledge and understanding of:

1. the nature of human computer interactions;
2. human characteristics;
3. computer system and interface architecture;
4. design, development and evaluation of user interface.

Keyword Syllabus:
Human Computer Interaction (HCI); Evaluation; Human Characteristics; Input and Output; Dialogue Interactions and Formal Models; Design Methods; Development and Applications.

Teaching Approach:
Lectures with students’ presentation and tutorials. Group UI Project for a real company.

Method of Assessment:
Coursework (group project and quiz and presentation): 60%  
Examination: 40%

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

Textbook:
1. Alan Dix, Finlay, Abowd and Beale, Human-Computer Interaction, 2nd ed., Prentice-Hall.
**SUBJECT DESCRIPTION FORM**

<table>
<thead>
<tr>
<th>Subject Title:</th>
<th>Chinese Information Processing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject Code:</td>
<td>COMP343</td>
</tr>
<tr>
<td>Number of Credits:</td>
<td>3</td>
</tr>
<tr>
<td>Hours Assigned:</td>
<td>Lecture 28 hours, Tutorial 14 hours</td>
</tr>
</tbody>
</table>

Pre-requisite: Multilingual Computing (COMP341)  
Co-requisite: nil  
Exclusion: nil

**Role and Purpose:**  
This subject enables students to understand the concept and technology of Chinese information processing.

**Objectives:**  
1. To provide students with the fundamentals in Chinese text processing;  
2. To introduce students to Chinese information access through different media and the technology behind;  
3. To provide practical exercises for students to develop Chinese text processing applications.

**Keyword Syllabus:**  
Chinese Coding Standards; Input Processing; Output Processing; Text Processing; and Linguistics Issues.

**Teaching Approach:**  
Lectures and tutorials.

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

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

**Indicative Reading List:**

SUBJECT DESCRIPTION FORM

Subject Title: Multimedia and Multilingual Information Retrieval Systems
Subject Code: COMP344

Number of Credits: 3
Hours Assigned: Lecture 28 hours
           Tutorial 14 hours

Pre-requisite: Multilingual Computing (COMP341)
Co-requisite: nil
Exclusion: nil

Role and Purpose:
This subject enables students to understand the concepts and practice of multimedia and multilingual information retrieval.

Objectives:
1. To equip students with principles and knowledge of classical and modern information retrieval;
2. To equip students with information extraction techniques for multilingual data;
3. To equip students with context analysis techniques for multimedia data;
4. To equip students with practical knowledge of building multilingual information retrieval systems and multimedia information retrieval systems.

Keyword Syllabus:
Multilingual and Multimedia Data; Classical Information Retrieval; Multilingual Textual Information Extraction; Multimedia Context Extraction; and Indexing and Searching.

Teaching Approach:
In the lectures, concepts and techniques are taught and the acquired knowledge will be subsequently used in a mini-project. In the tutorials, students will be given more examples and exercises to enhance their know-how.

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

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

Indicative Reading List:
SUBJECT DESCRIPTION FORM

Subject Title: Advanced Topics in Chinese Computing
Subject Code: COMP345
Number of Credits: 3
Hours Assigned: Lecture 28 hours, Tutorial 14 hours

Pre-requisite: Chinese Information Processing (COMP343)
Co-requisite: nil
Exclusion: nil

Role and Purpose:
This subject enables students to understand some of the latest technology in Chinese language processing.

Objectives:
1. To introduce students to advanced topics in Chinese natural language;
2. To present the latest technological development in Chinese processing and their applications in modern society.

Keyword Syllabus:
Advanced Algorithms; Character Recognition; Speech Recognition; Speech Synthesis; Translation; Information Retrieval; and Tools.

Teaching Approach:
Lectures and tutorials.

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

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

Indicative Reading List:

Books

Journals and Proceedings:
SUBJECT DESCRIPTION FORM

Subject Title: Data Mining and Data Warehousing
Subject Code: COMP348
Number of Credits: 3
Hours Assigned: Lecture 28 hours, Tutorial/Laboratory 14 hours


Role and Purpose:
This subject enables student to understand the concepts and practical aspects of data warehousing and data mining techniques.

