UNIVERSITY OF PLYMOUTH

PROGRAMME QUALITY HANDBOOK 2025/26

BSc (Hons) Applied Computer Science

1. Welcome and Introduction to BSc (Hons) Applied Computer Science

Welcome to BSc (Hons) Applied Computer Science delivered at City College Plymouth.

This programme has been designed to equip you with the skills and knowledge base required to work in your chosen specialism or other graduate opportunities. It is also a platform from which you can undertake additional vocational and academic qualifications.

This Programme Quality handbook contains important information including:

- The approved programme specification
- Module records

Note: The information in this handbook should be read in conjunction with the current edition of:

- Your Programme Institution & University Student Handbook which contains student support based information on issues such as finance and studying at HE

- Your Module, Teaching, Learning and Assessment Guide
  available on your programme VLE
- Plymouth University's Student Handbook
  available at:
  https://www.plymouth.ac.uk/your-university/governance/student-handbook

1. Programme Specification

Award Title: BSc (Hons) Applied Computer Science

Intermediate Award: N/A

UCAS code: I002

JACS code: XXXX

Awarding Institution:	**University of Plymouth**
Teaching institution(s):	**City College Plymouth**
Accrediting body(ies)	**N/A**

Distinctive Features of the Programme and the Student Experience

This programme distinctively focuses on developing knowledge, skills and attributes for ethically applying computer science disciplines including machine learning and artificial intelligence to solve problems that arise for local and regional industries and sectors. There is a strong emphasis on the application of computer science within this program and the design of the BSc (Hons) Applied Computer Science includes topics where theory is taught and then applied to industry related problems in areas including pattern recognition, high performance computing and artificial intelligence. The students will have an opportunity to use the knowledge gained, to complete an individual project where the techniques studied will be applied to a relevant computer related problem. Thus growing a community of graduates to build the future for this sector in the region and beyond.
This programme, delivered by City College Plymouth, partnered with the University of Plymouth as the degree awarding institution, targets specifically the application of machine learning and data science within the wider Information Technology sector.

A Graduate who has studied the BSc (Hons) Applied Computer Science will be able to apply these skills to the tasks of modelling complex scenarios. This includes pattern recognition and the prediction and visualisations of these through the use of modern automated perception, reasoning and learning computer algorithms through leveraging high performance computing techniques.
The BSc (Hons) Applied Computer Science curriculum reflects modern developments and professional standards in Artificial Intelligence, Machine Learning and Computer Science. Teaching is informed by the research activity and the industry expertise of staff, including their close links with industry-leading companies including Nvidia Corporation, NASA, The Met Office, the UK Land Registry, and the Plymouth NHS Trust[1]. That teaching integrates a wide spectrum of knowledge, including related aspects of physiology, philosophy, psychology, ethics, algorithms and data structures, logic and mathematics, hardware and networks, professional issues and software engineering. Combining those, with a wide range of technical and interpersonal skills, including computer programming, analysis and design, research, project management, report writing, presentation skills and enterprise, in order to specifically target the production of graduates who can apply aspects of computer science including machine learning and artificial intelligence to solve real-world problems.

The delivery of the BSc (Hons) Applied Computer Science is student centred and focused on equitability of opportunity, enabled by delivery to cohorts with a maximum of 16 students, and with both full-time and part-time routes and compact timetables that remain consistent across the academic year. Thus enabling students from varied backgrounds and employment situations to engage appropriately with their study. Those students will focus on project work and collaboration between students and with industry partners and clients. This provides a broad and immersive range of experiences for students and enhances their communication, collaboration and practical skills.
This BSc (Hons) Applied Computer Science, alongside the College's other computing programmes, is delivered in the 2017-built STEM (Science, Technology, Engineering and Maths) Centre on Kings Road, Plymouth. This modern building provides a stimulating and comfortable learning environment where students can find all the

[1] Specific industry links correct at the time of programme approval (2019)

hardware and software they need for their particular field of study, whilst sharing that environment with students studying in a range of science, creative and digital related subjects.

In addition to the new learning environment, computing students will have exclusive use of seven dedicated computing labs, and a research space. Five of the labs offer their own dedicated networking environments to allow for experimentation in networking, security and parallel programming, whilst the software suites offer the student a range of open source and proprietary software to enhance the practical side of their education. Continued procurement of dedicated AI equipment with significant computing power supports this programme, for example the planned[2] procurement of a dedicated AI workstation (Nvidia DGX-1 with V100) will have a potential of 1 Petaflops of computing power with 40,000 Cuda cores which the students will have time shared access to throughout the course of study. In addition to this an additional 200,000 Cuda Cores will be available from dedicated desktop computers equipped with GeForce RTX 2080 GPU's.
Students will have the opportunity to develop real solutions, for real clients. Alongside engaging with local and regional industry within the development of the BSc (Hons) Applied Computer Science, those industry partners also provide real-world problems for incorporation into assessment and also where students present their work to clients/sponsors and have the opportunity to then gain from reflecting on the work-based learning skills that provides.

Dedicated students of the BSc (Hons) Applied Computer Science will graduate as highly employable and enterprising individuals, who will be well prepared to also seek continued study to Masters or PhD if an academic future is desired.

[2] At the time of this programme's approval (2019)

Relevant QAA Subject Benchmark Group(s)

QAA Subject Benchmark for Computing (2016)

British Computing Society Guidelines on course accreditation information for universities and colleges (May 2018)

UK Engineering Council The Accreditation of Higher Education Programmes, UK Standard for Professional Engineering Competence, Third edition (May 2014)

Department for Digital, Culture, Media and Sport, UK Digital Strategy Policy Paper (2017)

ACM/IEEE Computing Curricula Recommendations

QAA Frameworks for Higher Education Qualifications (2014)

Industrial Advisory Partners: Digital Plymouth, Software Cornwall, the Digital Policy Alliance and a variety of local and national organisations, who have either directly or indirectly contributed to the Programme, these include NASA, Nvidia Corporation, Land Registry the NHS and the Met Office.

