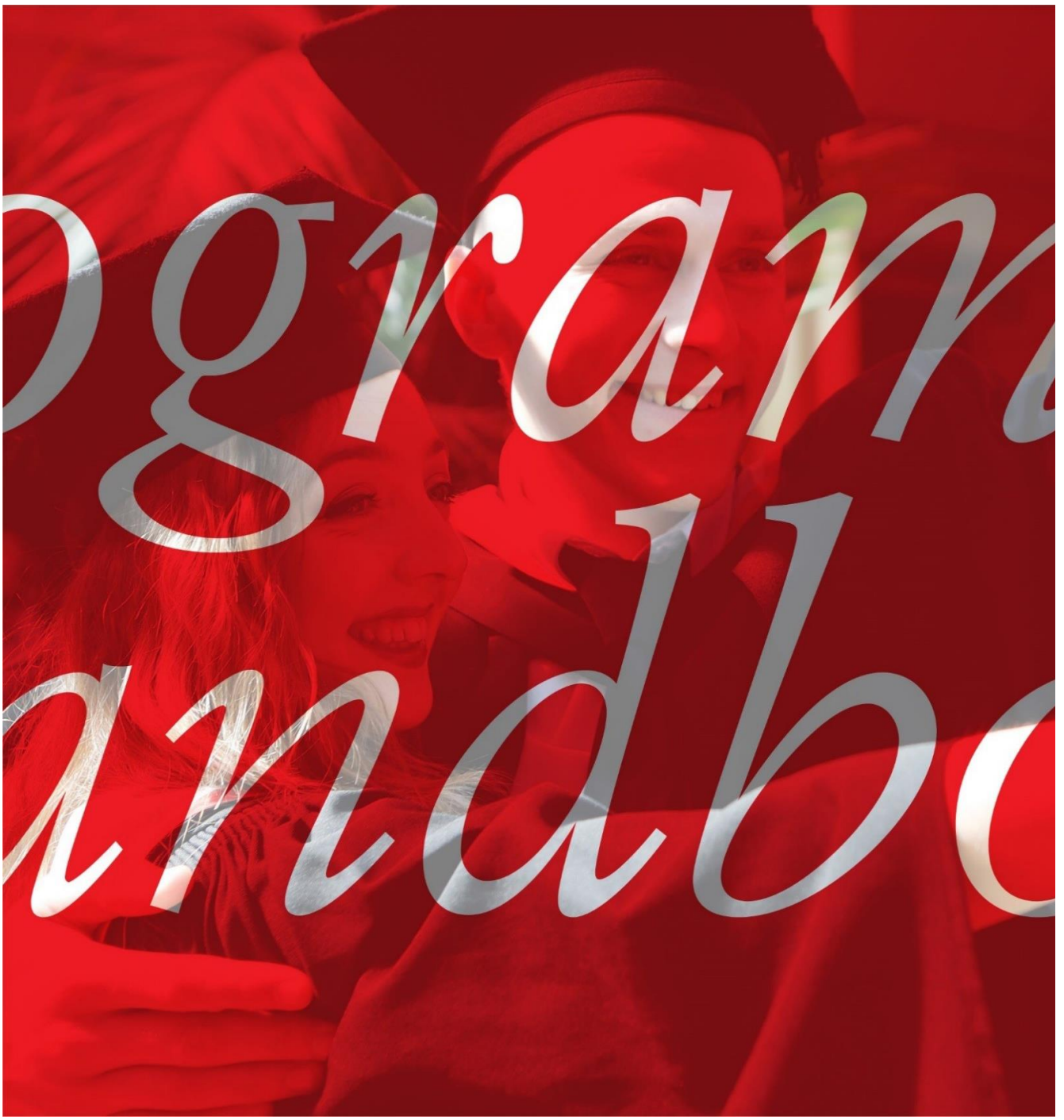
Programme Handbook 2019-20

Network Engineering (Cyber Security)

NET-CS-2016



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WELCOME

Welcome to Blackpool and The Fylde College and to the Network Engineering (Cyber Security) (NET-CS-2016) programme.

This **Programme Handbook** aims to provide you with the key information you will need to settle into and get the most out of your programme of study here at the College leading to successful completion of your programme. It will provide you with an overview of the programme content, how individual modules are organised and delivered, how and when you will be assessed and how overall grades final results are determined. In addition there is information on the help and general support available to you as well as making it clear what you need to do if you should encounter any specific difficulties in progressing as planned on the programme.

There is also further information available in the Partners for Success HE Guide which includes an overview of the College partners and how they will support you on your journey, alongside key information on College facilities, student representation and events you can get involved in. Guidance on term times, Travel to College, Attendance Expectations can be accessed through the College website and virtual learning environment (VLE).

It is strongly recommended that you refer to your **Programme Handbook** and **Partners for Success HE Guide** if you are to get the most out of the time you will have invested in participating in your valuable and hopefully enjoyable learning experience.

We appreciate that as students in order for materials to be fully accessible you may have a preference for a specific font size or colour of text/paper. To ensure that your needs are considered this handbook is available electronically.