Objectives:
Upon completion of this subject, students will be able to:

1. handle data in a large database in a more effective manner;
2. create a clean and consistent database repository within a data warehouse;
3. derive aggregated data to support decision making;
4. discover useful patterns and knowledge that are embedded in data via different data mining techniques.

Keyword Syllabus:
Introduction; Data Cleaning and Summarization; Data Warehousing; Online Processing; Knowledge Discovery; Knowledge Representation; Web Mining and Case Studies.

Teaching Approach:
The subject is designed to allow students to understand the basic concepts of data mining and data warehousing. The students are encouraged to apply techniques in doing a group project. Lab sessions will be arranged to consolidate the concepts.

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

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

Indicative Reading List:
6. Jiawei Han and Micheline Kamber, Data Mining, Concepts and Techniques, Morgan Kaufmann, 2001.
SUBJECT DESCRIPTION FORM

Subject Title: Computer Graphics
Subject Code: COMP350
Number of Credits: 3
Hours Assigned: Lecture 28 hours, Tutorial/Laboratory 14 hours

Pre-requisite: Fundamentals of Programming and Data Structures (COMP239)
Co-requisite: nil
Exclusion: nil

Objectives:
This subject allows students to:
1. understand the concept and practice of computer graphics;
2. appreciate the role of graphics as foundations to user interfaces, visualization and digital design;
3. learn the fundamental techniques, data structures and algorithms used in standard graphics API’s;
4. learn about the common API’s, for example, Java 3D, OpenGL, DirectX.

Student Learning Outcomes:
After taking this subject, the students should be able to:

Category A: Professional/academic knowledge and skills
1. identify and integrate digital hardware components required for high-performance computer graphics;
2. develop programs using Java 3D, OpenGL and/or DirectX API’s;
3. understand and apply the problems and techniques in image synthesis;
4. effectively construct data structures and develop algorithms for handling 3D modeling and animation;
5. develop simple graphics software systems.

Category B: Attribute for all-roundedness
6. understand, appreciate and follow the development and advancement of computer graphics technologies, including advanced technologies for 3D modelling, high performance rendering.

Syllabus:
1. Hardware components
   Basic hardware modules necessary for a functional graphics workstation, such as display devices, color formation, frame buffers and image representation in hardware. (3 hours)

2. Rasterization and scan conversion
   Algorithms for digitizing basic 2D shapes, such as lines, curves, circles, polygons. (4 hours)

3. 2D transformations
   Transforming points, lines, and vectors in 2D; introduction to homogeneous transformations. (3 hours)

4. 3D modeling and projective spaces
   3D modeling: rotations, translations, scaling, shearing, and projective geometry. (4 hours)

5. Camera model
   Constructing the 3D viewing frustrum; modeling a pin-hole camera for digital image synthesis. (3 hours)

6. Basic 3D object modeling
   Object hierarchies; planes; polygon meshes; spline curves and surfaces. (4 hours)

7. 3D Visibility
   Visibility problems and solutions; the ZBuffer algorithm. (4 hours)

8. Rendering
   Light, colour, illumination models; shading; ray-tracing; radiosity. (3 hours)
Laboratory Experiment:
Appropriate laboratory exercises will be conducted using the currently available computer graphics API such as OpenGL and DirectX.

Case Study:
If applicable, case studies may be conducted on modeling and design systems that are used in commercial applications.

Method of Assessment:
Assignments: 40%  Quizzes: 20%  Project: 40%

Textbook:

Reference Books:
**SUBJECT DESCRIPTION FORM**

<table>
<thead>
<tr>
<th>Subject Title:</th>
<th>Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject Code:</td>
<td>EIE340</td>
</tr>
<tr>
<td>Number of Credits:</td>
<td>6</td>
</tr>
<tr>
<td>Hours Assigned:</td>
<td>Project Work 210 hours (inclusive of contact hours, private study, etc.)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pre-requisite:</th>
<th>nil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-requisite:</td>
<td>nil</td>
</tr>
<tr>
<td>Exclusion:</td>
<td>nil</td>
</tr>
</tbody>
</table>

**Objectives:**
The final project is intended as a focal point where students are expected to integrate their knowledge from various subject areas to accomplish a task of moderate complexity and challenge. The nature of the assigned task may be design, implementation, exploration, or a combination of techniques. Apart from technical problems, the students may also need to address issues in the division of work, economics and social implications. The interaction involved within a small team is intended to nurture team spirit and a culture of shared knowledge. While the importance of written communication and documentation is emphasized in the written Final Report, the Oral Presentation is also important to enhance the students’ oral communication, presentation skills and their appreciation of peers’ work.