Programme Structure for the BSc (Hons) Applied Computer Science (full-time) 2024/25

120 Level 6 Credits				
Semester 1				
Module Code	**Module Title**	**Credits**	**Core/Optional**	**Mode of delivery (AY/ S1/ S2)**
CITY3111	Individual Project	40	Core	AY
CITY3112	High Performance Computing	20	Core	S1
CITY3113	Project Management	20	Core	S1
Semester 2				
Module Code	**Module Title**	**Credits**	**Core/Optional**	**Mode of delivery (AY/ S1/ S2)**
CITY3111	Individual Project	40	Core	AY
CITY3114	Machine Learning and AI	20	Core	S2
CITY3115	Bio-Inspired Computing	20	Optional	S2
CITY3116	Advanced Computer Forensics and Security	20	Optional	S2

Programme Structure for the BSc (Hons) Applied Computer Science (part-time) 2024/25

Year 1 = 80 Level 6 Credits				
Semester 1				
Module Code	**Module Title**	**Credits**	**Core/Optional**	**Mode of delivery (AY/ S1/ S2)**
CITY3112	High Performance Computing	20	Core	S1
CITY3113	Project Management	20	Core	S1
Semester 2				
Module Code	**Module Title**	**Credits**	**Core/Optional**	**Mode of delivery (AY/ S1/ S2)**
CITY3114	Machine Learning and AI	20	Core	S2
CITY3115	Bio-Inspired Computing	20	Optional	S2
CITY3116	Advanced Computer Forensics and Security	20	Optional	S2

Year 2 = 40 Level 6 Credits				
Semester 1				
Module Code	**Module Title**	**Credits**	**Core/Optional**	**Mode of delivery (AY/ S1/ S2)**
CITY3111	Individual Project	40	Core	AY
Semester 2				
Module Code	**Module Title**	**Credits**	**Core/Optional**	**Mode of delivery (AY/ S1/ S2)**
CITY3111	Individual Project	40	Core	AY

Programme Aims

The BSc (Hons) in Applied Computer Science aims to:

- To provide a thorough academic grounding in the core subject matter of Computer Science, Machine Learning and Artificial Intelligence.
- To develop technical, professional and managerial skills through exposure to practical projects, emphasising communication as well as software design and development skills.
- To expose students to leading-edge research in Machine Learning and opportunities to do so with other topics such as Bio-Inspired computing
- To produce immediately employable graduates with an industrially relevant mix of knowledge, practical skills and self-motivation.
- Enable learners to make a contribution to the digital community in the region and beyond, both during and on completing the course
- To ensure graduates have a solid awareness of the ethical, legal and social contexts of Computing, Machine Learning and Artificial Intelligence.

Programme Intended Learning Outcomes

10.1 Knowledge and understanding

On successful completion graduates should have developed:

1. A knowledge and critical understanding of the computing discipline as a whole and its application
2. A knowledge and critical understanding of the principles of Artificial Intelligence, Machine Learning, Data Processing and Evolutionary Computing in a range of paradigms.
3. A knowledge and critical understanding of the role of project management in software design, development and testing.
4. Awareness of the legal and ethical associated responsibilities.
5. Ability to create appropriate solutions to computing challenges with an awareness of quality and sustained refinements.

10.2. Cognitive and intellectual skills

On successful completion graduates should have developed:

1. Their ability to learn independently from a range of academic and industry sources and apply that learning to new problems.
2. Their ability to analyse complex problems, evaluate and recommend solutions using professional judgement, with regard to risks, costs, benefits and codes of practice.

10.3. Key and transferable skills

On successful completion, graduates should have developed the ability to:

1. To communicate effectively in speaking, interview and interact productively with a client, present and defend a substantial piece of work, engage with others and respond effectively to questions.
2. To communicate effectively in writing, present a two-sided argument, expose technical information clearly, comprehend and summarise resource material with proper citation of sources.
3. To work both autonomously and as part of a team as appropriate.

10.4. Employment related skills

On successful completion graduates should have developed:

1. To demonstrate personal initiative, self-motivation, self-learning and problem-solving skills.
2. Their ability to research, develop and complete a practical problem-solving challenge with reference to appropriate industry standards.
3. Their understanding of the role of computer systems, software and algorithms in a variety of industry and public contexts.

10.5. Practical skills

On successful completion graduates should have developed:

1. To develop industrially relevant intelligent (software) systems
2. To research material from multiple published sources, comprehend and filter such material and from it synthesis theories, principles or designs pertinent to a practical, problem-solving project.

3. The ability to select and apply a variety of tools for the development of a software solution.
4. To create informative and professional documentation
5. The ability to personally present information to others in a professional manner

Admissions Criteria, including APCL, APEL and DAS arrangements

Entry Requirements for BSc (Hons) Applied Computer Science	
Other HE qualifications	A FdSc in a relevant and appropriate subject or successful completion of the first two years of a related Bachelor's Degree. In addition applicants are required to complete Massive Open Online Courses (MOOCs) in subject specific areas including maths and programming. Applicants will also be required to attend an interview.
Other Qualifications	Non-traditional candidates with alternative equivalent qualifications will be considered. Candidates without the above qualifications, but who can demonstrate relevant industry experience are encouraged to apply. In addition applicants are required to complete Massive Open Online Courses (MOOCs) in subject specific areas including maths and programming. Applicants will also be required to attend an interview.
Direct Entry to Level 6	Students may enter at level 6 with a relevant HND or FdSc made up of 120 level 4 module credits and 120 level 5 module credits subject to the University of Plymouth APL regulations. In addition, direct entry students are required to complete Massive Open Online Courses (MOOCs) in subject specific areas including maths and programming. Applicants will also be required to attend an interview.
GCSE's required at grade 4 or above	Maths and English
DAS Arrangements	Applicants should indicate any health conditions or impairments and associated access requirements and/or disabilities on the initial application form. City College Plymouth will undertake every reasonable effort to accommodate students through individual consultations.

