Subject Description Form

<table>
<tr><td>Subject Code</td><td>AMA1100</td></tr>
<tr><td>Subject Title</td><td>Basic Mathematics - an introduction to Algebra and Differential Calculus</td></tr>
<tr><td>Credit Value</td><td>2</td></tr>
<tr><td>Level</td><td>1</td></tr>
<tr><td>Pre-requisite / Co-requisite/ Exclusion</td><td>Exclusion: HKDSE extended module M1 or M2 (with Level 2 or above).</td></tr>
<tr><td>Objectives</td><td>This subject aims to introduce students to the basic concepts and principles of algebra, limit and differentiation. It is designed for those students with only the compulsory mathematics component in the NSS curriculum. Emphasis will be on the understanding of fundamental concepts as well as applications of mathematical techniques in solving practical problems in science and engineering.</td></tr>
<tr><td>Intended Learning Outcomes</td><td>Upon completion of the subject, students will be able to:
a. apply mathematical reasoning to solve problems in science and engineering;
b. make use of the knowledge of mathematical techniques and adapt known solutions to various situations;
c. apply mathematical modeling in problem solving;
d. demonstrate abilities of logical and analytical thinking.</td></tr>
<tr><td>Subject Synopsis/ Indicative Syllabus</td><td>Mathematical Induction; Binomial Theorem; Functions and inverse functions; Trigonometric functions. Limit concepts, derivatives and their physical & geometric meanings, rules of differentiation.</td></tr>
<tr><td>Teaching/Learning Methodology</td><td>Basic concepts and techniques of topics in algebra and in elementary differential calculus will be discussed in lectures. These will be further enhanced in tutorials through practical problem solving.</td></tr>
<tr><td>Assessment Methods in Alignment with Intended Learning Outcomes</td><td>
<table>
<tr><td rowspan="2">Specific assessment methods/tasks</td><td rowspan="2">% weighting</td><td colspan="6">Intended subject learning outcomes to be assessed (Please tick as appropriate)</td></tr>
<tr><td>a</td><td>b</td><td>c</td><td>d</td><td></td><td></td></tr>
<tr><td>1.Homework, quizzes and mid-</td><td>40%</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td></td><td></td></tr>
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term test								
2. Examination	60%	✓	✓	✓	✓			
Total	100 %							

Continuous Assessment comprises of assignments, in-class quizzes, online quizzes and a mid-term test. An examination is held at the end of the semester.

Questions used in assignments, quizzes, tests and examinations are used to assess students' level of understanding of the basic concepts and their ability to use mathematical techniques in solving problems in science and engineering.

To pass this subject, students are required to obtain grade D or above in both the continuous assessment and the examination components.

Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:

The subject focuses on understanding of basic concepts and application of techniques in algebra, limit and differentiation. As such, an assessment method based mainly on examinations/tests/quizzes is considered appropriate. Furthermore, students are required to submit homework assignments regularly in order to allow subject lecturers to keep track of students' progress in the course.

Student Study Effort Expected

Class contact:	
▪ Lecture	19 Hours
▪ Tutorial	7 Hours
Other student study effort:	
▪ Self study	42 Hours
Total student study effort	68 Hours

Reading List and References

Hung, K.F., Kwan W.C.K and Pong, G.T.Y. Foundation Mathematics & Statistics, McGraw Hill 2011

Chung, K.C. A short course in calculus and matrices (2nd edition), McGraw Hill 2010

Lang, S. Short Calculus, Springer 2002