Electives Offered to Biology and Mathematics Stream (2009-2010)
(The medium of instruction is English.)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Level</th>
<th>No. of places</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Mathematics</td>
<td>*AL/ASL</td>
<td>30</td>
<td>for Mathematics stream only</td>
</tr>
<tr>
<td>Chemistry</td>
<td>AL</td>
<td>60</td>
<td>for Mathematics stream only</td>
</tr>
<tr>
<td>Physics</td>
<td>AL</td>
<td>60</td>
<td>for Biology stream only</td>
</tr>
<tr>
<td>Mathematics &amp; Statistics</td>
<td>ASL</td>
<td>18</td>
<td>for Biology stream only</td>
</tr>
<tr>
<td>#Computer Applications</td>
<td>ASL</td>
<td>30</td>
<td>for all streams</td>
</tr>
</tbody>
</table>

Successful applicants will be allocated to elective groups of their choice according to the selection criteria set by the school. Such results will be released on 24 August (Monday).

NOTE:
* / # combined class
For the Mathematics Stream and Biology Stream, those who get 19 points or below from the best 6 subjects can take only ONE ASL subject as their elective.

Applied Mathematics (AL)

The overall objectives are:
- to develop students' mathematical skills in solving real-life problems,
- to develop students' confidence and interest in applying mathematics,
- to provide students with a foundation of mathematical knowledge required in scientific and technological studies at sixth form and beyond.

In the syllabus, there are 4 main topic areas:
1. Vectors and Mechanics
2. Differential Equations
3. Numerical Methods
4. Probability and Statistics

Applied Mathematics (ASL)

The subject has been designed for students intending to continue their studies in engineering, science and technology. Students studying this syllabus are expected to have acquired mathematical knowledge at the level of the Hong Kong Certificate of Education Examination. In addition, knowledge of the topics of trigonometry, exponential and logarithmic functions, basic operations of complex numbers and elementary calculus will be expected.

There are 1 introductory area and 3 main topic areas in the syllabus:
Introduction: Fundamental Knowledge
Topic 1: Differential Equations
Topic 2: Numerical Methods
Topic 3: Probability and Statistics
Chemistry (AL)

In this syllabus, emphasis will be placed on the application of chemistry and its social, economic, environmental and technological implications. The topics can be roughly being divided into four areas, namely Physical Chemistry, Organic Chemistry, Inorganic Chemistry and Chemistry in Action.

Both in the quantity and the depth of treatment, the AL syllabus is much more than that of the CE syllabus. The studying skill required for AL Chemistry is quite different from that for the CE course. Physical Chemistry involves a certain amount of calculation which requires students to understand the underlying principles beforehand. Organic Chemistry requires students to understand a chemical reaction in molecular level as well as to memorize a number of reactions before they can go on to solve other problems. Inorganic Chemistry requires students to recall, predict and explain facts concerning the elements and their compounds in the Periodic Table. Chemistry in Action includes the study of natural and synthetic polymers, some common drugs and green chemistry.

Other than the theoretical part, much emphasis will be put on practical work. Students will be required to perform experiments individually and hand in the reports immediately after the practical session in most cases. Students’ performance in practical work will constitute 20% of the total mark in their future HKAL examination.

Computer Applications (ASL)

The Curriculum is designed to provide students with:

- knowledge, understanding and skills in the development and use of computer systems over a range of applications;
- an understanding of the organization of computer systems;
- an appreciation of the impact on society arising from the rapid development of computer technologies; and
- an opportunity to develop skills in problem solving, communication, creativity and critical thinking, and learning to learn capabilities.

The curriculum consists of four modules: Computer Systems, Office and Internet Applications, Databases and SOHO Networking. The examination consists of two parts: a three-hour written paper and a school based project.

Mathematics and Statistics (ASL)

The syllabus aims at breadth rather than depth with a view to broadening students' perspective on Mathematics.

Mathematics and statistics each constitutes about half of the syllabus in weight. The mathematical part emphasizes calculus because of its versatile usefulness for the study of statistical, social, biological or chemical phenomena. No further treatment of geometry and trigonometry is included as the CE Mathematics Syllabus has already covered these topics adequately for the students concerned. The algebra content of the CE Mathematics is also considered adequate except for permutations, combinations and binomial expansion that are particularly useful for studying probability and statistics. Exponential and logarithmic functions are included because of their wide applications.

The statistical part starts with basic statistical measures. Due emphasis is placed on probability because it is elementary and hence important. The normal, Bernoulli, binomial, geometric and Poisson distributions serve to widen students' knowledge of probability distributions. A study of population parameters and sample statistics depicts the relationship between populations and samples. A comparison of frequency distribution with fitted probability distributions provides a
link between empirical data and theoretical models, statistics and probability, and sample and population.

