**Subject Code:** AMA105  
**LOGIC: QUALITATIVE AND QUANTITATIVE**  

| **Level** | 1  
| **Contact Hours** | Lect:28 Tut:14  
| **Student Effort Hours** | 120  
| **Assessment Method** | Coursework 40%  
| **Credit Value** | 3  
| **Pre-requisites** | Nil  
| **Co-requisites** | Nil  
| **Exclusions** | Nil  
| **Subject Leader/Lecturer/Dept.** | (AMA)  

**Subject Aim:**

This subject is intended to:

1. This subject aims to develop students’ ability in logical and analytical thinking through the qualitative and quantitative aspects of logic. The first part will emphasize qualitative logic and will be taught by the General Education Centre. The second part will emphasize quantitative logic. Some topics from discrete mathematics will be presented as illustrations of the general theory. This part will be taught by the Department of Applied Mathematics.

**Learning Outcomes:**

Students will demonstrate their ability to:-

1. demonstrate basic logical reasoning  
2. see the relationship between formal logic and natural language  
3. apply logical reasoning in both everyday and academic situations  
4. recognize and refute common logical fallacies  
5. appreciate the axiomatic approach in mathematics  
6. understand why proofs of mathematical statements work  
7. apply logical reasoning in problem solving.

**Syllabus Content:**

1. Qualitative Logic:  
2. Quantitative Logic:  
   Sets and propositions; Permutations and combinations; Relations and Functions; Graphs and Trees; Natural Numbers.

**Learning and Teaching Approach** (tasks and activities designed to achieve learning outcomes):

Introduction to the key concepts and relationships of formal logic will be done primarily through lectures. Examples and case studies will be presented in small group tutorials. Finally, self-study will be encouraged through student accessible computer-based exercises. Assessment will be in the form of both in-class mid-term tests as well as group projects associated with tutorials.

**Assessment** (assessment of student performance resulting from learning tasks):

| Continuous Assessment | 40%  
| Examination | 60%  
| Total | 100%  

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.
Reading List:
