**Programme Specification**

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| **Please note:** This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she passes the programme.More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module can be found in the programme handbook. The accuracy of the information contained in this specification is reviewed by the University and may be checked by the Quality Assurance Agency for Higher Education. |

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| **Portfolio of Taught Postgraduate ProgrammesSchool of Computing, Canterbury campus****Degree and Programme Titles****Generalist Masters group:*** **MSc Computer Science**

**Advanced Masters group:*** **MSc Advanced Computer Science**
* **MSc Advanced Computer Science (Cloud Computing and Big Data)**
* **MSc Advanced Computer Science (Computational Intelligence)**
* **MSc Advanced Software Development**
* **MSc Computer Security**
* **MSc Cyber Security**
* **MSc Networks and Security**

**IT & Business Masters group:*** **MSc Computing and Entrepreneurship**
* **MSc IT Consultancy**

**Each of the above is available in the following formats:*** **MSc xxx - see Section 17A**
* **MSc xxx with an Industrial Placement - see Section 17B**

**Any reference to a named MSc programme applies to both formats unless stated otherwise.****Any reference to a named group applies to all MSc programmes in the group unless stated otherwise.****Alternative exit awards (PDip, PCert) are available for partial completion of each programme as described in Sections 17A and 17B.** |

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| 1. **Awarding Institution/Body**
 | University of Kent |
| 1. **Teaching Institution**
 | University of Kent |
| 1. **School responsible for management of the programme**
 | School of Computing |
| 1. **Teaching Site**
 | Canterbury |
| 1. **Mode of Delivery**
 | Full-timePart-time |
| 1. **Programme accredited by**
 | MSc Cyber Security is certified by GCHQ |
| 1. **Final Award**
 | MSc (final award)PDip, PCert (alternative exit awards) |
| 1. **Programme**
 | See list above |
| 1. **UCAS Code (or other code)**
 | n/a |
| 1. **Credits/ECTS value**
 | MSc – 180 credits (90 ECTS)PDip – 120 credits (60 ECTS)PCert – 60 credits (30 ECTS) |
| 1. **Study Level**
 | 7 |
| 1. **Relevant QAA subject benchmarking group(s)**
 | Master's Degrees in Computing (2011) |
| 1. **Date of creation/revision**
 | 6 July 2017 |
| 1. **Intended Start Date of Delivery of this Programme**
 | Changes take effect from September 2017 |

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| 1. **Educational Aims of the Programme**

All of the programmes aim to: |
| * Enhance the career prospects of graduates seeking employment in the computing/IT sector.
* Prepare graduates for research and/or professional practice at the forefront of the discipline.
* Develop an integrated and critically aware understanding of one or more areas of computing/IT and their applications (according to the degree title).
* Develop a variety of advanced intellectual and transferable skills.
* Equip graduates with the lifelong learning skills necessary to keep abreast of future developments in the field.
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| **16 Programme Outcomes**The programme provides opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas.The subject benchmark statement for Master's degrees in Computing is not referenced explicitly below because it does not outline a curriculum or itemise learning outcomes on an individual basis. However, the outcomes listed here together satisfy or exceed the Threshold Level defined in Section 7.2 of the benchmark. |

**A. Knowledge and Understanding of:**

**Common to all MSc programmes:**

1. How to engineer software systems that satisfy the needs of customers using a state-of-the-art methodology and an industrially-relevant programming language.
2. A broad variety of advanced topics relating to computing/IT (the specific topics will depend on the optional modules chosen by a student and may vary from year to year in response to developments in the field, staff changes, etc).

**Additional outcomes specific to MSc Computer Science:**

1. The theoretical foundations of computer science.
2. The architecture of computer systems including hardware components and operating systems in terms of their functionality, performance and interactions.
3. The specification, design and implementation of information systems using the latest database and web technologies.

**Additional outcomes specific to MSc Networks and Security:**

1. Computer networks and communications, including the latest technological developments and applications.

**Additional outcomes specific to MSc Computer Security, MSc Cyber Security and MSc Networks and Security:**

1. Security vulnerabilities of computer systems and networks and the countermeasures used to address them.
2. The motivation, design, operation and management of modern systems for encryption, authentication and authorisation, including quality of service issues.

**Additional outcomes specific to MSc IT Consultancy:**

1. The way in which SMEs operate and the constraints they are subject to, including aspects such as management, finance, and the organisation of business processes.
2. The most common roles of IT within SMEs, and of current technologies applicable to those roles, including issues of security, confidentiality and data integrity.

**Additional outcomes specific to MSc Computer Science, MSc IT Consultancy, MSc Cyber Security and MSc Computing and Entrepreneurship:**

1. Professional, legal, social, cultural and ethical issues related to the chosen field of computing.

**Additional outcomes specific to MSc Computing and Entrepreneurship:**

1. Understand the issues and constraints facing prospective entrepreneurs, and strategies for successfully establishing a new business.

**Additional outcomes specific to MSc Advanced Computer Science (Computational Intelligence):**

13. The foundations of computational intelligence methods, including the principles and concepts of a range of computational intelligence paradigms.

14. The use of advanced computational intelligence methods to better understand natural intelligence and/or to solve real-world problems cast as computational problems.

**Additional outcomes specific to MSc Advanced Computer Science (Cloud Computing and Big Data):**

15. Cloud computing technologies and the analysis of large data sets.

**Additional outcomes specific to MSc Advanced Software Development:**

1. The specification, design and implementation of software systems for a variety of platforms and across a range of application domains.

**Additional outcomes specific to MSc Cyber Security:**

1. Information security management and information assurance methodologies.
2. Information risk management, incident response, and business continuity planning and management.
3. Pattern analysis and forensics.

**Teaching/learning and assessment methods and strategies used to enable outcomes to be achieved and demonstrated**

**Teaching/learning**

Acquisition is through lectures, seminars, laboratory work, demonstrations, case studies, reading and presentation exercises.

Self-directed learning is facilitated by web-based materials and supported via email and a web-based forum.

The application of knowledge via formative coursework and project work (both individually and in groups) is a vital part of the learning process.

**Assessment**

Assessment is through a combination of unseen written examinations, written and practical coursework, student presentations, individual and group projects.

**Skills and Other Attributes**

**B. Intellectual Skills:**

**Common to all MSc programmes:**

1. Ability to identify, analyse and formulate criteria and specifications appropriate to a given problem.
2. Ability to model problems and their solutions with an awareness of any trade-offs involved.
3. Ability to evaluate systems, processes or methodologies in terms of general quality attributes and possible trade-offs.
4. Ability to deal with complex issues both systematically and creatively.
5. Ability to work with self-direction and originality in tackling and solving problems.
6. Ability to make sound judgements in the absence of complete data.

**Additional skills common to all MSc programmes except IT Consultancy:**

1. Ability to review a research paper or technical report critically and to present findings to a group of peers.
2. Ability to plan and execute a substantial research or development-based project and to report the work in the form of a dissertation.

**Teaching/learning and assessment methods and strategies used to enable outcomes to be achieved and demonstrated**

**Teaching/learning**

For outcomes common to all programmes as for section 16A.

All MSc and PDip programmes except IT Consultancy include a module on research skills.

MSc IT Consultancy students develop their skills further by undertaking practical consultancy work for KITC supported by the KITC coordinator and an academic supervisor.

Students on other MSc programmes undertake a substantial research or development project supported by an academic supervisor.

**Assessment**

For outcomes common to all programmes as for section 16A.

Research skills are assessed by a technical report and oral presentation.

MSc ITC practical consultancy work is assessed by a series of per-assignment reports and a more substantial report and presentation relating to the strategic development of the consultancy.

The substantial research or development project undertaken for other programmes is assessed by dissertation.

**C. Subject-specific Skills:**

**Common to all MSc programmes:**

1. Ability to specify, design, implement and test computer-based systems.
2. Ability to deploy effectively the tools used for the construction and documentation of software.
3. Ability to undertake practical work that explores techniques covered in the programme and to analyse and comment on the findings.
4. *Learning outcome C4 is no longer in use*.

**Additional skills specific to MSc IT Consultancy:**

1. Ability to follow up an initial contact with a client, leading to a mutually comprehensible statement of requirements and a well-formulated contract, taking due account of the interests of all stakeholders.
2. Ability to carry out a substantial piece of IT consultancy work, with particular emphasis on understanding the whole procedure of deploying a new IT solution within an SME environment, including the concomitant evolution of business processes.
3. Ability to deploy project management and team communication tools effectively.

**Additional skills specific to MSc Computing and Entrepreneurship:**

1. Ability to produce a viable business plan for a new business venture.

**Additional outcomes specific to MSc Advanced Computer Science (Computational Intelligence):**

9. Ability to abstract concepts and principles from other disciplines (particularly natural sciences) and use them as a metaphor to design computational systems to solve real-world problems.

**Additional skills specific to MSc Advanced Computer Science (Cloud Computing and Big Data):**

10. Be able to perform operations in existing cloud infrastructures and to create new cloud infrastructures using appropriate tools.

**Additional skills specific to MSc Advanced Software Development:**

11. Ability to make effective use of up-to-date tools for the development, modification, debugging, testing and verification of software systems.

**Teaching/learning and assessment methods and strategies used to enable outcomes to be achieved and demonstrated**

As for section 16B.

**D. Transferable Skills:**

**Common to all MSc programmes:**

1. Ability to plan, work and study independently and to use relevant resources in a manner that reflects good practice.
2. Ability to make effective use of general IT facilities including information retrieval skills.
3. Time management and organisational skills including the ability to manage one’s own learning and development.
4. Appreciation of the importance of continued professional development as part of lifelong learning.
5. Ability to work effectively as a member of a team.
6. Ability to communicate technical issues clearly to specialist and non-specialist audiences.
7. Ability to present ideas, arguments and results in the form of a well-structured written report.
8. Ability to act autonomously in planning and implementing tasks at a professional or equivalent level.

**Additional skills specific to MSc IT Consultancy:**

1. Ability to empathise with clients in understanding their problems and requirements.

**Additional skills specific to programmes with an Industrial Placement:**

1. Practical experience of the application in a working environment of knowledge and skills gained through academic study.

**Teaching/learning and assessment methods and strategies used to enable outcomes to be achieved and demonstrated**

As for section 16B.

See also sections 17B and 18 for skills relating to programmes with an Industrial Placement.

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| For more information on the skills developed by individual modules and on the specific learning outcomes associated with any alternative exit award relating to this programme of study, see the module mapping table, located at the end of this specification. |

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| **17A Programme Structures and Requirements, Levels, Modules, Credits and Awards for the MSc format without an industrial placement****Structure**The MSc programmes are normally studied over 12 months on a full-time basis. There are two main parts, a taught component and a major project. For the purpose of the credit framework they constitute a single stage, i.e. students do not need to pass the taught component in order to proceed to the project.The taught component runs from the start of the programme through to the middle of term 3 (summer). It comprises a mixture of compulsory and optional modules, each worth 15 credits or a multiple of 15 credits, amounting to 120 credits in total. Compulsory modules are core to the programme and must be taken by all students studying the programme. Optional modules provide a choice of subject areas, from which students will select a stated number of modules. Each module is normally delivered over a period of 6 or 12 weeks depending on pre-requisite and scheduling constraints.In term 1, students on most programmes are divided into two streams according to their previous programming experience. Beginners take CO881 and CO882 (optional for MSc IT Consultancy and MSc Computing and Entrepreneurship). Those who’ve studied programming before take CO871 plus an extra optional module (if necessary). The advanced stream is mandatory for some programmes. Students on programmes that require prior experience of advanced programming do not take any of the programming modules.Term 2 includes a mix of taught and project modules. IT Consultancy students undertake work on both the major project and the New Enterprise Development project. For other programmes the Project Research module is closely linked to the major project. It covers the research phase of the major project and includes supporting workshops on research methods. In order to balance workload evenly, students on some programmes may take an alternative instance of the Project Research module which spans both terms.Examinations are normally held in the first half of term 3.The major project is worth 60 credits and runs from the middle of term 3 through to the end of the programme (currently September). The Extended IT Consultancy Project follows a different pattern and runs throughout the year.**Part-time study**Certain programmes may be available on a part-time basis in certain years depending on timetabling and logistical constraints. When part-time study is permitted the MSc programme is normally spread over a period of 3 years with students taking half the taught modules in year 1, the other half in year 2 and the major project in year 3. (Some variation of this pattern may be necessary for IT Consultancy.)**Semester abroad**For selected programmes, students may optionally undertake term 2 at an approved partner institution abroad. The Board of Studies and School Graduate Studies Committee consider approval for institutions and programmes on an individual basis. For the purpose of recording credit at Kent, the period abroad is treated as a single 60-credit module CO901 Semester Abroad. Please refer to the CO901 module description for further details. Note – if a student undertaking term 2 abroad is on a programme that normally includes the Project Research module in term 2 then the background research for their major project will be carried out under the guidance of their project supervisor after they return to Kent.**Credits and levels**Students must successfully complete each module in order to be awarded the specified number of credits for that module. One credit corresponds to approximately ten hours of 'learning time' (including all classes and all private study and research). Thus obtaining 180 credits in an academic year requires 1,800 hours of overall learning time. For further information on modules and credits refer to the Credit Framework at <http://www.kent.ac.uk/teaching/qa/credit-framework/creditinfo.html>Each module and programme is designed to be at a specific level. For the descriptors of each of these levels, refer to Annex 2 of the Credit Framework at <http://www.kent.ac.uk/teaching/qa/credit-framework/creditinfoannex2.html>.**Condonement and compensation**Where a student fails a module(s) due to illness or other mitigating circumstances, such failure may be condoned, subject to the requirements of the Credit Framework and provided that the student has achieved the **programme** learning outcomes. For further information refer to the Credit Framework at <http://www.kent.ac.uk/teaching/qa/credit-framework/creditinfo.html>. Where a student fails a module(s), but has marks for such modules within 10 percentage points of the pass mark, the Board of Examiners may nevertheless award the credits for the module(s), subject to the requirements of the Credit Framework and provided that the student has achieved the **programme** learning outcomes. For further information refer to the Credit Framework.Failure in certain modules, however, may not be compensated or condoned. These modules are indicated in the table below.**Degree awards**These programmes make provision for awards to be made “with Merit” or “with Distinction”, as specified in Section 11 of the University credit framework.To be eligible for the award of an MSc, students must obtain 180 credits of which at least 150 are at level 7.Provision is also made for the award of Postgraduate Diploma (PDip) or Postgraduate Certificate (PCert) for students unable to complete their MSc programme. The PDip requires successful completion of 120 credits with at least 90 at level 7. This may comprise either the whole taught component or half the taught component plus the major project (except IT Consultancy for which the Extended IT Consultancy Project is mandatory). The PCert requires successful completion of 60 credits from the taught component with at least 40 credits at level 7.Certain compulsory modules are mandatory for some PDip/PCert awards and these are indicated in the table below. Where a student has achieved a sufficient volume and level of credits for a fall-back award but not met all the constraints particular to a PDip/PCert in their original programme title, they may be considered for a fall-back award in a less specialised programme if its requirements are met. Taught CO modules from any of the MSc programmes may contribute to a PCert in Computer Science.**Special requirements and adjustments**Students who have passed a taught module as part of a previous qualification at Kent are not normally permitted to repeat it as part of their new programme. If this situation arises the module must be substituted with another amounting to the same number of credits from the options available, subject to logistical constraints and the requirements of the credit framework. This constraint does not apply to project or IT consultancy practice modules (CO645 and CO880) because no substantial duplication of work would occur.Minor adjustments may also be necessary for students attending an MSc programme at Kent as part of an approved partnership arrangement with another institution. For example, a core module may need to be substituted to avoid duplication with the partner institution's curriculum and/or an optional module made compulsory to meet the partner's programme learning outcomes. In all cases the adjustment will comply with the requirements of the programme and credit framework at Kent.Programme details are subject to change without notice.  |