As a whole, the syllabus has about 30% common with the CE Additional Mathematics Syllabus, mainly in calculus and binomial expansion. A substantial part of the syllabus is contained in the A Level Pure Mathematics and A Level Applied Mathematics Syllabuses. The overlapping with the ASL Applied Mathematics Syllabus is mainly in statistics and probability. However, the spirit in which the topic is treated in the two syllabuses is not quite the same.

Physics (AL)

Aims
This syllabus encourages both the experimental and the theoretical approach to physics and is designed to provide a balanced course for further study, and to give an appreciation of the nature and the important of physics in daily life. It aims to stimulate candidates’ interest in, and enthusiasm for the study of physics, and promote a sense of achievement.

The Syllabus

<table>
<thead>
<tr>
<th>Section</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Mechanics</td>
<td>statics, kinematics, dynamics, projectile motion,</td>
</tr>
<tr>
<td></td>
<td>circular motion, gravitation, oscillation</td>
</tr>
<tr>
<td>B. Wave Motion</td>
<td>wave propagation, wave phenomena, stationary waves,</td>
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<tr>
<td></td>
<td>acoustics, optical instruments</td>
</tr>
<tr>
<td>C. Fields, Electricity and</td>
<td>electric fields, storage of charge by capacitors,</td>
</tr>
<tr>
<td>Electromagnetism</td>
<td>current electricity, electromagnetic induction,</td>
</tr>
<tr>
<td></td>
<td>alternating currents</td>
</tr>
<tr>
<td>D. Matters</td>
<td>gases, solids, fluids, electrons, extra-nuclear</td>
</tr>
<tr>
<td></td>
<td>structure of the atom, radioactivity, conservation</td>
</tr>
<tr>
<td></td>
<td>of energy and mass</td>
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</tbody>
</table>

The Examination
The examination consists of two three-hour written papers and a Teacher Assessment Scheme (TAS). Paper 1 (42%) contains structured-type questions, all of which are to be attempted. Paper 2 consists of two sections, A and B. Section A (25%) contains multiple-choice questions and Section B (18%) contains essay-type questions, and candidates are required to answer 3 out of 4 questions in this section. Paper 3 (15%) is a Teacher Assessment Scheme, which is compulsory for all school candidates. Their practical abilities will be assessed internally by subject teachers.

Notes: (i) A broad knowledge of the Hong Kong Certificate of Education Physics Syllabus is assumed and questions requiring such knowledge may be set.
(ii) Additional mathematical knowledge is required for the handling of physical concepts and models in Advanced Level Physics.

In addition to the general mathematics at secondary level, the following are required.
1. Indices: integral, negative and fractional. Logarithms to bases 10 and e.
2. Use of the approximation \((1 + x)^n \approx 1 + ax\) for small \(x\).
3. The exponential function.
4. The sin, cos, tan, cot functions for positive and negative angles and for angles > \(2\pi\). The results \(\sin \theta \to 0\), \(\tan \theta \to 0\), and \(\cos \theta \to 1\) as \(\theta \to 0\). Ability to use the common trigonometric formulae in straightforward calculation. Meaning of \(\sin^{-1} x\), etc.
5. The derivative as a limit. Interpretation as a gradient of the tangent to a curve and as a rate of change in general, either in time or space. The second derivative.
6. Differentiation of \(kx^n\), \(\sin kx\) and \(\cos kx\), \(e^{kx}\) and \(\ln kx\) where \(n\) and \(k\) are constants.
7. Calculation of maximum and minimum in simple cases involving the above functions.
8. Integration as the inverse of differentiation. The definite integral as the limit of a sum.
Electives Offered to Arts and Business Stream (2009-2010)

(The medium of instruction is English except for Chinese History)

AL: Business Studies, Chinese History, Geography, Principles of Accounts, Psychology,
ASL: Chinese History, Computer Applications, Psychology

NO. OF PLACES: 30 places per elective group (combined class for Chinese History – AL/ASL, and Computer Applications for all streams), except for Geography which offers a maximum of 18 places

Successful applicants will be allocated to elective groups of their choice according to the selection criteria set by the school. Such results will be released on 24 August (Monday).

Business Studies (AL)

The aims of this A-level course are to provide students with a knowledge of the theoretical and practical aspects of the various types of business organisations and an understanding of the Hong Kong business environments. Some major topics include: marketing, financial management, human resources management, risk management, etc. The examination papers consist of short questions, questions on case studies and essay questions.