**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 log-book 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 and a Project Panel. The Project Panel consists of Programme Leader and staff members from teaching sections. They will oversee standards of the projects to ensure a reasonable degree of uniformity in the assessment. The following will be taken into consideration:

<table>
<thead>
<tr>
<th>Nominal weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The quality of work and the individual daily log-book (60%)</td>
</tr>
<tr>
<td>2. The quality of the report (30%)</td>
</tr>
<tr>
<td>3. The quality of the presentation (10%)</td>
</tr>
</tbody>
</table>

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 Log-books 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 Log-book** regularly.
- Submit a **Project Plan** to the supervisor within the first month of their final year of study.
- Submit a **Progress Report** before the second semester.
- Submit the **Final Report and Daily Log-book** before the end of week 13.
- Give an **Oral Presentation** right after the final semester's examination period.

**Project Selection/Assignment:**
By May each year, a list of projects proposed by potential supervisors will be distributed. Students shall attend a **Project Introduction Talk** and mark the priorities of their choices on a Project Selection Form. Project will then be allocated to students in the order of their GPA scores. The assignment of projects is expected to be completed in June. Students should meet their supervisors a number of times during the
summer period to fully understand the requirements. During the summer break, students are expected to acquire the needed concepts by reading and to become familiar with the prescribed development environment and tools.

**Project Plan:**

At the beginning of the final year, each project team shall submit a comprehensive and concise Project Plan (no more than a few pages of text) that covers the following:

- Statement of problem and objectives
- Result of literature survey conducted (if any)
- Approach to tackle the problem
- Outline design of hardware and software
- Preliminary project schedule and partial deliverables

**Progress Report:**

In early January, students are required to submit a mid-sessional Progress Report to declare his/her progress in the Project. Two copies of the progress report, endorsed by the supervisor, should be submitted via the General Office of COMP or EIE to the Programme Leader. This forms the basis for their supervisors to review the progress against the declared objectives, and to obviate any discrepancies if necessary. Students with unsatisfactory progress may receive warning in writing.

The Progress Report should be comprehensive and concise. Typically the following are included:

- Partial achievements (if any)
- Documents of work performed
  - e.g. program code, design drawings, simulation results or mathematical analysis
- Unforeseen problems that has hindered the progress
- Changes of approach (if any)
- Revised project schedule

**Project Report:**

This written report serves to emphasize the importance of documentation, presentation and writing abilities. Students are expected to finish the development work of their project by March and leave sufficient time to prepare their written final reports. Three copies of final report are to be submitted to the supervisor. The supervisor shall forward one endorsed copy to the administrative host (EIE).

**Oral Presentation and Project Demonstration:**

Students are required to present and demonstrate their projects to teaching staff and their fellow classmates. Each member should present his/her contributions. A project presentation and demonstration week will normally be held right after the final year examinations.
SUBJECT DESCRIPTION FORM

Subject Title: Multimedia Signal Processing
Subject Code: EIE354
Number of Credits: 3
Hours Assigned:
- Lecture 28 hours
- Tutorial 8 hours
- Laboratory 12 hours

Pre-requisite: nil
Co-requisite: nil
Exclusion: nil

Role and Purpose:
This subject enables students to understand the concepts and practice of speech, audio, image and video processing techniques used in multimedia applications.

Objectives:
To provide students with an introduction to the basic concepts, methodologies and applications of multimedia signal processing techniques so they can select appropriate techniques for particular multimedia applications.

Keyword Syllabus:
Time and Frequency Domains; Digital Speech Processing; Digital Audio Processing; Digital Image Processing; and Digital Video Processing.

Teaching Approach:
Students will be taught the processing techniques of different multimedia signals, which will be subsequently used in the real-world systems. In laboratory sessions, students will be provided with the opportunity to gain hands-on experience using some real-world multimedia signal processing techniques.