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|  | **Programme** |
|  | **Gen** | **Advanced** | **IT&B** |

| **Code** | **Title** | **Level** | **Credits** | **CS** | **ACS** | **ACS(CCBD)** | **ACS(CI)** | **ASD** | **CompSec** | **CyberSec** | **NetSec** | **CompEnt** | **ITC** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TERM 1***Students with substantial prior experience of programming (mandatory for some courses)* |
| CO871 | Advanced Java for Programmers 1 | 7 | 15 | x | x | x | x | x | x |  | x | x | X |
| CO889 | C++ Programming 1 | 7 | 15 | o | o | o | o | o | o |  | o | o | o |
| *Students with no or only limited prior experience of programming* |
| CO881 | Object-Oriented Programming 1 | 7 | 15 | x | x | x | x |  | x |  | x | x | x |
| CO882 | Advanced Object-Oriented Programming 1 | 7 | 15 | x | x | x | x |  | x |  | x | o | o |
| *Other modules depend on MSc programme* |
| CO836 | Cognitive Neural Networks 7 | 7 | 15 | o | o | o | o | o | o |  | o |  |  |
| CO837 | Natural Computation 7 | 7 | 15 |  | o | o | o | o | o |  | o |  |  |
| CO846 | Cloud Computing | 7 | 15 |  | o | X | o | x | o |  | o | o | o |
| CO874 | Networks and Network Security | 7 | 15 | o | o | o | o | o | x | x | x | o | o |
| CO876 | Computer Security | 7 | 15 |  | o | o | o | o | x | x | x | o | o |
| CO883 | Systems Architecture | 7 | 15 | x |  |  |  |  | o |  | o |  |  |
| CO887 | Web-based Information Systems Development 2 | 7 | 15 | x |  |  |  |  |  |  |  | o | o |
| CO894 | Development Frameworks | 7 | 15 |  | o | o | o | x | o |  | o |  | o |
| CB932 | Management of Operations | 7 | 15 |  |  |  |  |  |  |  |  | o | x |
| CB937 | Financial and Management Accounting | 7 | 15 |  |  |  |  |  |  |  |  | o | o |
| EL844 | Image Analysis with Security Applications 6 | 7 | 15 |  |  |  |  |  | o | o | o |  |  |
| EL857 | Biometric Technologies6 | 7 | 15 |  |  |  |  |  |  | o |  |  |  |
| *Selected options from undergraduate programmes, such as (may vary)*None at present |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **MODULES SPANNING TERM 1 AND TERM 2** |
| CO845 | New Enterprise Development | 7 | 30 |  |  |  |  |  |  |  |  | X | x |
| CO885 | Project Research 4 | 7 | 15 |  |  |  |  |  |  | x |  |  |  |
| LZ600 | Advanced English for Academic Study (Science) | 6 | 15 | o | o | o | o | o | o |  | o | o | o |
| **TERM 2***Students undertaking a semester abroad* |
| CO901 | Semester Abroad | 7 | 60 |  | X | X | X | X | X |  | X |  |  |
| *Other students* |
| CO832 | Data Mining and Knowledge Discovery 7 | 7 | 15 | o | o | x | o | o | o |  | o |  |  |
| CO834 | Trust, Security and Privacy Management | 7 | 15 |  | o | o | o |  | x | x | o | o | o |
| CO838 | Internet of Things and Mobile Devices | 7 | 15 |  | o | o | o | x | o |  | x | o | o |
| CO839 | Data Science | 7 | 15 |  | o | X | o | o | o |  | o | o | o |
| CO841 | Computing Law, Contracts and Professional Responsibility | 7 | 15 | o | o | o | o | o | o | x | o | x | o |
| CO884 | Logic and Logic Programming 7 | 7 | 15 | x | o | o | o |  |  |  |  |  |  |
| CO885 | Project Research 4 | 7 | 15 | x | x | x | x | x | x |  | x | x |  |
| CO886 | Software Engineering | 7 | 15 | x |  |  |  |  |  |  |  | o | o |
| CO890 | Concurrency and Parallelism 9 | 7 | 15 |  | o | o | o | x | o |  | o |  |  |
| CO892 | Advanced Network Security | 7 | 15 |  | o | o | o |  | o | x | x | o | o |
| CO899 | System Security | 7 | 15 |  | o | o | o | o | x | x | o | o | o |
| CB904 | Structure & Organisation of the E-enterprise | 7 | 15 |  |  |  |  |  |  |  |  | o | o |
| CB934 | Strategic Management | 7 | 15 |  |  |  |  |  |  |  |  | o | o |
| CB9067 | Digital Marketing | 7 | 15 |  |  |  |  |  |  |  |  | o | o |
| EL846 | Industrial Context of Biometrics 6 | 7 | 15 |  |  |  |  |  | o |  | o |  |  |
| PL583 | Philosophy of Cognitive Science and Artificial Intelligence | 6 | 30 |  |  |  | o |  |  |  |  |  |  |
| *Selected options from undergraduate programmes, such as (may vary)* |
| CO528 | Intro to Intelligent Systems | 5 | 15 | o | o | o | o | o | o |  | o |  |  |
| CO545 | Functional and Concurrent Programming 9 | 5 | 15 |  | o | o | o |  | o |  | o |  |  |
| CO641 | Computer Graphics and Animation | 6 | 15 | o | o | o | o | o |  |  |  |  |  |
| CO645 | IT Consultancy Practice 2 | 6 | 15 | o | o | o | o | o | o |  | o | o |  |
| **TERM 3 + SUMMER** |
| CO843 | Extended IT Consultancy Project 5 | 7 | 60 |  |  |  |  |  |  |  |  |  | X |
| CO880 | Project and Dissertation 4 | 7 | 60 | X | X | X | X | X | X | X | X | X |  |