This subject is open to Arts and Business students and backgrounds in Economics, Commerce and Principles of Accounts are NOT required! Good English language skills and mathematical abilities will be an advantage for studying this subject.

Computer Applications (ASL)

The Curriculum is designed to provide students with:
- knowledge, understanding and skills in the development and use of computer systems over a range of applications;
- an understanding of the organization of computer systems;
- an appreciation of the impact on society arising from the rapid development of computer technologies; and
- an opportunity to develop skills in problem solving, communication, creativity and critical thinking, and learning to learn capabilities.

The curriculum consists of four modules: Computer Systems, Office and Internet Applications, Databases and SOHO Networking. The examination consists of two parts: a three-hour written paper and a school based project.

Geography (AL)

The AL geography syllabus is divided into 3 main sections. In each section, the interactions between human beings and natural environment is emphasized. Practical skills such as map reading and statistical techniques will be integrated into the syllabus. The 3 sections, and some of the sub-divisions, are described below.

I. Natural Landscapes
   A. Climatic system
   B. Landform system
   C. Biotic system
   D. Man-environment relationship

II. Agricultural Landscapes

III. Urban & Industrial Landscapes
Principles of Accounts (AL)

Objectives
The course aims to develop students’ abilities to:
- demonstrate knowledge of accounting procedures and practices and an understanding of accounting principles on which they are based,
- apply such knowledge and understanding to familiar and novel situations,
- analyze data and present information in an appropriate accounting form, and
- evaluate a given scenario with reasoned explanations and make recommendations based on accounting information and principles.

Examination Format:
Paper I (3 hours)
  Section A (60%)  2 compulsory questions of 30 marks each
  Section B (40%)  a choice of 2 out of 3 questions of 20 marks each

Paper II (3 hours)
  Section A (60%)  2 compulsory questions of 30 marks each
  Section B (40%)  a choice of 2 out of 3 questions of 20 marks each

Remark :
For Principles of Accounts, the AL examination syllabus is heavily built on the CE examination syllabus. Extra efforts from students with no previous accounting knowledge are therefore required. Students must be well prepared for this.

Psychology (AL/ASL)

The course aims to provide students with an opportunity to obtain a basic knowledge of psychological theory and research in which their practical implications are strongly emphasized. Students are expected to develop critical thinking to evaluate different theoretical frameworks and analyze everyday phenomena from a psychological point of view. Twelve important discussion topics are included in the AL course and Six are included in the ASL course.

<table>
<thead>
<tr>
<th>AL Psychology</th>
<th>ASL Psychology</th>
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</thead>
<tbody>
<tr>
<td><strong>Paper I</strong></td>
<td><strong>Paper I</strong></td>
</tr>
<tr>
<td>Section 1</td>
<td>Nature of Psychology</td>
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<tr>
<td>Section 2</td>
<td>Learning</td>
</tr>
<tr>
<td>Section 3</td>
<td>Remembering and Forgetting</td>
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<tr>
<td>Section 4</td>
<td>Sensation, Perception and Attention</td>
</tr>
<tr>
<td>Section 5</td>
<td>Child and Adolescent Development</td>
</tr>
<tr>
<td>Section 6</td>
<td>Personality</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Paper II</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 1</td>
<td>Scientific Methods of Psychology</td>
</tr>
<tr>
<td>Section 2</td>
<td>Motivation and Emotion</td>
</tr>
<tr>
<td>Section 3</td>
<td>Biological Processes and Consciousness</td>
</tr>
<tr>
<td>Section 4</td>
<td>Individual Differences</td>
</tr>
<tr>
<td>Section 5</td>
<td>Social Influences</td>
</tr>
<tr>
<td>Section 6</td>
<td>Stress and Psychopathology</td>
</tr>
</tbody>
</table>
中國歷史科

本科共分兩「程度」——高級程度（AL）及高級補充程度（ASL）

高級程度（AL）

【考試形式】本科設二卷
（試卷一） 共分三部分
  歷代治亂因果：包括必答題歷史資料題（DBQ）
  重要制度
  學術思想

（試卷二） 共分四部分
  經濟發展
  中外交通
  史學名著
  宗教傳播

【考試時間】每卷各為三小時

【本科主要目標】
本科考試主要是測驗同學下列能力：
1. 剖析及論述重要史實。
2. 綜合有關之史實，加以比較及論證。

高級補充程度（ASL）

【考試形式】本科只設一卷
（試卷）共分三部分
  歷代治亂因果：包括必答題歷史資料題（DBQ）
  重要制度
  學術思想

【考試時間】每卷各為三小時

【本科主要目標】
本科考試主要是測驗同學下列能力：
1. 剖析及論述重要史實。
2. 綜合有關之史實，加以比較及論證。

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