Progression criteria for Final and Intermediate Awards

As a BSc (Hons) programme, there is no requirement for an articulated progression route. However, a graduate from this programme would be able to progress to a Level 7 qualification in such areas as Computer Science and Computer Security. For example, graduates would be able to apply to progress onto the following Masters Level course:

MSc Computer Science Plymouth University

Module Records

UNIVERSITY OF PLYMOUTH MODULE RECORD

SECTION A: DEFINITIVE MODULE RECORD. ***Proposed changes must be submitted via Faculty/AP Quality Procedures for approval and issue of new module code.***

MODULE CODE: CITY3111	**MODULE TITLE: Individual Project**	
CREDITS: 40	**FHEQ LEVEL: 6**	**HECos CODE: 100962**
PRE-REQUISITES: NONE	**CO-REQUISITES: NONE**	**COMPENSATABLE: No**

SHORT MODULE DESCRIPTOR: *(max 425 characters)*

The individual project gives students an opportunity to tackle a major applied computing related problem in an approved industrial related topic. Statistical methods applicable to the project will be included at the start of the course of study as well as the ethics involved. Students are expected to spend a minimum of 400 hours of time on their individual project. In addition, regular meetings with an allocated project supervisor will be scheduled for the duration of the individual project.

This practical assessment will take place in person and on-site at CCP as specified on the Assignment Brief. However, if at the time of the assessment, government guidelines on social distancing make this inappropriate then it will take place remotely online. Any changes will be communicated via the DLE.

ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions] – see Definitions of Elements and Components of Assessment*

E1 (Examination)		**C1** (Coursework)	80%	**P1** (Practical**)**	20%
E2 (Clinical Examination)		**A1** (Generic assessment)			
T1 (Test)					

SUBJECT ASSESSMENT PANEL to which module should be linked: BSc (Hons) Applied Computer Science

Professional body minimum pass mark requirement: N/A

MODULE AIMS:

1. To enable the student to tackle a major applied computing related problem in an approved industrial related topic.
2. To provide an opportunity for the student to integrate many of the threads of their programme of study.

ASSESSED LEARNING OUTCOMES: (additional guidance below; please refer to the Programme Specification for relevant award/ programme Learning Outcomes.

At the end of the module the learner will be expected to be able to:

Assessed Module Learning Outcomes	Award/ Programme Learning Outcomes contributed to
LO1. Apply the student's knowledge and implementation skills to a project relevant to computer science and an understanding of research ethics and statistical methods.	8.1.1, 8.1.2, 8.1.3, 8.1.4
LO2. Identify an approved computing related problem that requires the application of methods and techniques that demonstrates the application of knowledge and understanding.	8.2.1, 8.2.2, 8.5.1

LO3. Manage a complex project that demonstrates personal initiative and effective decision making in an unpredictable context.	8.1.5, 8.3.3, 8.4.1, 8.5.3
LO4. Communicate effectively and critically evaluate all aspects of the project deliverables including the theoretical and methodological framework.	8.3.1, 8.3.2, 8.4.3, 8.5.4, 8.5.5

DATE OF APPROVAL: August 2019	**FACULTY/OFFICE: Academic Partnerships**
DATE OF IMPLEMENTATION: **September 2019**	**SCHOOL/PARTNER: CITY COLLEGE PLYMOUTH**
DATE(S) OF APPROVED CHANGE:	**SEMESTER: Semester 1 & 2**
Notes:	

Additional Guidance for Learning Outcomes:

To ensure that the module is pitched at the right level check your intended learning outcomes against the following nationally agreed standards

- Framework for Higher Education Qualifications http://www.qaa.ac.uk/publications/information-and-guidance/publication/?PubID=2718#.VW2INtJVikp
- Subject benchmark statements http://www.qaa.ac.uk/ASSURINGSTANDARDSANDQUALITY/SUBJECT-GUIDANCE/Pages/Subject-benchmark-statements.aspx
- Professional, regulatory and statutory (PSRB) accreditation requirements (where necessary e.g. health and social care, medicine, engineering, psychology, architecture, teaching, law)
- QAA Quality Code http://www.qaa.ac.uk/AssuringStandardsAndQuality/quality-code/Pages/default.aspx

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

Items in this section must be considered annually and amended as appropriate, in conjunction with the Module Review Process. Some parts of this page may be used in the KIS return and published on the extranet as a guide for prospective students. Further details for current students should be provided in module guidance notes.

ACADEMIC YEAR: 2025/2026	**NATIONAL COST CENTRE:**
MODULE LEADER: Dr Andrew Watson	**OTHER MODULE STAFF: Tomasz Bergier**

Summary of Module Content

- Learn specific technical skills required by a chosen topic and apply them to project work.
- Learn relevant project-related skills, including project management, ethics in research, knowledge of relevant research, statistical methods and the evaluation and production of project artefacts.
- Undertaking of an individual substantive project appropriate to Computing which has been approved by the project supervisor.
- Regular progress meetings with allocated project supervisor
- Presentation of an account of work in written form.
- Oral presentation of work.