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| **Key**Gen = Generalist MastersAdvanced = Advanced MastersIT&B = IT and Business MastersCS = MSc Computer ScienceACS = MSc Advanced Computer ScienceACS(CCBD) = MSc Advanced Computer Science (Cloud Computing and Big Data)ACS(CI) = MSc Advanced Computer Science (Computational Intelligence)ASD = MSc Advanced Software DevelopmentCompSec = MSc Computer SecurityCyberSec = MSc Cyber SecurityNetSec = MSc Networks and SecurityCompEnt = MSc Computing and EntrepreneurshipITC = MSc IT Consultancyx = compulsory moduleX = compulsory module that cannot be compensated or condonedo = optional module (optional modules may vary from year to year and are subject to timetabling and prerequisite constraints).x/X/o = required for PCert/PDip (see "Additional constraints on fall-back awards" below).**Notes**1 CO871 and CO881 are delivered semi-intensively in the first half of term 1.CO882 and CO889 are delivered semi-intensively in the second half of term 1.Neither CO871 nor CO889 can be combined with either CO881 or CO882.4 CO885 Project Research and CO880 Project and Dissertation are closely linked and the topic/area chosen must be relevant to the particular degree programme. There are two instances of CO885, one spans both terms and the other is confined to term 2.5 CO843 Extended IT Consultancy Project runs throughout the year but most of the effort takes place in term 3 and over the summer.6 Modules from MSc Information Security and Biometrics. The availability of these modules may vary from year to year.7 ACS(CI) students must select at least two modules from this subset. Furthermore, to ensure all programme learning outcomes are satisfied, the options selected must include at least one of the following: CO836, CO837, PL583.9 CO545 Functional and Concurrent Programming cannot be combined with CO890 Concurrency and Parallelism.**Additional constraints on fall-back awards**The general conditions for fall-back awards were described earlier. Additional constraints apply to the following programmes. The required subset of modules is indicated by underlining (i.e. x / X / o) and must be passed without compensation or condonement. * PDip/PCert Advanced Computer Science (Cloud Computing and Big Data)PDip/PCert Advanced Computer Science (Computational Intelligence)PDip/PCert Advanced Software DevelopmentPDip/PCert Computer SecurityPDip/PCert Networks and SecurityAt least two of the indicated modules are required.
* PDip/PCert Computing and EntrepreneurshipCO845 (30 credits) is required.
* PDip IT ConsultancyThe project (CO843) is required.Students who pass the taught component (120 credits) but fail the project may be eligible for the award of a PDip in Computing and Entrepreneurship.
* PCert IT ConsultancyEither CO843 or CB932 are required.
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| **17B Programme Structures and Requirements, Levels, Modules, Credits and Awards for the MSc format with an industrial placement****Structure**Each of the MSc programmes can optionally be combined with an industrial placement. Programmes with an industrial placement are normally only available on a full-time basis.Placements normally commence shortly after the major project has been completed (September) and vary in length from 8 to 50 weeks, extending the MSc programme to between 14 and 24 months. The start date and duration depend on the employer. Placements may be undertaken in the UK or overseas.**Progression**For the purpose of the credit framework the taught component, project and work placement constitute a single stage. (The varying order and timings make it difficult to apply a progression point.) However, commencement of the placement is conditional on satisfactory progress in the taught component, as determined at the interim examination board in June. A student with resits amounting to more than 30 credits will normally be required to retrieve the credit before beginning a placement.The University does not guarantee every student will find a placement. Those who don't will be transferred to the corresponding MSc programme without a placement.**Degree awards**The placement consists of two modules: Industrial Placement Experience (CO915/6/7/8) and Industrial Placement Report (CO902). Four versions of the Experience module exist to cover placements of different lengths. The Experience module is assessed as pass/fail only and the Report module is graded on a percentage scale.To be eligible for the award of an MSc with an Industrial Placement, students must meet the requirements for the award of the MSc without a placement and pass both of the placement modules. Fall-back awards (PDip and PCert with an Industrial Placement) follow a similar rule.**Condonement and compensation**The award of credit by compensation or condonement is limited to 25% of the modules which contribute towards the taught and project components (e.g. 180 credits for the MSc).The Industrial Placement modules cannot be compensated, condoned or repeated. However, the examination board may permit resubmission of an Industrial Placement Report if the failure was due to shortcomings in the report itself rather than in the work undertaken during the placement.Any student who fails either of the placement modules (with the above exception) will be transferred to the corresponding MSc programme without an Industrial Placement.Programme details are subject to change without notice.  |

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| **Code** | **Title** | **Duration****(weeks)** | **Level** | **Credits** |
| See section 17A for details of taught and project modules.Additional modules used for programmes with an industrial placement are listed below.Students take CO902 and either CO915, CO916, CO917 or CO918 depending on the length of their placement. |
| **Compulsory Modules** |
| CO902 | Industrial Placement Report | n/a | 7 | 15 |
| CO915 | Industrial Placement Experience (3 months) | 8 – 13 | 7 | 15 |
| CO916 | Industrial Placement Experience (6 months) | 14 – 26 | 7 | 45 |
| CO917 | Industrial Placement Experience (9 months) | 27 – 39 | 7 | 75 |
| CO918 | Industrial Placement Experience (12 months) | 40 – 50 | 7 | 105 |

