PROGRAMME SPECIFICATION

1. Key Information

Programme Title:	BSc (Hons) Computer Science BSc (Hons) Computer Science with Foundation Year
Awarding Institution:	Buckinghamshire New University
Teaching Institution(s):	Buckinghamshire New University
Subject Cluster:	Computing
Award Title (including separate Pathway Award Titles where offered):	BSc (Hons) Computer Science BSc (Hons) Computer Science with Artificial Intelligence
Pathways (if applicable)	Computer Science Computer Science with Artificial Intelligence
FHEQ level of final award:	6
Other award titles available (exit qualifications):	Certificate of Higher Education Diploma of Higher Education BSc Computer Science (or relevant pathway)
Accreditation details:	N/A
Length of programme:	3 years Full Time 4 years with Foundation Year
Mode(s) of Study:	Full Time
Mode of Delivery:	In person (on-site) delivery
Language of study:	English
QAA Subject Benchmark(s):	Computing (including Master's) (2022)
Other external reference points (e.g. Apprenticeship Standard):	British Computer Society
Course Code(s):	BSCOSCFT/ BSCOSCFY
UCAS Code(s):	
Approval date:	01 December 2022
Date of last update:	

2. Programme Summary

The world is a connected place in all aspects of modern life - ourselves in our personal activities, in businesses through commercial activities and for society via smart cities. These stimulating areas are becoming more essential and vital aspects of modern everyday life. The aim of this course is to ensure that you will acquire the full-stack of capabilities and skills in the field of Computer Science and where relevant Artificial Intelligence (AI), to embark on

careers in this ever expanding area of computing and gain a strong underpinning of computer science and AI development technology. The Computing Science and the Artificial Intelligence pathway course is further enhanced by alignment with a number of proprietary certification programmes from major industrial companies, such as: Microsoft, Amazon Web Services (AWS), Cisco, that can optionally be taken by you through levels of your studies. The course will provide you with the appropriate skills and knowledge to pursue a number of careers within Computer Science, AI and digital-based sectors, including as Computer Scientists, AI developer, Software Development, Intelligent Systems developer in Business , Retail and Research sectors. Furthermore, the programme will place great emphasis on developing your employability skills, thus providing you with the competence and confidence to succeed in this exciting are of the profession.

This programme is founded in software and web technologies with a focus on the technical side of web-based applications and services for working in industries that require expertise in web focused sectors of computing. You will gain an appreciation of the role that web-based computing can have in a range of business and industry contexts. The course provides a balance of theory and practice, providing opportunities to apply knowledge into real projects where possible. You will acquire a wide range of skills and competences such as the ability to think critically about real-world problems. You will be exposed to a variety of computing discipline areas, so that you will then be able to select and apply appropriate principles, theories, best practices and appropriate technologies to address the needs of different business contexts, users, customers and stakeholders.

There will be progression and development in your learning through the programme, from initially learning the fundamentals in areas, such as web and mobile development, IT support, software development and network industries, before going on to apply what you have learned to various individual and team assignments. Following on from this you will develop your abilities to think strategically about dynamic real-world problems, whilst enhancing and extending your transferable skill set to include analysis, design, research and leadership.

In the final year of the programme, You will be expected to integrate, apply and evaluate the knowledge you have gained through independent, work-relevant study as part of a major project or extended written piece of work. The course provides, through the choice of research topic and via selection of particular option modules, for you to tailor your studies to suit your own individual interest areas and future career ambitions.

3. Programme Aims and Learning Outcomes

Programme Aims

This programme aims to:

1. Provide learners with a deep understanding of the methodologies, technologies and techniques used within computing systems and web/cloud development technologies
2. Enable learners to apply knowledge of computing systems and web development technologies to the development of systems and software for industrial, business, and commercial applications, both working individually and working in professional teams
3. Make our learners aware of the impact, challenges presented, and the increasing pervasiveness and ubiquity of Computing in our contemporary world, including where appropriate web-based developments that are particularly relevant

4. Enable the building of solutions using different technologies, architectures and appropriate methodological approaches in the context of varying organisational structures
5. Enable learners to be flexible enough in the evaluation of different approaches to solving problems and taking technical decisions using computer systems, within a constantly changing complex and dynamic professional environment

Programme Learning Outcomes

Knowledge and Understanding (K)

On successful completion of the programme, you will be able to:

ID	Learning Outcome
K1	Appreciate the fundamentals and underlying theory of computer science, including artificial intelligence. Along with computer architectures, programming, operating systems, networks, software systems, database systems, particularity where appropriate in the context of web/cloud based systems.
K2	Paraphrase and comment upon aspects relating to the computing mathematical principles that underpin computer and Computer Science systems, Artificial Intelligence systems, including computability and algorithmic complexity.
K3	Recognise the need for the efficient as well as effective management of the process of computer based software / hardware construction within a professional framework being aware of the business, industrial, commercial and social context.
K4	Describe and comment upon aspects of current research, or equivalent advanced scholarship prevalent in the compurt science filed, alongside their outputs and dependencies between stages, including the ethical, professional and legal standard requirements, including the impact of artificial intelligence systems.

Analysis and Criticality (C)

On successful completion of the programme, you will be able to:

ID	Learning Outcome
C1	Deliver advanced level skills of an intellectual, analytical, creative and problem-solving nature. Recognise the risks or safety aspects associated with various computing based systems.
C2	Deploy innovative plans, approaches and solution to computer science and artificial intelligence based issues within a quality assurance and testing framework focused against the needs of critical based system, within computer science and artificial intelligence-based connotations.
C3	Evaluate concepts and data, to make judgements, and to frame appropriate questions to achieve a solution to the development of computing-based systems and where required artificial intelligence system artefacts in a logical, analytical and ethical manner.
C4	Analyse future technologies in the computer science field with corresponding reference to a range of systems architectures including those underpinned by artifical intelligence technology

C5	Evaluate critically computer-based systems in terms of quality and associated trade-offs, whilst appreciating society's increased dependence on nascent technology.

Application and Practice (P)

On successful completion of the programme, you will be able to:

ID	Learning Outcome
P1	Devise and sustain social, ethical and mathematical arguments and/to solve problems, using ideas and techniques, some of which are at the forefront of the computer science and artificial intelligence based disciplines.
P2	Produce a final year computind-based project involving the key processes of analysis, design, implementation and testing; underpinned by their associated product documentation.
P3	Apply professional codes of conduct and appreciate the ethical considerations that underpin the acceptance and adoption of computing-based technology in society by professionals, by individuals and by society in general.
P4	Apply the methods and techniques of specification, requirements, analysis, prototyping, implementation, testing, integration, documentation, delivery and maintenance and their roles in developing computer science solutions to specific problems including artificial intelligence contexts as appropriate.

Transferable skills and other attributes (T)

On successful completion of the programme, you will be able to:

ID	Learning Outcome
T1	Communicate data, ideas, problems and solutions to both specialist and non-specialist audiences effectively in writing, speaking and in appropriate forms of presentation.
T2	Apply computational data using information technology to efficiently handle such data and simulations of systems for design and testing.
T3	Consolidate and expand on previous experience in order to enhance personal development or when leading/working as part of a team.

Graduate Attributes

The BNU Graduate Attributes of: Knowledge and its application; Creativity; Social and ethical awareness and responsibility; and Leadership and self-development focus on the development of innovative leaders in professional and creative capacities, who are equipped to operate in the 21st Century labour market and make a positive impact as global citizens.

Whilst developing as a computing professional on this programme, personal attributes are developed through the practical application of analytical skills, computational principles, algorithmic intricacy, basic microprocessors technology and intelligent systems in a variety of creative situations, including real-world scenarios, and life-critical Case Studies. (K1, C1, P3, P4, C2). Analysis and evaluation approaches are embedded throughout the programme

in individual and team tasks, through the appraisal of current and past computing and web/cloud-based systems supported by the feedback given to your own personal work. (P1, T1, T3, C4). An understanding and awareness of operational applications fostered with a strong focus given to applying and assessing an appropriate life-cycle methodology. (K3, C4). This nurtures the self-efficacy to develop your own work opportunities and to adapt to a constantly evolving technological work environment (C4, K1, K2, K4). Through analysing the historical, social and cultural contexts of operational computing and web/cloud-based systems, a growing social awareness is formed to ensure professional and ethical values are developed. In conjunction with the confidence to assess existing real-world, life critical systems, whilst appreciating the balance between the needs of 'software' engineering practice, embedded by computing fundamentals. (P1, P2, P3, C1, T3, T2, P4).

4. Entry Requirements

The University's general entry requirements will apply for admission to a BSc (Hons) Degree programme. For this course, you must also hold both GCSE English Language and GCSE Maths at Grade C/4 or above, or equivalent qualifications.

A typical offer for entry to the programme would be a UCAS tariff score of 104 – 128, with UCAS points being obtained through qualifications such as A Levels, BTECs and Access to Higher Education courses in appropriate subjects.

Where a candidate does not fully meet the defined entry requirements, they will be further assessed according to their previous study, professional and/or vocational experiences. An interview may be necessary in such cases.

The accreditation of prior learning (APL) process may be utilised to determine if any exemptions from studying modules, or direct entry to a higher level of the programme, are appropriate.

Applicants who do not satisfy the conditions to join the 3-year version of the Degree programme will be considered for the extended 4-year Degree including a Foundation Year.

5. Programme Structure

Pathway 1 BSc (Hons) Computer Science

Level	Modules (Code, Title and Credits)	Exit Awards
Foundation Year	**Core modules:** FY026 Preparing for Success, Knowledge and Creativity FY027 Preparing for Success, Self-development and Responsibility FY028 Inquiry and Research Skills FY006 Digital Media FY007 Computing Essentials **Option modules:** No option modules are available at this level.	**N/A.** No credit is awarded at this Level.
Level 4	**Core modules:** COM 4008 Programming Concepts (20) COM4009 Computer Architecture (20) COM4010 Networking (20) COM4011 Web Development (20) COM4012 Computing Computational Fundamentals (20) **Opportunity modules:** You must choose 2 x 10 credit Level 4 Opportunity modules from the Opportunity module catalogue www.bnu.ac.uk/oppmodules	**Certificate of Higher Education**, awarded on achievement of 120 credits at Level 4
Level 5	**Core modules:** COM5018 Data Essentials (20) COM5012 Object Orientated Programming (20) COM5003 Research Methods (20) **Option modules:** Choose modules to the total of 40 credits:	**Diploma of Higher Education**, awarded on achievement of 240 credits, including a minimum of 120 credits at Level 5

	COM5002 Introduction to Natural Language Processing (20) COM5005 Real-Time Systems (20) COM5013 Algorithms and Data Structures (20) **Opportunity modules:** In addition, you must choose 2 x 10 credit Level 5 Opportunity modules from the Opportunity module catalogue www.bnu.ac.uk/oppmodules	
Level 6	**Core modules:** Advanced Programming (20) COM6001 Project (40) **Option modules:** Choose modules to the total of 60 credits: COM6004 Design Patterns (20) COM6002 Critical Systems (20) COM6005 Cloud Computing (20) COM6003 Data Science (20) COM6008 Knowledge-Based Systems in Artificial Intelligence (20) **Opportunity modules:** No Opportunity modules are available at this level.	**Ordinary Degree**, awarded on achievement of 300 credits, including 60 credits at Level 6 and 120 credits at each of Levels 4 and 5 **Honours Degree**, awarded on achievement of 360 credits, including 120 credits at each of Levels, 4, 5 and 6

BSc (Hons) Computer Science with Artificial Intelligence

Level	Modules (Code, Title and Credits)	Exit Awards
Foundation Year[1]	**Core modules:** FY026 Preparing for Success Knowledge and Creativity FY027 Preparing for Success Self-development and Responsibility FY028 Inquiry and Research Skills FY006 Digital Media FY007 Computing Essentials **Option modules:** No option modules are available at this level.	**N/A.** No credit is awarded at this Level.
Level 4	**Core modules:** COM4008 Programming Concepts (20) COM4009 Computer Architecture (20) COM4010 Networking (20) COM4011 Web Development (20) COM4012 Computing Computational Fundamentals (20) **Opportunity modules:** You must choose 2 x 10 credit Level 4 Opportunity modules from the Opportunity module catalogue www.bnu.ac.uk/oppmodules	**Certificate of Higher Education**, awarded on achievement of 120 credits at Level 4
Level 5	**Core modules:** COM5004 Machines and Their Languages (20) COM5014 Planning, Search and Artificial Intelligence (20) COM5003 Research Methods (20)	**Diploma of Higher Education**, awarded on achievement of 240 credits, including a minimum of 120 credits at Level 5

[1] Modules on the Foundation Year only apply to learners who are enrolled on the “with Foundation Year” programme.

	Option modules: Choose modules to the total of 40 credits: COM5001 Computer Science (20) COM5013 Algorithms and Data Structures (20) COM5002 Introduction to Natural Language Processing (20) **Opportunity modules:** In addition, you must choose 2 x 10 credit Level 5 Opportunity modules from the Opportunity module catalogue www.bnu.ac.uk/oppmodules	
Level 6	**Core modules:** COM6015 Autonomous Robotic Systems (20) COM6001 Project (40) **Option modules:** Choose modules to the total of 60 credits: COM6016 Legal Aspects of IT (20) COM6003 Data Science (20) COM6008 Knowledge-Based Systems in Artificial Intelligence (20) COM6009 Learning Machines & Intelligent Agents (20) **Opportunity modules:** No Opportunity modules are available at this level.	**Ordinary Degree**, awarded on achievement of 300 credits, including 60 credits at Level 6 and 120 credits at each of Levels 4 and 5 **Honours Degree**, awarded on achievement of 360 credits, including 120 credits at each of Levels, 4, 5 and 6

Please note: Not all option modules will necessarily be offered in any one year. Other option modules may also be introduced at a later stage enabling the programme to respond to changes in the subject area.

6. Learning, Teaching and Assessment

Learning and teaching

Our adopted teaching and learning styles in the subject of computer science, artificial intelligence reflects the role and importance that the various disciplines of the sector undertake in the modern world of today. Increasing emphasis on capability, competency and performance is woven into our approach to all aspects of our teaching and learning methods. They can reflect traditional workplace environments – apprenticeships, placements and live projects with clients - as well as newer approaches like online evaluations, role-playing scenarios and gig-economy/commissioned work. Practical coursework, both individual and in teams, features heavily in our computing programmes.

The teaching and learning approaches in our programmes are designed to provide meaningful opportunities for applied learning in authentic or simulated work contexts, such as industrial placements. Working in teams on bigger projects simulates real-world environments and exposes learners to complexity. Ideally, projects can collaborate with industrial partners or research groups, enhancing learning and self-regulation and can expose learners to legal or ethical issues.

The focus is to provide learners better control of their own educational learner journeys, giving them the tools and techniques to enable them to self-regulate and to optimise their personal performance: self-reflection, performance monitoring, evaluation and feedback within learning to support a more personalised journey. The teaching and learning approaches also aim to imbue the ability to work autonomously, both individually and in teams, reflecting the key desired professional attributes employers value in the field of computing.

Modules on this programme will be taught in line with best practice across the university and in the sector. A variety of approaches, and good use of the latest technology, will be blended to engage learners in learning in class, labs and beyond, and to encourage full learner participation. Meanwhile, the Course Team will strive to ensure that all modules embrace contemporary industrial practice wherever possible. The teaching and learning strategies employed throughout the course are those judged to be the most appropriate for each module at each stage and level of the course. The strategies have been designed to ensure that there is progression from formal teaching through to learner centred independent learning as the learner progresses through the levels of the course(s).

A range of teaching methods will be used including:

Lectures

This is the most formal teaching strategy employed in teaching the modules. It is generally used to deliver a body of theoretical information to a large group of learners and is most effective when followed up by a seminar or tutorial session to consolidate learning.

The lecture format may be supported by written handouts, web or library references which serve to reinforce and expand the audio-visual information presented. In addition, staff will make appropriate use of the University's VLE (Virtual Learning Environment) and rich-media facilities. This will enable lecturers to enhance the traditional communication and learning mediums, as well as making material available to learners off-site and at the university.

Tutorials / Practical Sessions

Often in smaller groups, tutorials are guided learning sessions, which can either support a formal lecture by learners working through tutorial sheets with the help of a lecturer or by learners working through practical exercises in say a computing room.

Seminars

These can vary from large group seminars, which provide an opportunity for the learner-led formal debate of topic areas, to 'impromptu' discussion sessions with smaller groups, which may for example follow the viewing of a video.

Other techniques such as industrial visits, guest lectures and computer aided learning tools will be used where appropriate. This variety of techniques is aimed at stimulating learner learning. The teaching and learning strategies for individual modules are detailed in the relevant module proforma.

Assessment

The assessment of our Computing courses includes varied methods that are accessible to all learners. Assessments are, where possible, authentic and tied to real-world contexts and constraints, allowing learners to practically demonstrate the skills they have developed.

We aim to incorporate, where appropriate, the use of capstone activities (to encourage learners to think critically, solve challenging problems, and develop professional employability skills) when concluding the session. This brings together knowledge and practical and analytical skills that learners have developed throughout the course. This may take the form of a traditional project or end-point assessment, but other formats can be appropriate.

Where a learner may identify with disabilities that require further adjustments these will be handled, and adaptations made in accordance with the reasonable adjustment policy. The procedures used for assessment cover the subject knowledge, abilities and skills developed through the degree course.

Therefore, a variety of assessment vehicles will be used as appropriate to the module, including assignments carried out in the learner's own time, in-class assignment, workshops, presentations and formal examination. The form of assessment has been chosen to motivate learners to achieve their best and create learning activities for the learners. The assessment vehicles for individual modules are detailed in the module descriptor.

Assessments will be appropriate to the task, achievable, motivating and vocationally focussed and will form a constructive part of the learning process.

Assessments will develop general transferable skills as well as academic skills.

Assessments will provide enough opportunity for the best learners to exhibit a level of innovation and creativity associated with excellence.

During the Foundation Year, learners will be exposed to a variety of summative and formative assessments whilst developing the academic skills to be a successful learner at university; course content and Learning Outcomes strongly relate to learners developing their knowledge and understanding of the subjects being studied and assessed.

Level 4 assessments will be primarily formative and will encourage the development of appropriate academic practice and concepts. The emphasis will be on frequent small-scale assessments wherever possible with a balance between formative and summative assessment.

Level 5 assessments will be more demanding, with the emphasis still on development of knowledge, skills, and concepts but now encouraging learning at greater depth, emphasising the fundamental principles. There will be a shift towards summative assessment.

Level 6 assessments are designed to allow learners to demonstrate their knowledge and skills so that they have become effective, independent learners. The emphasis is on summative assessment.

Advice, Feedback and Collaborative Learning

Assessment is an integral part of the education process, promoting learner learning by providing a focus for consolidating, applying and demonstrating understanding of the subject matter. The listed summative assessment regime essentially measures and grades learner development and achievement in relation to the intended Learning Outcomes. It also generates feedback information for learners about the strengths and weaknesses in their work, with tutors affirming what learners have done well whilst giving constructive and encouraging advice about areas requiring reflection and further improvement.

In fact, tutor feedback on formal assessment elements is just part of the ongoing dialogue with learners about their learning and personal development. Tutors will offer learners frequent opportunities to discuss their progress, where their work can be examined and reviewed, including the evaluation of plans and drafts for assignments prior to submission. This supportive engagement helps to clarify what “good performance” is, with reference to published criteria and expected standards; it also encourages, motivates and directs learners towards achieving their full potential.

Different strategies for timely advice and effective feedback will be adopted, according to what is fit-for-purpose for learners and modules. For instance: good or bad examples of previous learner work not only give learners clues about appropriate content, structure and presentation of assignments but also highlight common mistakes and omissions; mock exam papers and formative tests; work portfolios represent a collection

of structured activities completed over a period of time with regular interactions with the tutor; individual and group tutorials; practising presentations with other learners can invite peer review; model answers can supplement and extend the feedback given on assessments; group discussions can promote reflection and collaborative learning; audio and video recordings can be used at various points to explain topics and to give guidance; other technology (such as the VLE) can facilitate information sharing, and support learning and collaboration.

Contact Hours

One unit of credit is broadly equivalent to ten notional learning hours. Full time undergraduate learners will normally study 120 credits per year on their programme (1200 notional learning hours), noting that a Foundation Year is not formally described in terms of credits. The combination of scheduled teaching (contact) activities, guided independent study and any opportunities for placement or work-based learning, will be defined at Module level.

7. Programme Regulations

This programme will be subject to the following assessment regulations:

- Academic Assessment Regulations

8. Support for learners

The following systems are in place to support you to be successful with your studies:

- The appointment of a personal tutor to support you through your programme
- A programme handbook and induction at the beginning of your studies
- Library resources, include access to books, journals and databases - many of which are available in electronic format – and support from trained library staff
- Access to Blackboard, our Virtual Learning Environment (VLE), which is accessible via PC, laptop, tablet or mobile device
- Access to the MyBNU portal where you can access all University systems, information and news, record your attendance at sessions, and access your personalised timetable
- Academic Registry staff providing general guidance on University regulations, exams, and other aspects of learners and course administration

- Central learner services, including teams supporting academic skills development, career success, learner finance, accommodation, chaplaincy, disability and counselling
- Support from the Bucks Learners' Union, including the Learners' Union Advice Centre which offers free and confidential advice on University processes.

9. Programme monitoring and review

BNU has several ways for monitoring and reviewing the quality of learning and teaching on your programme. You will be able to comment on the content of their programme via the following feedback mechanisms:

- Formal feedback questionnaires and anonymous module 'check-ins'
- Participation in external surveys
- Programme Committees, via appointed learner representatives
- Informal feedback to your programme leader

Quality and standards on each programme are assured via the following mechanisms:

- An initial event to approve the programme for delivery
- An annual report submitted by the External Examiner following a process of external moderation of work submitted for assessment
- The Annual Monitoring process, which is overseen by the University's Education Committee
- Review by the relevant PSRB(s)
- Periodic Subject Review events held every five years
- Other sector compliance and review mechanisms

10. Internal and external reference points

Design and development of this programme has been informed by the following internal and external reference points:

- The Framework for Higher Education Qualifications (FHEQ)
- The QAA Subject Benchmark Statement – see detailed mapping below
- The BNU Qualifications and Credit Framework
- The BNU Grading Descriptors
- The University Strategy

Mapping of Subject Benchmark Statement and any relevant Apprenticeship Standard to Programme Learning Outcomes

Subject Benchmark Statement / Apprenticeship Standard:	**Knowledge and understanding (K)**				**Analysis and Criticality (C)**					**Application and Practice (P)**				**Transferable skills and other attributes (T)**		
Benchmark / Standard requirement	**K1**	**K2**	**K3**	**K4**	**C1**	**C2**	**C3**	**C4**	**C5**	**P1**	**P2**	**P3**	**P4**	**T1**	**T2**	**T3**
Subject knowledge understanding and skills/ Demonstrate an exceptional understanding of the main body of knowledge for their subject and be able to exercise insightful and critical judgement in the use of that knowledge. Be creative and innovative in the application of the principles covered in the curriculum, and be able to go beyond what has been taught in classes	X	X			X	X		X	X	X		X				X
Intellectual skills/ Critically analyse and apply a wide range of concepts, principles and practices of the subject in the context of open scenarios, showing refined judgement and	X	X	X	X	X	X	X	X	X	X	X	X	X	X		

adaptability in the selection and use of tools and techniques																
Computational problem-solving/ Be able to demonstrate sophisticated judgement, critical thinking, research design, and well-developed problem-solving skills with a high degree of autonomy, and to create highly effective computational artefacts across complex and unpredictable circumstances		X		X	X	X	X	X		X		X			X	
Practical skills across the computing lifecycle/ Demonstrate the ability to undertake problem identification and analysis to appropriately design, develop, test, integrate or deploy a highly complex computing system and any associated artefacts; deeply understand the relationship between stages and be able to demonstrate related sophisticated problem-solving and evidence-informed evaluative skills	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X

Interpersonal and team working **Skills/** Demonstrate the ability to work in a highly proactive and accomplished manner, including as a leading member of a team, making excellent use of tools and techniques to proficiently communicate, manage tasks and plan projects with minimum guidance	X	X		X			X	X			X	X	X			X
Professional practice covering Equality, diversity and inclusion, Sustainability and Entrepreneurship and enterprise education/ Identify best-of-kind practices and effect highly principled solutions within a professional, legal and ethical framework to consistently address a wide breadth of relevant considerations – including data management and use, security, equality, diversity and inclusion (EDI) and sustainability – in the work that they undertake	X				X	X	X	X	X	X		X		X	X	X

Mapping of Programme Learning Outcomes to Core Modules

Programme Learning Outcome	Knowledge and understanding (K)				Analysis and Criticality (C)					Application and Practice (P)				Transferable skills and other attributes (T)		
Module Code (Core)	**K1**	**K2**	**K3**	**K4**	**C1**	**C2**	**C3**	**C4**	**C5**	**P1**	**P2**	**P3**	**P4**	**T1**	**T2**	**T3**
Level 4																
Programming Concepts	X	X	X	X	X	X		X		X		X	X	X	X	
Computer Architecture		X		X	X	X		X	X						X	
Networking	X	X		X	X	X		X	X	X		X		X		
Web Development		X		X			X					X	X		X	X
Computing Computational Fundamentals	X	X	X	X	X			X	X			X			X	
Level 5																
Machines and Their Languages - CS with AI	X			X	X			X	X	X				X		X
Planning, Search and Artificial Intelligence - CS with AI			X	X		X	X	X				X	X	X	X	X
Research Methods	X	X	X	X	X	X	X	X	X	X	X	X		X	X	
Level 6																
Project (40 credits)	X	X		X	X	X	X	X	X	X	X	X	X	X	X	
Autonomous Robotic Systems	X	X		X		X	X	X								