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*

Scheduled Activities	**Hours**	**Comments/Additional Information (briefly explain activities, including formative assessment opportunities)**
Lectures	15	Combined lecture/lab sessions (online)
Directed Study	45	Combined lecture/lab sessions and individual scheduled meetings with a project supervisor throughout the year. (online)
Student Self Study	340	Google classroom is the starting point for guidance in directed study with direction from project supervisor.
Total	400	**(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)**

SUMMATIVE ASSESSMENT

Element Category	**Component Name**	**Component Weighting**
Coursework	Dissertation on a chosen topic of applied computing	LO1, LO2, LO3 100%
Practical	Viva voce oral presentation (Viva voce oral presentation online)	LO4 100%

REFERRAL ASSESSMENT

Element Category	**Component Name**	**Component Weighting**
Coursework	Dissertation on a chosen topic of applied computing	LO1, LO2, LO3 100%
Practical	Viva voce oral presentation	LO4 100%

	(Viva voce oral presentation online)	

To be completed when presented for Minor Change approval and/or annually updated	
Updated by: Tomasz Bergier Date: July 2025	**Approved by**: Hollie Galpin-Mitchell Date: August 2025

UNIVERSITY OF PLYMOUTH MODULE RECORD

SECTION A: DEFINITIVE MODULE RECORD. *Proposed changes must be submitted via Faculty/AP Quality Procedures for approval and issue of new module code.*

MODULE CODE: CITY3112	**MODULE TITLE: High-Performance Computing**	
CREDITS: 20	**FHEQ LEVEL: 6**	**HECos CODE: 100741**
PRE-REQUISITES:	**CO-REQUISITES:**	**COMPENSATABLE: Yes**

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
High Performance computing is prevalent in all sectors (academia, government and industry) in today's world of computerisation. Some examples are weather simulation, prediction, and that of the development of sensitive instrumentation systems. This module will provide a grounding in this subject area and an insight into its applications.

ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions] – see Definitions of Elements and Components of Assessment*

E1 (Examination)	**C1** (Coursework)	100%	**P1 (**Practical**)**	
E2 (Clinical Examination)	**A1** (Generic assessment)			
T1 (Test)				

SUBJECT ASSESSMENT PANEL to which module should be linked: BSc (Hons) Applied Computer Science
Professional body minimum pass mark requirement: N/A

MODULE AIMS:

1. Be able to understand and analyse HPC principles, a variety of HPC methods and big data analysis and processes.
2. Be able to design parallel programs and critically evaluate these alongside a variety of HPC setups.
3. Be able to implement big data processes with a variety of clustering methods and parallel programming using the HPC system.
4. Be able to employ a variety of testing techniques for example benchmarking.
5. Be able to document and analyse the results of both the HPC system configurations utilising big data processes.

ASSESSED LEARNING OUTCOMES: (additional guidance below; please refer to the Programme Specification for relevant award/ programme Learning Outcomes.

At the end of the module the learner will be expected to be able to:

Assessed Module Learning Outcomes	Award/ Programme Learning Outcomes contributed to
LO1 Demonstrate a deep understanding and critically evaluate the principles of cluster computing and parallel computing in terms of high performance and data analytics.	8.1.2, 8.5.2

LO2 Compare, critically evaluate and discuss competing methods through application in design.	8.2.1, 8.3.2
LO3 Implement parallel programming and clustering methods on high-performance computing and big data.	8.4.2
LO4 Implement the various testing techniques and benchmarking, verify and document the resulting learning and representations.	8.5.3

DATE OF APPROVAL: August 2019	**FACULTY/OFFICE: Academic Partnerships**
DATE OF IMPLEMENTATION: **September 2019**	**SCHOOL/PARTNER: CITY COLLEGE PLYMOUTH**
DATE(S) OF APPROVED CHANGE:	**SEMESTER: Semester 1**

Notes:

Additional Guidance for Learning Outcomes:

To ensure that the module is pitched at the right level check your intended learning outcomes against the following nationally agreed standards

- Framework for Higher Education Qualifications http://www.qaa.ac.uk/publications/information-and-guidance/publication/?PubID=2718#.VW2INtJVikp
- Subject benchmark statements http://www.qaa.ac.uk/ASSURINGSTANDARDSANDQUALITY/SUBJECT-GUIDANCE/Pages/Subject-benchmark-statements.aspx
- Professional, regulatory and statutory (PSRB) accreditation requirements (where necessary e.g. health and social care, medicine, engineering, psychology, architecture, teaching, law)
- QAA Quality Code http://www.qaa.ac.uk/AssuringStandardsAndQuality/quality-code/Pages/default.aspx

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

Items in this section must be considered annually and amended as appropriate, in conjunction with the Module Review Process. Some parts of this page may be used in the KIS return and published on the extranet as a guide for prospective students. Further details for current students should be provided in module guidance notes.

ACADEMIC YEAR: 2025/2026	**NATIONAL COST CENTRE:**
MODULE LEADER: Tomasz Bergier	**OTHER MODULE STAFF:**

Summary of Module Content

- Programming languages and programming-language extensions for HPC
- Compiler options and optimizations for modern single-core and multi-core processors
- Execution profiling, timing techniques, and benchmarking for modern single-core and multi-core processors
- Hardware architecture that meets industry standards
- Parallelization strategies, task parallelism, data parallelism, and work sharing techniques
- Parallel programming for example master-slaves, or Cuda-Core.
- Testing and benchmarking for HPC informed by industry standards

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*

Scheduled Activities	**Hours**	**Comments/Additional Information (briefly explain activities, including formative assessment opportunities)**
Lectures	15	Combined lecture/lab sessions (online)
Directed Study	45	Combined lecture/lab sessions (online)
Student Self Study	140	Google classroom is the starting point for guidance in directed study with direction from module leader.
Total	200	**(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)**

SUMMATIVE ASSESSMENT

Element Category	**Component Name**	**Component Weighting**
Coursework	**Assignment 1/2** Report on a variety of HPC principles. The report will include a deep understanding, critically evaluating and analysing the principles of cluster computing and parallel computing.	50% LO1, LO2
	Assignment 2/2 Implementation of a HPC system using both hardware and software, employing a variety of testing techniques. In addition, a report documenting the results and analysis of the HPC system configurations.	50% LO3 Total = 100%

REFERRAL ASSESSMENT

Element Category	Component Name	Component Weighting
Coursework	**Assignment 1/2** Report on a variety of different HPC principles. The report will include a deep understanding, critically evaluating and analysing the principles of cluster computing and parallel computing.	50% LO1, LO2
	Assignment 2/2 Implementation of a different HPC system using both hardware and software, employing a variety of testing techniques. In addition, a report documenting the results and analysis of the HPC system configurations.	50% LO3 Total = 100%

To be completed when presented for Minor Change approval and/or annually updated	
Updated by: Tomasz Bergier Date: July 2025	**Approved by**: Hollie Galpin-Mitchell Date: August 2025

UNIVERSITY OF PLYMOUTH MODULE RECORD

SECTION A: DEFINITIVE MODULE RECORD. *Proposed changes must be submitted via Faculty/AP Quality Procedures for approval and issue of new module code.*

MODULE CODE: CITY3113	**MODULE TITLE: Project Management**	
CREDITS: 20	**FHEQ LEVEL: 6**	**HECos CODE: 100812**
PRE-REQUISITES: None	**CO-REQUISITES: None**	**COMPENSATABLE: Yes**

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
This module will build understanding of the key themes in project management and the generic methodologies, tools and techniques used in professional practice. Further, it will deliver practical knowledge through professional theory, example and practice of project design, control and change techniques, culminating in a 'Dragon's Den' style practical presentation to an Industry panel.

ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions] – see Definitions of Elements and Components of Assessment*

E1 (Examination)		**C1** (Coursework)	100%	**P1** (Practical)	
E2 (Clinical Examination)		**A1** (Generic assessment)			
T1 (Test)					

SUBJECT ASSESSMENT PANEL to which module should be linked: BSc (Hons) Applied Computer Science
Professional body minimum pass mark requirement: N/A

MODULE AIMS:

1. Be able to interpret and implement project control theories of organisation, risk and time/cost/quality control.
2. Be able to, through examples, master methods of measuring and controlling project performance.
3. Be able to discern and manage the need for project change within computing related projects.
4. Be able to implement, evaluate and present a detailed project concept, PID, and associated management and change control methodologies to a professional level.

ASSESSED LEARNING OUTCOMES: (additional guidance below; please refer to the Programme Specification for relevant award/ programme Learning Outcomes.
At the end of the module the learner will be expected to be able to:

Assessed Module Learning Outcomes	Award/ Programme Learning Outcomes contributed to
LO1 Understand professional project management design, feasibility and control theories with specific reference to computing related projects.	8.1.3, 8.1.4, 8.2.1,
LO2 Identify, develop, implement and evaluate professional project documentation for a conceptual computing related project.	8.1.5, 8.4.1

LO3 Perform methods of measuring and controlling project performance and change management with specific reference to computing related projects.	8.2.2
LO4 Implement and present a detailed project concept, PID, and associated management and change control documentation.	8.3.1, 8.3.2, 8.3.3, 8.5.4, 8.5.5

DATE OF APPROVAL: August 2019	**FACULTY/OFFICE: Academic Partnerships**
DATE OF IMPLEMENTATION: **September 2019**	**SCHOOL/PARTNER: CITY COLLEGE PLYMOUTH**
DATE(S) OF APPROVED CHANGE: XX/XX/XXXX	**SEMESTER: Semester 1**
Notes:	

Additional Guidance for Learning Outcomes:

To ensure that the module is pitched at the right level check your intended learning outcomes against the following nationally agreed standards

- Framework for Higher Education Qualifications http://www.qaa.ac.uk/publications/information-and-guidance/publication/?PubID=2718#.VW2INtJVikp
- Subject benchmark statements http://www.qaa.ac.uk/ASSURINGSTANDARDSANDQUALITY/SUBJECT-GUIDANCE/Pages/Subject-benchmark-statements.aspx
- Professional, regulatory and statutory (PSRB) accreditation requirements (where necessary e.g. health and social care, medicine, engineering, psychology, architecture, teaching, law)
- QAA Quality Code http://www.qaa.ac.uk/AssuringStandardsAndQuality/quality-code/Pages/default.aspx

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

Items in this section must be considered annually and amended as appropriate, in conjunction with the Module Review Process. Some parts of this page may be used in the KIS return and published on the extranet as a guide for prospective students. Further details for current students should be provided in module guidance notes.

ACADEMIC YEAR: 2025/2026	**NATIONAL COST CENTRE:**
MODULE LEADER: Gemma Lane	**OTHER MODULE STAFF:**

Summary of Module Content

This module will teach students how to manage a computing related project. They should be able to analyse and plan the activities / resources needed to carry out a project, define the project risks and keep a project on time and within budget, utilising time, cost, quality and change management techniques. This module will also teach students practical business skills through the design and implementation of a conceptual group project with detailed professional project documentation, culminating in an industry-led 'Dragon's Den' style presentation.

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*

Scheduled Activities	**Hours**	**Comments/Additional Information (briefly explain activities, including formative assessment opportunities)**
Lectures	15	Combined lecture/lab sessions (online)
Directed Study	45	Combined lecture/lab sessions (online)
Student Self Study	140	Google classroom is the starting point for guidance in directed study with direction from module leader.
Total		**(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)**

SUMMATIVE ASSESSMENT

Element Category	**Component Name**	**Component Weighting**
Coursework	Assignment 1 - Project Management Scenario Report	LO1 40%
	Assignment 2 - Conceptual computing (group) project proposal (incl. PID containing professional documentation on time, cost, quality and change management control) culminating in an industry-led 'Dragon's Den' presentation. (online)	LO2, LO3, LO4 60% Total = 100%

REFERRAL ASSESSMENT (Same)

Element Category	**Component Name**	**Component Weighting**
Coursework	Assignment 1 - Different Project Management Scenario Report	LO1 40% LO2, LO3, LO4 60%

	Assignment 2 - Different conceptual computing project proposal (incl. PID containing professional documentation on time, cost, quality and change management control) and video-based presentation. (online)	Total = 100%

To be completed when presented for Minor Change approval and/or annually updated	
Updated by: Tomasz Bergier Date: July 2025	**Approved by**: Hollie Galpin-Mitchell Date: August 2025

UNIVERSITY OF PLYMOUTH MODULE RECORD

SECTION A: DEFINITIVE MODULE RECORD. *Proposed changes must be submitted via Faculty/AP Quality Procedures for approval and issue of new module code.*

MODULE CODE: CITY3114	**MODULE TITLE: Machine Learning and AI**	
CREDITS: 20	**FHEQ LEVEL: 6**	**HECos CODE: 100359**
PRE-REQUISITES:	**CO-REQUISITES: None**	**COMPENSATABLE: Yes**

SHORT MODULE DESCRIPTOR: *(max 425 characters)*

Modern Society is data-rich and there is a need to make sense of datasets of increasing complexity and size, from a broad spectrum of application areas in industry, healthcare, and academia. This module will introduce both supervised and unsupervised machine learning principles and practical methods for learning from real data. There is scope for applied project work with industry who can provide datasets for students.

This practical assessment will take place in person and on-site at CCP as specified on the Assignment Brief. However, if at the time of the assessment, government guidelines on social distancing make this inappropriate then it will take place remotely online or alternative arrangements will be made. Any changes will be communicated via the DLE.

ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions] – see Definitions of Elements and Components of Assessment*

E1 (Examination)	**C1** (Coursework)	60 %	**P1 (**Practical**)**	40%
E2 (Clinical Examination)	**A1** (Generic assessment)			
T1 (Test)				

SUBJECT ASSESSMENT PANEL to which module should be linked: BSc (Hons) Applied Computer Science

Professional body minimum pass mark requirement: N/A

MODULE AIMS:

This module aims to provide students with the skills to produce software to implement learning algorithms and represent that learning in a variety of useful ways in order that others may gain understanding. This will include both statistical mechanisms and those which represent artificial neural networks and deep learning. Ethics of Machine Learning and AI will be introduced. The students will use readily available real-world datasets to achieve this. There is scope for project work with industry and government organisations who are willing to provide datasets for students to work with.

ASSESSED LEARNING OUTCOMES: (additional guidance below; please refer to the Programme Specification for relevant award/ programme Learning Outcomes.

At the end of the module the learner will be expected to be able to:

Assessed Module Learning Outcomes	Award/ Programme Learning Outcomes contributed to

LO1 Gain a systematic understanding of the principles of machine learning and AI	8.1.1, 8.1.2, 8.4.3, 8.5.3
LO2 Discuss, compare and critically evaluate competing methods	8.1.4
LO3 Apply and extend their understanding through implementation of machine learning/AI techniques	8.2.1, 8.5.1, 8.5.2
LO4 Test, verify and document the resulting learning and representations	8.3.2

DATE OF APPROVAL: August 2019	**FACULTY/OFFICE: Academic Partnerships**
DATE OF IMPLEMENTATION: **September 2019**	**SCHOOL/PARTNER: CITY COLLEGE PLYMOUTH**
DATE(S) OF APPROVED CHANGE: XX/XX/XXXX	**SEMESTER: Semester 2**
Notes:	

Additional Guidance for Learning Outcomes:

To ensure that the module is pitched at the right level check your intended learning outcomes against the following nationally agreed standards

- Framework for Higher Education Qualifications http://www.qaa.ac.uk/publications/information-and-guidance/publication/?PubID=2718#.VW2INtJVikp
- Subject benchmark statements http://www.qaa.ac.uk/ASSURINGSTANDARDSANDQUALITY/SUBJECT-GUIDANCE/Pages/Subject-benchmark-statements.aspx
- Professional, regulatory and statutory (PSRB) accreditation requirements (where necessary e.g. health and social care, medicine, engineering, psychology, architecture, teaching, law)
- QAA Quality Code http://www.qaa.ac.uk/AssuringStandardsAndQuality/quality-code/Pages/default.aspx

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

Items in this section must be considered annually and amended as appropriate, in conjunction with the Module Review Process. Some parts of this page may be used in the KIS return and published on the extranet as a guide for prospective students. Further details for current students should be provided in module guidance notes.

ACADEMIC YEAR: 2025/2026	**NATIONAL COST CENTRE:**
MODULE LEADER: Dr Andrew Watson	**OTHER MODULE STAFF:**

Summary of Module Content

- Linear Regression
- Instance-based Learning and Decision Trees
- Maximum Likelihood
- Probabilistic (Bayesian) Inference
- Markov Chain Monte Carlo
- Support Vector Machines
- Clustering algorithms, k-means, Expectation-Maximization, and Gaussian Mixture Models
- Ensemble learning, bagging, boosting, stacking, random forests
- Dimensionality reduction techniques, SVD/PCA, Multidimensional scaling
- Artificial Neural Networks: perceptron, MLPs, back propagation, intro to Deep Learning
- Ethics of the development and use of Machine Learning and AI

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*

Scheduled Activities	Hours	Comments/Additional Information (briefly explain activities, including formative assessment opportunities)
Lectures	15	Combined lecture/lab sessions (online)
Directed Study	45	Combined lecture/lab sessions (online)
Student Self Study	140	Google classroom is the starting point for guidance in directed study with direction from module leader.
Total	200	**(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)**

SUMMATIVE ASSESSMENT

Element Category	Component Name	Component Weighting
Coursework	Report to include a critical evaluation of a variety of machine learning techniques and their application.	LO1, LO2 100%
Practical	Implementation, test and verification of machine learning/AI algorithms with a report explaining the learning and representations. (Practical as coursework)	LO3, LO4 100%

REFERRAL ASSESSMENT

Element Category	Component Name	Component Weighting
Coursework	Different report to include a critical evaluation of a variety of machine learning techniques and their application.	LO1, LO2 100%

Practical as Coursework	Implementation, test and verification of different machine learning/AI algorithms with a report explaining the learning and representations.	LO3, LO4 100%

To be completed when presented for Minor Change approval and/or annually updated	
Updated by: Tomasz Bergier Date: July 2025	**Approved by**: Hollie Galpin-Mitchell Date: August 2025

UNIVERSITY OF PLYMOUTH MODULE RECORD

SECTION A: DEFINITIVE MODULE RECORD. *Proposed changes must be submitted via Faculty/AP Quality Procedures for approval and issue of new module code.*

MODULE CODE: CITY3115	**MODULE TITLE: Bio-Inspired Computing**	
CREDITS: 20	**FHEQ LEVEL: 6**	**HECos CODE: 100359**
PRE-REQUISITES: None	**CO-REQUISITES: None**	**COMPENSATABLE: Yes**

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
Bio-inspired computational algorithms are increasingly used to solve a variety of problems and in particular they may be applied to scenarios where pattern recognition and intelligence are required. The algorithms themselves have been created from observing biological mechanisms in nature. There is scope for project work with industry and government organisations who can provide **annotated** datasets for students.
This Exam will take place in person and on-site at CCP as specified on the Assignment Brief. However, if at the time of the assessment, government guidelines on social distancing make this inappropriate then it will take place remotely online or alternative arrangements will be made. Any changes will be communicated via the DLE.

ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions] – see Definitions of Elements and Components of Assessment*

E1 (Examination)	30%	**C1** (Coursework)	70%	**P1** (Practical)	
E2 (Clinical Examination)		**A1** (Generic assessment)			
T1 (Test)					

SUBJECT ASSESSMENT PANEL to which module should be linked: BSc (Hons) Applied Computer Science
Professional body minimum pass mark requirement: N/A

MODULE AIMS:
This module aims to provide students with the understanding of the benefits of adopting biologically inspired techniques when implementing computational algorithms that require a reasoning about complex datasets and/or systems. It will give students an introductory experience in both established and new techniques. The students will use readily available annotated datasets to achieve this. There is scope for project work with industry, government and academic organisations who are willing to provide ***annotated*** datasets for students to work with.

ASSESSED LEARNING OUTCOMES: (additional guidance below; please refer to the Programme Specification for relevant award/ programme Learning Outcomes)

At the end of the module the learner will be expected to be able to:

Assessed Module Learning Outcomes	Award/ Programme Learning Outcomes contributed to
LO1 Establish an understanding of a range of bio-inspired computational algorithms	8.1.1, 8.2.1

LO2 Discuss the differing data analysis problems through the implementation of a selection of bio-inspired algorithms, and a resulting critical evaluation	8.1.2, 8.3.2, 8.5.3
LO3 Recognise future opportunities to exploit bio-inspired computational algorithms	8.4.3

DATE OF APPROVAL: August 2019	**FACULTY/OFFICE: Academic Partnerships**
DATE OF IMPLEMENTATION: **September 2019**	**SCHOOL/PARTNER: City College Plymouth**
DATE(S) OF APPROVED CHANGE: XX/XX/XXXX	**SEMESTER: Semester 2**
Notes:	

Additional Guidance for Learning Outcomes:

To ensure that the module is pitched at the right level check your intended learning outcomes against the following nationally agreed standards

- Framework for Higher Education Qualifications http://www.qaa.ac.uk/publications/information-and-guidance/publication/?PubID=2718#.VW2INtJVikp
- Subject benchmark statements http://www.qaa.ac.uk/ASSURINGSTANDARDSANDQUALITY/SUBJECT-GUIDANCE/Pages/Subject-benchmark-statements.aspx
- Professional, regulatory and statutory (PSRB) accreditation requirements (where necessary e.g. health and social care, medicine, engineering, psychology, architecture, teaching, law)
- QAA Quality Code http://www.qaa.ac.uk/AssuringStandardsAndQuality/quality-code/Pages/default.aspx

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

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ACADEMIC YEAR: 2025/2026	**NATIONAL COST CENTRE:**
MODULE LEADER: Dr Andrew Watson	**OTHER MODULE STAFF:**

Summary of Module Content

Human visual perception, visual neuroscience, image acquisition and "noise", and the evaluation and design of visual computing systems, introducing:

- Edges and features: Edge detection, feature detection and representation
- Motion: Video, feature tracking, background subtraction, modelling motion and change
- Objects: Grouping features, grouping motion, modelling variability
- Learning models.

Theoretical and practical knowledge of evolutionary computation, introducing:

- Genetic Algorithms
- Genetic Programming
- Fitness functions
- Advanced representations
- Applications of Genetic Algorithms and Genetic Programming

SUMMARY OF TEACHING AND LEARNING ***[Use HESA KIS definitions]***

Scheduled Activities	**Hours**	**Comments/Additional Information (briefly explain activities, including formative assessment opportunities)**
Lectures	15	Combined lecture/lab sessions (online)
Directed Study	45	Combined lecture/lab sessions (online)
Student Self Study	140	Google classroom is the starting point for guidance in directed study with direction from module leader.
Total	200	**(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)**

SUMMATIVE ASSESSMENT

Element Category	**Component Name**	**Component Weighting**
Coursework	Report to include a critical evaluation of a variety of bio-inspired algorithms, their application and potential for future exploitation	LO1, LO2, L03 100%
Exam	Exam – Demonstrate an understanding of biologically inspired techniques for solving complex problems (Exam as online time constrained Coursework)	LO1 100%

REFERRAL ASSESSMENT

Element Category	Component Name	Component Weighting
Coursework	Report to include a critical evaluation of a variety of bio-inspired algorithms, their application and potential for future exploitation	LO1, LO2, LO3 100%
Report	Report – Demonstrate an understanding of biologically inspired techniques for solving complex problems	LO1 100%

To be completed when presented for Minor Change approval and/or annually updated	
Updated by: Tomasz Bergier Date: July 2025	**Approved by**: Hollie Galpin-Mitchell Date: August 2025

UNIVERSITY OF PLYMOUTH MODULE RECORD

SECTION A: DEFINITIVE MODULE RECORD. *Proposed changes must be submitted via Faculty/AP Quality Procedures for approval and issue of new module code.*

MODULE CODE: CITY3116	**MODULE TITLE:** Advanced Computer Forensics and Security	
CREDITS: 20	**FHEQ LEVEL:** 6	**JACS CODE: 100376**
PRE-REQUISITES:	**CO-REQUISITES:**	**COMPENSATABLE: Yes**

SHORT MODULE DESCRIPTOR: *(max 425 characters)*

Using Open Web Application Security Protocol (OWASP) Top Ten benchmarks, students investigate Cyber Physical Systems and applications in instrumentation and critical infrastructure networks. By their very nature such systems require a different security posture. Students are introduced to the ensuing Security and forensic challenges through theoretical and practical experimentation using raspberry pi and data science mitigation implementations.
This practical assessment will take place in person and on-site at CCP as specified on the Assignment Brief. However, if at the time of the assessment, government guidelines on social distancing make this inappropriate then it will take place remotely online or alternative arrangements will be made. Any changes will be communicated via the DLE.

ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions] – see Definitions of Elements and Components of Assessment*

E1 (Examination)		**C1** (Coursework)	60%	**P1** (Practical**)**	40%
E2 (Clinical Examination)		**A1** (Generic assessment)			
T1 (Test)					

SUBJECT ASSESSMENT PANEL to which module should be linked: BSc (Hons) Applied Computer Science
Professional body minimum pass mark requirement: N/A

MODULE AIMS:
This module allows students to explore business continuity techniques available to organisations in investigating, prevention and mitigation of security breaches to their computer system. Students will investigate forensic security exploitation and mitigation techniques according to OWASP Top 10 and other knowledge bodies.
They will be able to:
● Identify different networks and their unique security/forensic implementations and associated challenges - OWASP Top Ten
● Identify and explain security requirements of Cyber-Physical Systems (CPS) with respect to critical industrial networking solutions.
● Be able to work within approved industry guidelines – BSI/ISO standards -27000/ACPO/OWASP
● Understand and be able to explain the security and forensic consequences of massive and/or critical wireless networking for the higher layers of communication systems
● Cultivate awareness of major open research challenges in the context of next generation networks such as BANs and Critical Infrastructure networks etc. and their implications in meeting societal challenges including forensics, security and ethics

ASSESSED LEARNING OUTCOMES: (additional guidance below; please refer to the Programme Specification for relevant award/ programme Learning Outcomes.)

At the end of the module the learner will be expected to be able to:

Assessed Module Learning Outcomes	Award/ Programme Learning Outcomes contributed to
LO1 - Understanding offensive/defensive methods of traditional and non-traditional networks of lower and higher layered security.	8.1.2, 8.2.1
LO2 – Demonstrate critical understanding and identify core security issues underpinned by OWASP Top Ten project	8.4.2, 8.4.3
LO3 - Analyse and implement Digital Forensic Investigations using Open source tools – checking viability and efficacy	8.5.2, 8.5.3
LO4 – Demonstrate Ethical awareness and application of Cybersecurity and Information resilience through BSI/ISO Standards: 27001 – IS management requirements ISO 27037 -digital evidence requirements. ACPO/OWASP ISO 15288 /26262 - CPS	8.1.4
LO 5 - Investigate Forensic Security with data driven methodologies/tools. Security data science, Threat Intelligence, Block chains etc.	8.3.2

DATE OF APPROVAL: August 2019	**FACULTY/OFFICE: Academic Partnerships**
DATE OF IMPLEMENTATION: September 2019	**SCHOOL/PARTNER: City College Plymouth**
DATE(S) OF APPROVED CHANGE: XX/XX/XXXX	**SEMESTER: Semester 2**
Notes:	

Additional Guidance for Learning Outcomes:

To ensure that the module is pitched at the right level check your intended learning outcomes against the following nationally agreed standards

- Framework for Higher Education Qualifications http://www.qaa.ac.uk/publications/information-and-guidance/publication/?PubID=2718#.VW2INtJVikp
- Subject benchmark statements http://www.qaa.ac.uk/ASSURINGSTANDARDSANDQUALITY/SUBJECT-GUIDANCE/Pages/Subject-benchmark-statements.aspx
- Professional, regulatory and statutory (PSRB) accreditation requirements (where necessary e.g. health and social care, medicine, engineering, psychology, architecture, teaching, law)
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SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

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ACADEMIC YEAR: 2025/2026	**NATIONAL COST CENTRE:**
MODULE LEADER: Tomasz Bergier	**OTHER MODULE STAFF:**

Summary of Module Content

- Non-Traditional Network Security
- Malware Forensics
- Memory forensics
- Operating system forensics
- Network forensics
- Security Assessment
- Open source tools - viability and efficacy
- Command line Interfaces/Interaction
- Cyber physical systems design, applications and forensic security
- Incidence response/Digital Investigations
- ISO/BSI/ACPO Standards
- Data recovery & Business continuity
- Security Policy formulation
- Next Generation forensic Security challenges - data driven techniques

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*

Scheduled Activities	**Hours**	**Comments/Additional Information (briefly explain activities, including formative assessment opportunities)**
Lectures	15	Combined lecture/lab sessions (online)
Directed Study	45	Combined lecture/lab sessions (online)
Student Self Study	140	Google classroom is the starting point for guidance in directed study with direction from module leader.
Total	200	**(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)**

SUMMATIVE ASSESSMENT

Element Category	Component Name	Component Weighting
Coursework	Assignment 1/2 design and implement IPS/IDS/DMZ/ACL CPS Security. Assignment 2/2: Forensics	LO1, LO2, LO4, LO5 100%
Practical	Forensic Investigation (practical as coursework)	LO3 100%

REFERRAL ASSESSMENT

Element Category	Component Name	Component Weighting
Coursework	Assignment 1/2 design and implement IPS/IDS/DMZ/ACL CPS Security. Assignment 2/2: Forensics Assignment 2/2 Report - Forensic Investigation	LO1, LO2, LO4, LO5 60% LO3 40% Total = 100%

To be completed when presented for Minor Change approval and/or annually updated	
Updated by: Tomasz Bergier Date: July 2025	**Approved by**: Hollie Galpin-Mitchell Date: August 2025