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| **18 Work-Based Learning**Disability Statement: Where disabled students are due to undertake a work placement as part of this programme of study, a representative of the University will meet with the work placement provider in advance to ensure the provision of anticipatory and reasonable adjustments in line with legal requirements.  |
| Where relevant to the programme of study, provide details of any work-based learning element, inclusive of employer details, delivery, assessment and support for students. |
| **MSc IT Consultancy**Students on the MSc IT Consultancy programme undertake practical consultancy work in the Kent IT Consultancy (KITC) supported by the KITC coordinator and an academic supervisor. They are prepared for this work during term 1 by familiarising themselves with the clinic and its projects. The consultancy work starts in term 2 and runs through to the end of the programme as part of the Extended IT Consultancy Project. Assessment is through a series of per-assignment reports and a more substantial report and presentation relating to the strategic development of the clinic.**MSc programmes with an Industrial Placement**Students can opt to undertake an industrial placement as part of their MSc programme (see section 17B). A dedicated Placements Team based in the department maintains close links with a variety of employers including several large and medium-size companies. The following assistance is provided:* Before the placement:
	+ placement vacancies list
	+ presentations by employers
	+ assistance with checking of CVs, letters and applications
	+ assistance with interview preparation
	+ assistance with assessment centre preparation
	+ general advice and support
* During the placement:
	+ supervision by Industrial Supervisor (employer)
	+ normally a visit to workplace by member of Placements Team

All students normally receive a visit to check they are integrating successfully, the type of work is appropriate and that the employer understands the requirements of the assessment process. For short placements or those located overseas the visit may be replaced by a formal telephone/Skype meeting. A second visit or telephone/Skype meeting may be arranged for longer placements (i.e. 26 weeks or more).Assessment is based largely on a performance evaluation from the Industrial Supervisor and a reflective report written by the student. Student preparation for the placement is monitored and counts towards the assessment too. |

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| 1. **Support for Students and their Learning**
 |
| **Provided by the School of Computing*** School induction programme
* Programme handbooks (available online and in printed form)
* Web pages hosted on Moodle providing detailed information about each module including lecture materials, audio/video recordings (where available), assessments, past examination papers and an online forum
* Dedicated study space and facilities for MSc students
* Assignment of an academic advisor who monitors individual student progress and who can provide advice and support on a range of academic and pastoral issues
* Placements Team (for programmes with an Industrial Placement)
* Administrative support by staff familiar with MSc programmes

**Provided by the University*** University induction programme
* Student Support <http://www.kent.ac.uk/studentsupport/>
* Student Wellbeing [www.kent.ac.uk/studentwellbeing/](http://www.kent.ac.uk/studentwellbeing/)
* Student Learning Advisory Service <http://www.kent.ac.uk/uelt/about/slas.html>
* Counselling Service [www.kent.ac.uk/counselling/](http://www.kent.ac.uk/counselling/)
* Kent Union [www.kentunion.co.uk/](http://www.kentunion.co.uk/)
* Graduate Student Association (GSA) [www.kent.ac.uk/graduateschool/community/woolf.html](http://www.kent.ac.uk/graduateschool/community/woolf.html)
* Graduate School (Provision of (i) skills training (workshops and online courses) (ii) institutional level induction and (iii) student-led initiatives such as social events, conferences and workshops) [www.kent.ac.uk/graduateschool/index.html](http://www.kent.ac.uk/graduateschool/index.html)
* Information Services (computing and library services) [www.kent.ac.uk/is/](http://www.kent.ac.uk/is/)
* Postgraduate student representation at School, Faculty and Institutional levels
* Centre for English and World Languages [www.kent.ac.uk/cewl/index.html](http://www.kent.ac.uk/cewl/index.html)
* Careers and Employability Services [www.kent.ac.uk/ces/](http://www.kent.ac.uk/ces/)
* International Development Office [www.kent.ac.uk/international/](http://www.kent.ac.uk/international/)
* Medical Centre [www.kent.ac.uk/counselling/menu/Medical-Centre.html](http://www.kent.ac.uk/counselling/menu/Medical-Centre.html)
* Library services, see <http://www.kent.ac.uk/library/>
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| **20 Entry Profile**The minimum age to study a degree programme at the university is normally at least 17 years old by 20 September in the year the programme begins. There is no upper age limit. |
| 20.1 **Entry Route**For fuller information, please refer to the University prospectus |
| The following are in addition to the University’s general entry requirements for postgraduate degree courses.**Common to all programmes*** Mathematical skills equivalent to a grade C or above in GCSE/O-level mathematics. (Programmes that require more advanced mathematical skills are indicated below.)
* No previous work experience is required but relevant experience may be taken into account when applications are considered.

**Undergraduate degree level requirements*** A First or good Second Class Honours degree (or the equivalent) in an appropriate subject (see below).

**Undergraduate degree subject requirements*** Generalist Masters programmesThe first degree may be in any subject. No previous formal qualification in computing is required.
* IT & Business Masters programmesThe first degree may be in any subject but applicants must be able to demonstrate a keen interest in, and sufficient prior knowledge of, information technology. However, this prior knowledge need not have been gained via formal academic study.
* MSc Advanced Software DevelopmentThe first degree must be in Computer Science or a closely related subject with a substantial coverage of programming and software engineering.
* MSc Cyber SecurityThe first degree must be in Computer Science or a closely related subject with a substantial coverage of programming.
* Other Advanced Masters programmesThe first degree must be in Computer Science or a related subject with a substantial computing content.

**Additional requirements specific to MSc IT Consultancy*** Applicants who are not native speakers of English will be required to have achieved an overall score of 7.0 in the International English Language Test (IELTS), with a minimum of 7 in speaking and of 6 in listening, reading and writing, or equivalent qualifications.
* Admission to the programme will be subject to interview (which may be conducted by telephone) to verify:
* that applicants are suitably motivated for the programme, and have appropriate interpersonal skills for interacting with SME clients;
* that applicants have a sufficient command of English to interact effectively with SME clients and with fellow consultants;
* that applicants have a sufficient understanding of technical areas relevant to small-business IT consultancy, and to identify any deficiencies in this understanding that will need to be rectified during the course of the programme.
* The number of students admitted to the course in any academic year will be subject to an upper limit in the light of the commercial prospects of KITC for that year, so that the Board of Studies can be confident that there will be sufficient practical work for each student.

**Accreditation of Prior Learning (APL)**Requests for APL/APEL will not normally be considered for these programmes because they involve detailed study of particular topics for which it would be difficult to determine the precise depth of prior learning. |
| 20.2 **What does this programme have to offer?** |
| **Common to all programmes*** High quality teaching from internationally recognised experts.
* Up-to-date courses underpinned by the latest research and informed by strong industrial links.
* A firm grounding in computer science or a related specialism.
* The opportunity to acquire deeper knowledge in topics of personal interest by selection of optional modules and choice of projects.
* The development of knowledge and skills that are highly sought after by employers and which open up a wide range of careers to graduates, within computing and other professional fields.
* Excellent computer facilities including a dedicated laboratory for students on these programmes.

**Additional benefits specific to IT & Business Masters programmes*** The opportunity to combine modules relating to computer science with a selection of modules taught by the Kent Business School as part of their Management MSc programmes.
* For the MSc in IT Consultancy, the opportunity to learn consultancy skills in the environment of a real IT consultancy working for local SMEs.
 |
| 20.3 **Personal Profile** |
| **Common to all programmes**Desirable qualities include:* An enthusiasm for computing and/or a related specialism.
* A willingness to accept new ideas and to be flexible in one's thinking.
* A capability to work with others.
* The ability to work hard when required. This is an intensive course.
* Good oral and written communication skills.

