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| Hibernia College Information Sheet |
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**Module Information Sheet**

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| Module title: | 2910102 Mathematics for computing (uncom\_macom) | |
| Module descriptions and aims: | Computer science depends on the science of mathematics and without the mathematical ideas that underpin it, none of the marvels of modern computer technology would be possible. To study for a degree in Computing and Information Systems, students need to understand and feel easy with some essential mathematical ideas. The topics in this module have been selected with that in mind and students will find that they use many of the ideas and skills introduced in this module directly or indirectly in the other modules in this degree programme. Students will also gain experience of the way that mathematicians and computer scientists express their ideas using symbols and make their statements precise. | |
| Total contact hours: | 10 hours per week | |
| Total number of sessions in module: | 10 sessions | |
| Session content:  (Chapters from subject guide) | Session 1: | Volume 1 Chapter 1: Numbers systems |
| Session 2: | Volume 1 Chapter 2: Sets and binary operations |
| Session 3: | Volume 1 Chapter 3: Logic |
| Session 4: | Volume 1 Chapter 4: Functions |
| Session 5: | Volume 1 Chapter 5: Introduction to graph theory |
| Session 6: | Volume 2 Chapter 1: Digraphs and relations |
| Session 7: | Volume 2 Chapter 2: Sequences, series and induction |
| Session 8: | Volume 2 Chapter 3: Trees |
| Session 9: | Volume 2 Chapter 4: Counting methods and probability |
| Session 10: | Volume 2 Chapter 5: Systems of linear equations and matrices |
| Date of release of first session: | 05/11/12 | |
| Frequency of session release: | Fortnightly  **Note:** No reference in subject guide of how much time to spend on each chapter so allocated them equally between the 10 sessions (10 chapters in total) | |
| LSE existing content:  Content available on the LSE VLE for the module | Reading list  Discussion forum  Subject guide (volume 1 and 2)  Appendix of subject guides: Solutions to end-of-chapter exercises, specimen exam questions and solutions, glossary of symbols  Past exam papers (2008-2011)  Examiners' reports (2008-2011)  CD-ROM content (Subject guide and exercises for volume 1 and 2, end-of-chapter quizzes (10 true/false questions)) | |
| Essential readings: | Epp, Susanna S. *Discrete mathematics with applications.* (Pacific Grove, Calif: Andover: Brooks/Cole c2011) fourth edition (As the material in the fourth edition has been reorganised, the subject guide’s references to this book are being mapped to the fourth edition and details will be uploaded to the VLE.) | |
| Exam:  Type of questions, format, length, any specific information for this module | Exam: Three hour written paper  Ten questions are set and full marks for the paper are awarded for complete answers to all of them. Each question carries the same number of marks. In general, there is at least one question on the material in each chapter of the guide, but some questions may require knowledge or techniques from more than one chapter.  The exam questions are generally very similar to worked examples or exercises in the subject guide so these exercises should be practiced and revised thoroughly. Some parts of questions may contain a new twist that requires more careful thought. Some questions may also ask for a definition or the statement of a result proved in the subject guide. These need to be carefully learned. Students may express a definition in their own words, but they need to make sure that their words cover all the points in the definition in this guide.  A hand-held calculator may be used in the exam but it must not be pre-programmed or able to display graphics, texts or algebraic equations. The make and type of machine must be stated clearly on the front cover of the exam book. | |
| Coursework: | No coursework | |
| Information specific to the module: | The subject guide is in two volumes and the material is presented in a convenient order of study. Taken together, the two volumes contain a complete account of the examinable topics in the module.  You only learn mathematics by doing it. Ideas and methods that may seem complicated at first will become more familiar and natural with practice. The exercises at the end of each chapter are a crucially important part of the module and students should try all of them. Answers to the exercises are included as an Appendix. Students can get extra practice, particularly on topics that they find difficult, by trying additional questions from an appropriate textbook.  Although the subject guide gives a complete account of the module, students should consult a textbook for alternative explanations, extra examples and exercises, and supplementary material.  A detailed marking scheme is given on the exam paper and that can be used as a guide to the length of answer expected. Although most students find that attempting past exam papers is reassuring, they should not spend all their revision time in this way, because every year the questions will be different. It is much better to revise thoroughly the ideas and skills taught in each chapter until they are confident that they really understand the material. When they have finished their revision, they should test themselves by answering the specimen exam questions to time. Suggested solutions are also included, so that they can check their answers and see the level of detail required.  Note: Discreet Mathematics is a comparatively modern area of study and the notation in some topics has not been completely standardised. This means that you may find occasional differences between the symbols and terminology used in textbooks by different authors. However, the exam papers will follow the usage in the subject guide. | |
| Are tutors assigned to this module?  If tutors have been assigned, please complete the Tutor Information Form for each tutor. | |  | | --- | | Yes | | No |   Kevin O’Brien | |
| Useful information for planning module content:  Any information noted from the existing LSE content that will inform our content development | Volume 1 and 2 – Appendix E List of symbols and definitions  From examiners' commentaries:  Many students have problems with precise mathematical notation and exact definitions. Many questions require understanding of the notation for number sets, set operations and relations. Students should pay attention to the notation used in the subject guide and adapt this notation in their own work. When they have solved an exercise, they should compare their notation as well as their answers to the model answers provided in the subject guide.  Another mistake made by students is not to show their workings and calculations and not explaining the reasoning behind an answer. This generally results in the loss of marks. Also, questions requiring a short answer are best answered by initially giving a short answer to the question followed by their reason for this particular answer. Examiners are usually more interested in how students arrived at an answer than in the answer itself.  When revising for the exam, it is a good idea to work through the sample paper in the subject guide which has full solutions. Students can then compare their answers with those given. They can learn a lot from looking at the notation and wording used in the solution and the way any mathematical definitions or proofs are included. It may also help for students to make a list of key points on each chapter as a revision guide, together with typical exam questions. | |
| Ideas for session content:  Any suggestions for session tasks/activities based on a review of the existing LSE content | Look at end-of-chapter exercises and sample exam questions and solutions provided – is it worth providing videos of the process involved in reaching these solutions? (See videos in maths 1 and stats 1 on LSE VLE)  Provide exercises from textbooks that students do not have access to the solutions as they complete them – provide them with the solutions after they have attempted the exercises.  Give students a matching quiz at the end of each volume based on the list of symbols and their definitions. | |