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

Indicative Reading List:
SUBJECT DESCRIPTION FORM

Subject Title: Advanced Topics in Networking  
Number of Credits: 3  
Subject Code: EIE355  
Hours Assigned: 
  Lecture/Tutorial 36 hours  
  Laboratory 12 hours

Pre-requisite: Fundamentals of Data Communications and Networks (EIE279)  
Co-requisite: nil  
Exclusion: nil

Objectives:
The aim of this course is to introduce the principles, protocols and performance evaluation techniques of various advanced networking technologies. Upon completion of this subject, students will gain in-depth knowledge in selected topics of the following areas:

1. Local area networks (LAN) and wide area networks (WAN);
2. Queueing theory and other network analysis techniques;
3. Next generation Internet;

Keyword Syllabus:
Switched LAN and virtual LAN; integrated services digital network (ISDN); ATM networks; performance modeling and congestion control; quality of service (QoS); IPv6 and IP multicast; wireless networks.

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

Indicative Reading List:
SUBJECT DESCRIPTION FORM

Subject Title: Web Administration

Subject Code: EIE383

Number of Credits: 3

Hours Assigned: Lecture 28 hours

Mini-project 14 hours

Pre-requisite: Fundamentals of Data Communications and Networks (EIE279)

Co-requisite: nil

Exclusion: nil

Role and Purpose:
This subject enables students to understand the concepts and practice of Web Administration. It provides students with the necessary skills in applying Internet technologies to support Web-based or eCommerce applications.

Objectives:
Upon completion of this subject, students will:

1. master network configuration and testing;
2. master web application service configuration;
3. understand security procedure and policy; and
4. use network management tools.

Keyword Syllabus:
Network Configuration and Testing; Application Service Configuration; Security Procedure and Policy; and Web-based Network Administration.

Teaching Approach:
Students will be taught the web management technology which will be subsequently practiced in a competitive mini-project. In tutorial sessions, students will be given design exercises to enhance their design skills.

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

Indicative Reading List:
### SUBJECT DESCRIPTION FORM

**Subject Title:** Interactive Multimedia Programme Development  
**Subject Code:** SD3981

<table>
<thead>
<tr>
<th>Number of Credits:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours Assigned:</td>
<td></td>
</tr>
<tr>
<td>Lecture</td>
<td>14 hours</td>
</tr>
<tr>
<td>Tutorial/Laboratory</td>
<td>28 hours</td>
</tr>
</tbody>
</table>

**Pre-requisite:** Fundamentals of Programming and Data Structures (COMP239)  
**Co-requisite:** nil  
**Exclusion:** nil

### Role and Purpose:
Interactive multimedia nowadays has become the showcase of the state-of-the-art computer technology - computer graphics, animation, digital entertainment, computer network, software engineering, etc. Many packages have been developed (for example, DirectX, RenderWare, NeMo, Director, Flash, Motivate, NDL, etc.) to allow developers to author interactive multimedia contents for the industry. This course presents a comprehensive introduction to the technologies involved in the development of interactive multimedia, engages students to the essential concepts and techniques on programme development, and allows them to have hands-on practices on using the software packages. This course also concerns the processes of developing interactive multimedia contents for digital entertainment industry.

### Objectives:
Upon completion of this subject, students will:

1. acquire skills for the design and development of interactive multimedia;
2. broaden their experience and knowledge on the concepts and technologies on interactive multimedia technologies;
3. provide students with hands-on experience on developing programmes for interactive content and multimedia entertainment.

### Keyword Syllabus:
Interactive Multimedia Industry; Essentials of Software Development; Graphics Programming Using DirectX; User Interaction Control Using DirectInput; Embedding Audio Using DirectX Audio; Physics Simulation and Artificial Intelligence.

### Teaching Approach:
Students will be assessed through their ability to develop interactive multimedia contents using the tools and packages, and ability to interpret the programming concepts and development processes to manage their projects. Assignments will be given to assess the students’ progresses towards the goal of the course. Students are required to work on projects to demonstrate their skills and knowledge on game programme development.

### Method of Assessment:

| Assignments: 30% | Projects: 50% | Test: 20% |

### Indicative Reading List: