1. **Title of the module**

COMP5190 (CO519) - Theory of Computing

1. **Division or partner institution which will be responsible for management of the module**

Division of Computing, Engineering, Mathematical Sciences (CEMS)

1. **The level of the module (Level 4, Level 5, Level 6 or Level 7)**

Level 5

1. **The number of credits and the ECTS value which the module represents**

15 credits (7.5 ECTS)

1. **Which term(s) the module is to be taught in (or other teaching pattern)**

Autumn or Spring

1. **Prerequisite and co-requisite modules**

Pre-requisite: COMP5200: Further Object-Oriented Programming

COMP3250 Foundations of Computing II

1. **The courses of study to which the module contributes**

BSc Computer Science, BSc CS(Networks), BSc CS(Cyber Security), BSc Artificial Intelligence

Plus year in industry variants of these programmes.

1. **The intended subject specific learning outcomes.  
   On successfully completing the module students will be able to:**

8.1 understand specifications in formal logical notation

8.2 write formal proofs

8.3 understand the expressiveness of various language formalisms

8.4 appreciate the difference between decidable and undecidable problems

1. **The intended generic learning outcomes.  
   On successfully completing the module students will be able to:**

9.1 Understand, use and work with formal notation of various forms

9.2 Understand and judge the inherent complexity of certain classes of problems, and the techniques needed to approach them

1. **A synopsis of the curriculum**

Propositional & Predicate Logic, including proofs. Formal languages: finite automata, regular expressions, CFGs. Turing machines, decidability.

1. **Reading list (Indicative list, current at time of publication. Reading lists will be published annually)**

Huth, Ryan: Logic in Computer Science

Boolos, Jeffrey: Computability and Logic

Martin: Introduction to Languages and the Theory of Computation

1. **Learning and teaching methods**

Total contact hours: 32

Private study hours: 118

Total study hours: 150

1. **Assessment methods**
   1. Main assessment methods

Logic and Regular Languages (Coursework) (25%)

Context-Free Languages and Decidability (Coursework) (25%)

2-hour unseen examination (50%)

13.2 Reassessment methods

Like for like.

1. **Map of module learning outcomes (sections 8 & 9) to learning and teaching methods (section12) and methods of assessment (section 13)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Module learning outcome** | *8.1* | *8.2* | *8.3* | *8.4* | *9.1* | *9.2* |  |  |
| **Learning/ teaching method** |  |  |  |  |  |  |  |  |
| **Private Study** | x | x | x | x | x | x |  |  |
| Classes | **x** | **x** | **x** | **x** | **x** |  |  |  |
| Lectures | **x** | **x** | **x** | **x** |  | **x** |  |  |
| **Assessment method** |  |  |  |  |  |  |  |  |
| Coursework | x | x | x |  | x | x |  |  |
| Coursework | x |  | x | x | x | x |  |  |
| Examination | x | x | x | x | x | x |  |  |

1. **Inclusive module design**

The Division recognises and has embedded the expectations of current equality legislation, by ensuring that the module is as accessible as possible by design. Additional alternative arrangements for students with Inclusive Learning Plans (ILPs)/declared disabilities will be made on an individual basis, in consultation with the relevant policies and support services.

The inclusive practices in the guidance (see Annex B Appendix A) have been considered in order to support all students in the following areas:

a) Accessible resources and curriculum

b) Learning, teaching and assessment methods

1. **Campus(es) or centre(s) where module will be delivered**

Canterbury

1. **Internationalisation**

The topics addressed by this module relate to a field of international importance, given the global role of computers in today's technological innovation. The topics covered by this module are international in nature, being identical worldwide and independent of traditional spoken language.

**DIVISIONAL USE ONLY**

**Revision record – all revisions must be recorded in the grid and full details of the change retained in the appropriate committee records.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date approved | Major/minor revision | Start date of delivery of revised version | Section revised | Impacts PLOs (Q6&7 cover sheet) |
| 23/11/2020 | Minor | September 2021 | 7 | No |
|  |  |  |  |  |