**Generalist Masters programmes*** MSc Computer ScienceAimed primarily at graduates of other disciplines seeking to augment their initial degree with knowledge of computer science and intellectual skills that will enhance their career prospects, either within their original discipline or in the computing/IT sector. May also appeal to graduates of joint/applied computing programmes wishing to deepen their knowledge or those who studied computing many years ago wishing to update their knowledge.

**Advanced Masters programmes**This group of programmes is aimed primarily at graduates of computing or related disciplines wishing to deepen their knowledge of particular specialism(s), typically with a view to improving career prospects or as preparation for research.* MSc Advanced Computer Science.Aimed at graduates whose interests span more than one specialism and/or who are seeking the freedom to explore a wide variety of advanced topics.
* MSc Advanced Computer Science (Cloud Computing and Big Data).Aimed at computing graduates interested in these new and emerging paradigms and applications of computing, most probably with a view to working in a research environment or as preparation for PhD study.
* MSc Advanced Computer Science (Computational Intelligence).Aimed at graduates interested in computational intelligence including its inspirations from the natural world and its applications, most probably with a view to working in a research environment or as preparation for PhD study.
* MSc Advanced Software Development.Aimed at computing graduates seeking careers as professional software developers/engineers and who are looking for a highly practical course that covers a broad spectrum of platforms, tools, techniques and skills.
* MSc Computer Security and MSc Cyber Security.Aimed at computing graduates seeking careers as computer security professionals or careers/research that requires a systematic and deep understanding of the subject.
* MSc Networks and Security.Aimed at computing graduates seeking careers in networking or network security industries, or thinking about progressing to research in this field.

**IT & Business Masters programmes**This group of programmes is aimed at graduates interested in working at the interface between computing and business. |

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| 21 **Methods for Evaluating and Enhancing the Quality and Standards of Teaching and Learning** |
| 21.1 **Mechanisms for review and evaluation of teaching, learning, assessment, the curriculum and outcome standards** |
| * Quality Assurance Framework <http://www.kent.ac.uk/teaching/qa/codes/index.html>
* Periodic Programme Review <http://www.kent.ac.uk/teaching/qa/codes/taught/annexf.html>
* External Examiners system <http://www.kent.ac.uk/teaching/qa/codes/taught/annexk.html>
* Annual programme and module monitoring reports <http://www.kent.ac.uk/teaching/qa/codes/taught/annexe.html>
* QAA Higher Education Review, see <http://www.qaa.ac.uk/InstitutionReports/types-of-review/higher-education-review/Pages/default.aspx>
* Student module evaluations
* Annual staff appraisal
* Peer observation
* School Industrial Panel
 |
| 21.2 **Committees with responsibility for monitoring and evaluating quality and standards** |
| * School Board of Examiners for Postgraduate Taught Programmes
* School Board of Studies for Postgraduate Taught Programmes
* School Staff/Student Liaison Committee
* Faculty Graduate Studies Committee
* Faculty Board
* Graduate School Board
* PASC
 |
| 21.3 **Mechanisms for gaining student feedback on the quality of teaching and their learning experience** |
| * School Staff-Student Liaison Committee
* Postgraduate Taught Experience Survey (PTES)
* Student module evaluations
* Postgraduate Student Representation System (School, Faculty and Institutional level)
 |
| 21.4 **Staff Development priorities include:** |
| * Annual Appraisals
* Institutional Level Staff Development Programme
* Study Leave
* Academic Practice Provision (PGCHE, ATAP and other development opportunities)
* PGCHE requirements
* HEA (associate) fellowship membership
* Professional body membership and requirements
* Programme team meetings
* Research seminars
* Conferences
* School annual away-days
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| 22 **Indicators of Quality and Standards** |
| * Annual External Examiner reports
* Results of periodic programme review 2012
* Annual programme and module monitoring reports
* Graduate Destinations Survey
* Postgraduate Taught Experience Survey (PTES) results
* QAA Higher Education Review 2015
* Staff includes two ACM Distinguished Scientists and several winners of national and international prizes for teaching including two ACM SIGCSE awards for "outstanding contribution to computer science education"
* REF 2014
 |
| 22.1 The following reference points were used in creating these specifications: |
| * QAA UK Quality Code for Higher Education
* QAA Benchmarking statement for Masters programmes in Computing
* School and Faculty plan
* University Plan/Learning and Teaching Strategy
* Staff research activities
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*Updated to October 2015 template*

**Module Mapping Table**

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|  | Knowledge and Understanding | Intellectual Skills | Subject-specific Skills | Transferable Skills |

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| Learning outcomes for each MSc programme 🡪x = all programme formatsI = just for programmes with industrial placement | Generalist | CS | x | x | x | x | x |  |  |  |  |  | x |  |  |  |  |  |  |  |  | x | x | x | x | x | x | x | x | x | x | x |  |  |  |  |  |  |  |  | x | x | x | x | x | x | x | x |  | I |
|  | ACS | x | x |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | x | x | x | x | x | x | x | x | x | x | x |  |  |  |  |  |  |  |  | x | x | x | x | x | x | x | x |  | I |
|  | ACS(CCBD) | x | x |  |  |  |  |  |  |  |  |  |  |  |  | x |  |  |  |  | x | x | x | x | x | x | x | x | x | x | x |  |  |  |  |  |  | x |  | x | x | x | x | x | x | x | x |  | I |
|  | ACS(CI) | x | x |  |  |  |  |  |  |  |  |  |  | x | x |  |  |  |  |  | x | x | x | x | x | x | x | x | x | x | x |  |  |  |  |  | x |  |  | x | x | x | x | x | x | x | x |  | I |
| Advanced | ASD | x | x |  |  |  |  |  |  |  |  |  |  |  |  |  | x |  |  |  | x | x | x | x | x | x | x | x | x | x | x |  |  |  |  |  |  |  | x | x | x | x | x | x | x | x | x |  | I |
|  | CompSec | x | x |  |  |  |  | x | x |  |  |  |  |  |  |  |  |  |  |  | x | x | x | x | x | x | x | x | x | x | x |  |  |  |  |  |  |  |  | x | x | x | x | x | x | x | x |  | I |
|  | CyberSec | x | x |  |  |  |  | x | x |  |  | x |  |  |  |  |  | x | x | x | x | x | x | x | x | x | x | x | x | x | x |  |  |  |  |  |  |  |  | x | x | x | x | x | x | x | x |  | I |
|  | NetSec | x | x |  |  |  | x | x | x |  |  |  |  |  |  |  |  |  |  |  | x | x | x | x | x | x | x | x | x | x | x |  |  |  |  |  |  |  |  | x | x | x | x | x | x | x | x |  | I |
| IT & Business | CompEnt | x | x |  |  |  |  |  |  |  |  | x | x |  |  |  |  |  |  |  | x | x | x | x | x | x | x | x | x | x | x |  |  |  |  | x |  |  |  | x | x | x | x | x | x | x | x |  | I |
|  | ITC | x | x |  |  |  |  |  |  | x | x | x |  |  |  |  |  |  |  |  | x | x | x | x | x | x |  |  | x | x | x |  | x | x | x |  |  |  |  | x | x | x | x | x | x | x | x | x | I |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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|  | CS | ACS | ACS(CCBD) | ACS(CI) | ASD | CompSec | CyberSec | NetSec | CompEnt | ITC | A1 | A2 | A3 | A4 | A5 | A6 | A7 | A8 | A9 | A10 | A11 | A12 | A13 | A14 | A15 | A16 | A17 | A18 | A19 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 | C11 | D1 | D2 | D3 | D4 | D5 | D6 | D7 | D8 | D9 | D10 |

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| CO545 | Func & Conc |  | o | o | o |  | o |  | o |  |  | x | x | x |  |  |  |  |  |  |  |  |  |  |  |  | x |  |  |  |  | x |  |  |  |  |  |  | x |  | x |  |  |  |  |  |  |  |  |  | x | x |  |  |  |  |  |  |  |
| CO641 | Comp Gra | o | o | o | o | o |  |  |  |  |  |  | x |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | x | x |  |  |  |  |  | x | x |  |  |  |  |  |  |  |  |  |  | x | x |  |  | x |  |  |  |  |
| CO645 | ITC Practice | o | o | o | o | o | o |  | o | o |  | p | p | p | p | p | p | p | p | x | x | x | x |  |  |  | p |  |  |  | x | x | x | x | x | p |  |  | x | x | p |  | p | p | x |  |  |  | p | x | x | x | x | x | x | x | x | x | x |
| CO832 | Data Mining | o | o | x | o | o | o |  | o |  |  |  | x | x |  |  |  |  |  |  |  |  |  | x | x | x |  |  |  |  | x | x | x | x |  |  |  |  | x |  | x |  |  |  |  |  |  |  |  |  | x |  |  |  | x | x |  |  |  |
| CO834 | Trust Man |  | o | o | o |  | x | x | o | o | o | x | x |  |  |  |  | x | x |  |  | x |  |  |  |  |  | x | x |  | x | x | x | x | x | x |  |  | x | x | x |  |  |  |  |  |  |  |  | x | x | x | x | x | x | x |  |  |  |
| CO836 | Cog Neur Net | o | o | o | o | o | o |  | o |  |  |  | x |  |  |  |  |  |  |  |  |  |  | x | x |  |  |  |  |  | x | x | x | x | x |  |  |  | x |  | x |  |  |  |  |  | x |  |  | x | x | x |  | x | x |  |  |  |  |
| CO837 | Natural Comp |  | o | o | o | o | o |  | o |  |  | x | x | x |  |  |  |  |  |  |  |  |  | x | x | x |  |  |  |  | x | x | x | x | x | x | x |  | x |  | x |  |  |  |  |  | x |  |  | x | x | x |  |  | x | x |  |  |  |
| CO838 | IoT & Mobile | o | o | o | o | x | o |  | x | o | o | x | x |  | x |  | x | x |  |  |  |  |  |  |  |  | x |  |  |  | x | x | x | x | x |  | x |  | x | x | x |  |  |  |  |  |  |  | x | x | x | x |  |  | x | x |  |  |  |
| CO839 | Data Science |  | o | X | o | o | o |  | o | o | o |  | x | x |  |  |  |  |  |  |  | x |  |  |  | x |  |  |  |  | x | x | x | x | x | x |  |  | x |  | x |  |  |  |  |  |  | x |  | x | x | x |  | x | x |  | x |  |  |
| CO841 | Comp Law | o | o | o | o | o | o | x | o | x | o | x | x |  |  |  |  |  |  | x | x | x | x |  |  |  |  |  |  |  | x | x | x | x | x | x |  |  | x | x |  |  | x |  |  |  |  |  |  | x | x | x | x | x | x | x | x | x |  |
| CO843 | Ext ITC Proj |  |  |  |  |  |  |  |  |  | X | p | x | p | p | p | p | p | p | x | x | x | x |  |  |  | p |  |  |  | x | x | x | x | x | p |  |  | x | x | p |  | x | x | x |  |  |  | p | x | x | x | x | x | x | x | x | x | x |
| CO845 | New Ent Dev |  |  |  |  |  |  |  |  | X | x |  | x |  |  |  |  |  |  | x | x | x | x |  |  |  |  |  |  |  | x |  | x | x | x |  |  |  |  |  |  |  | x | x | x | x |  |  |  | x | x | x | x | x | x | x | x | x |  |
| CO846 | Cloud Comp |  | o | X | o | x | o |  | o | o | o | x |  | x | x |  |  | x | x |  |  |  |  |  |  | x | x |  |  |  | x |  | x | x | x | x |  |  | x | x | x |  |  |  |  |  |  | x |  | x | x | x |  | x | x | x |  |  |  |
| CO871 | Ad Java Prog | x | x | x | x | x | x |  | x | x | X | x |  | x |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | x | x | x | x |  |  |  |  | x | x | x |  |  |  |  |  |  |  |  | x | x | x | x | x | x |  |  |  |  |
| CO874 | Net & Net Sec | o | o | o | o | o | x | x | x | o | o |  | x | x | x |  | x | x | x |  | x |  |  |  |  |  |  |  |  |  | x | x | x | x |  |  | x |  | x |  | x |  |  |  |  |  |  |  |  | x | x | x | x |  | x | x |  |  |  |
| CO876 | Comp Sec |  | o | o | o | o | x | x | x | o | o |  | x | x |  |  | x | x | x |  |  |  |  |  |  |  |  | x | x |  | x |  | x | x |  | x | x |  | x |  | x |  |  |  |  |  |  |  |  | x | x | x | x | x | x | x |  |  |  |
| CO880 | Proj & Diss | X | X | X | X | X | X | X | X | X |  | p | x | p | p | p | p | p | p |  |  | p |  | p | p | p | p | p | p | p | x | x | x | x | x | x | x | x | p | p | p |  |  |  |  |  | p | p | p | x | x | x | x | p | x | x | x |  |  |
| CO881 | OO Prog | x | x | x | x | x | x |  | x | x | x | x |  |  | x |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | x | x | x |  |  |  |  |  | x | x | x |  |  |  |  |  |  |  |  | x | x | x | x |  |  |  |  |  |  |
| CO882 | Adv OO Prog | x | x | x | x | x | x |  | x | o | o | x |  | x |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | x | x | x | x |  |  |  |  | x | x | x |  |  |  |  |  |  |  |  | x | x | x | x | x | x |  |  |  |  |
| CO883 | Sys Arch | x |  |  |  |  | o |  | o |  |  |  |  | x | x |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | x |  | x | x |  |  |  |  | x | x | x |  |  |  |  |  |  |  |  | x | x |  |  |  |  |  |  |  |  |
| CO884 | Logic & Prog | x | o | o | o |  |  |  |  |  |  |  | x | x |  |  |  |  |  |  |  |  |  | x | x |  | x |  |  |  | x | x | x | x |  |  |  |  | x |  | x |  |  |  |  |  |  |  |  | x | x |  |  |  |  |  |  |  |  |
| CO885 | Proj Research | x | x | x | x | x | x | x | x | x |  | x | x | p | p | p | p | p | p |  |  |  |  | p | p | p | p |  |  |  | x | p | p | x | x | x | x | x |  |  | p |  |  |  |  |  | p | p | p | x | x | x |  | x | x | x | x |  |  |
| CO886 | Soft Eng | x |  |  |  |  |  |  |  | o | o | x | x | x |  | x |  |  |  |  | x | x |  |  |  |  |  |  |  |  | x | x | x | x | x | x |  |  | x | x | x |  |  |  |  |  |  |  | x | x | x | x | x | x | x | x | x |  |  |
| CO887 | Web IS Dev | x |  |  |  |  |  |  | o | o | o | x | x | x |  | x |  |  |  |  | x | x |  |  |  |  | x |  |  |  | x | x | x |  | x | x |  |  | x | x | x |  |  |  |  |  |  |  |  | x | x | x |  | x | x | x |  |  |  |
| CO889 | C++ Prog | o | o | o | o | o | o |  | o | o | o | x | x | x | x |  |  |  |  |  |  |  |  |  |  |  | x |  |  |  | x | x | x | x |  |  |  |  | x | x | x |  |  |  |  |  |  |  | x | x | x | x |  |  | x |  |  |  |  |
| CO890 | Conc Parallel |  | o | o | o | x | o |  | o |  |  | x | x | x |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | x | x | x | x |  |  | x |  | x |  | x |  |  |  |  |  |  |  |  | x | x | x | x |  | x |  |  |  |  |
| CO892 | Adv Net Sec |  | o | o | o |  | o | x | x | o | o |  | x |  | x |  | x | x | x |  | x |  |  |  |  |  |  |  |  | x | x | x | x | x |  |  | x |  |  |  | x |  |  |  |  |  |  |  |  | x | x | x | x | x | x |  |  |  |  |
| CO894 | Dev Frame |  | o | o | o | x | o |  | o |  | o | x | x |  | x |  |  |  |  |  |  |  |  |  |  |  | x |  |  |  | x | x | x | x | x |  |  |  | x | x | x |  |  |  |  |  |  |  | x | x | x | x | x | x | x |  | x |  |  |
| CO899 | Sys Security |  | o | o | o | o | x | x | o | o | o | x | x |  | x |  | x | x | x |  |  |  |  |  |  |  |  |  |  | x | x | x | x | x | x |  |  | x | x | x | x |  |  |  |  |  |  |  |  | x | x | x | x | x | x | x |  |  |  |
| CO901 | Sem Abroad |  | A | A | A | A | A |  | A |  |  | p | x | p | p | p | p | p | p | p | p | p | p | p | p | p | p | p | p | p | x | x | x | x | x | x | p | p | x | x | x |  | p |  | p |  | p | p | p | x | x | x | p | x | x | p | p |  |  |
| CO902 | Ind Plac Rep | I | I | I | I | I | I |  | I | I | I | p | p | p | p | p | p | p | p | p | p | p | p | p | p | p | p | p | p | p | p | p | p | p | p | p |  |  | p | p | p |  | p |  | p |  | p | p | p | x | x | x | x |  | x | x | x | p | X |
| CO915CO916CO917CO918 | Indust Place Experience | I | I | I | I | I | I |  | I | I | I | p | p | p | p | p | p | p | p | p | p | p | p | p | p | p | p | p | p | p | p | p | p | x | x | x |  |  | p | p | p |  | p |  | p |  | p | p | p | x | x | x | x | x | x | p | x | p | X |
| CB9067 | Dig Marketing |  |  |  |  |  |  |  |  | o | o |  |  |  |  |  |  |  |  | x |  |  |  |  |  |  |  |  |  |  |  |  | x |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | x |  |
| CB904 | Struct E-ent |  |  |  |  |  |  |  |  | o | o |  |  |  |  | x |  |  |  | x |  |  |  |  |  |  |  |  |  |  |  |  | x |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CB932 | Man Ops |  |  |  |  |  |  |  |  | o | x |  |  |  |  |  |  |  |  | x |  |  |  |  |  |  |  |  |  |  |  |  | x | x |  |  |  |  |  |  |  |  |  | x |  |  |  |  |  | x |  | x |  |  |  |  |  | x |  |
| CB934 | Strat Man |  |  |  |  |  |  |  |  | o | o |  |  |  |  |  |  |  |  | x |  |  |  |  |  |  |  |  |  |  |  |  | x | x |  | x |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | x |  |  |  |  |  | x |  |
| CB937 | Fin Man Acc |  |  |  |  |  |  |  |  | o | o |  |  |  |  |  |  |  |  | x |  |  |  |  |  |  |  |  |  |  |  |  | x |  |  | x |  |  |  |  |  |  |  | x | x |  |  |  |  |  |  |  |  |  |  |  |  | x |  |
| EL844 | Fund Im Ana |  |  |  |  |  | o | o | o |  |  |  |  |  |  |  |  |  | x |  |  |  |  |  |  |  |  |  |  | x |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| EL846 | Indust Biomet |  |  |  |  |  | o |  | o |  |  |  |  |  |  |  |  |  | x |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| EL857 | Biomet Tech |  |  |  |  |  |  | o |  |  |  |  |  |  |  |  |  |  | x |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| LZ600 | Adv English | o | o | o | o | o | o |  | o | o | o |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | x | x | x | x | x | x | x |  |  |  |
| PL583 | Philos of AI |  |  |  | o |  |  |  |  |  |  |  | x | x |  |  |  |  |  |  |  |  |  | x |  |  |  |  |  |  |  |  |  |  |  |  | x |  |  |  |  |  |  |  |  |  | x |  |  | x | x | x |  |  | x | x |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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|  | CS | ACS | ACS(CCBD) | ACS(CI) | ASD | CompSec | CyberSec | NetSec | CompEnt | ITC | A1 | A2 | A3 | A4 | A5 | A6 | A7 | A8 | A9 | A10 | A11 | A12 | A13 | A14 | A15 | A16 | A17 | A18 | A19 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 | C11 | D1 | D2 | D3 | D4 | D5 | D6 | D7 | D8 | D9 | D10 |

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| 🡩 Modules 🡩 | 🡩 Programmes using module 🡩 | 🡩 Programme learning outcomes met by each module (x = met, p = depends on project/placement topic/activities) 🡩 |
| x = core, o = option, | X = core and can't be compensated or condoned, I = just for programmes with industrial placement, A = just for students undertaking a semester abroad |