GENERAL INFORMATION ABOUT YOUR PROGRAMME

Programme Code	NET-CS-2016
Programme Title	Network Engineering (Cyber Security)
Teaching Institution	Blackpool and The Fylde College
Professional, Statutory and Regulatory Body (PSRB) Accreditation	None
UCAS Code	
Language of Study	English
Version	1

Programme Awards			
Award	**Award Type**	**Level**	**Awarding Body**
LU Foundation Degree in Science	Foundation Degree (240 credits)	Level 5	Lancaster University
LU Bachelor of Science (Honours)	Honours Degree (360 credits)	Level 6	Lancaster University

THE FRAMEWORK FOR HIGHER EDUCATION QUALIFICATIONS (FHEQ)

The Framework for Higher Education Qualifications (FHEQ) ensures the comparability of Higher Education qualifications in England, Wales and Northern Ireland. The framework describes the achievement represented by qualifications and the various awards which may be granted by a Higher Education provider with degree awarding powers. All students pursuing Higher Education programmes at Blackpool and The Fylde College are awarded qualifications aligned to the FHEQ upon successful completion of their programme.

Level	4	5	6	7	8
FHEQ Level	Certificate (C)	Intermediate (I)	Honours (H)	Masters (M)	Doctoral (D)
About this level of qualification	Level 4 These qualifications are work-related (vocational) higher education qualifications. While bachelors degrees tend to focus on gaining knowledge, HNCs are designed to give you the skills to put that knowledge to effective use in a particular job.	Level 5 These qualifications are designed to equip you for a particular area of work – as well as giving you the general skills that are useful in any type of job. They're university-level qualifications, but are designed with work in mind, with the help of employers from that sector.	Level 6 These qualifications are designed to give you a thorough understanding of a subject. They help you develop your analytical, intellectual and essay or dissertation writing skills. You'll also have much more of a say about the direction your learning takes than you've had previously.	Level 7 These qualifications are of academic study. They can be research based, a taught course, or a mixture of both, and will take at least 12 months of full-time study to complete. You may also have to submit a dissertation at the end of your course.	Level 8 This level gives you the opportunity to undertake an original piece of research. It will usually take at least three years of full-time study to complete. Many doctorate courses lead to a qualification such as a Doctor of Philosophy – a PhD or Dphil.
Qualifications that are available at this level	Higher National Certificates (HNC) Foundation Studies (FS) Diploma	Higher National Diplomas (HND) Foundation Degrees (FD) Diploma of Higher Education (DipHE)	Bachelor Degrees (BA, BSc) Bachelor Degrees with Honours (BA Hons.) Professional Graduate Certificates in Education (PGCE)	Masters Degrees (MA, MSc) Postgraduate Certificates and Diplomas Post Graduate Certificates in Education (PGCE)	Doctoral Degrees

PROGRAMME OVERVIEW

Blackpool and the Fylde College remains committed to providing a highly responsive curriculum that is employment and future-focused and will enable you to develop the essential knowledge and skills that will prepare you for future success in work and life.

Businesses are increasingly reliant upon interconnected systems and networked infrastructures; as these systems continue to grow in size and importance, the number of job roles in computer networking increases alongside them. The need for organisations to protect themselves from the legal, political and economic ramifications derived from data losses or breaches of security is symbiotic with this reliance.

This Foundation Degree programme has produced significant numbers of graduates, the majority of whom have found employment in the area of networking. The combination of network security with network systems administration produces extremely well qualified graduate cohorts with broad, commercially desirable skill sets and qualifications. It produces self-directing IT professionals with a

wide range of career pathways available to them. Along with the technical skills referred to, you will develop your understanding of continuing professional development and the value of transferable skills.

The college has experience of delivering specialist HE networking courses linked to both the Cisco Curriculum, via the Cisco Networking Academy and the Microsoft Curriculum, via the Microsoft Academy. We have demonstrated that there is an established market for such globally recognised networking qualifications in the local area.

Building on this success, the FdSc. Network Engineering (Cyber Security) provides a specialist route in one of the most in-demand disciplines within contemporary computing.

The FdSc Network Engineering (Cyber Security) programme intends to develop technical and professional skills in order that you meet the current expectations of industry.

The skills you will develop include the ability to:

- Apply networking and hardware skills that will enable the connection, control and maintenance of various devices, using both traditional and wireless connectivity
- Protect individual systems and corporate infrastructures from unauthorised and illegal hacking and industrial espionage
- Configure, maintain and recover server based solutions to SMEs and larger corporations
- Develop specialist Cyber Security skills to prepare Information Security Professionals for a range of in-demand industry roles
- Work independently and as part of a team, the ability to take instruction and work to deadlines, communication and adaptability
- Be creative, use initiative and develop problem solving skills
- Undertake a work placement and apply the full range of technical and professional skills acquired during the foundation degree in a real world context.

The BSc. (Hons) Network Engineering (Cyber Security) programme intends to develop your advanced technical and professional competence to meet the current expectations of industry, and facilitate their adaptability to emergent requirements.

The skills you will develop include the ability to:

- Collaborate in the design and delivery of Secure Systems commissioning to provide professional guidance for both existing organisations and new entrants to the market
- Devise entrepreneurial methods for developing opportunities for SMEs and larger public / private organisations through the provision of networking and networking infrastructure
- Apply networking and hardware skills that will enable the protection of information architecture through a range of suitable security mechanisms
- Create and modify robust corporate infrastructures to protect from unauthorised and illegal hacking and industrial espionage against current and future threats
- Develop advanced creative and problem solving skills
- Work independently, in a team leading role, including the ability to issue instruction and manage workloads / task delegation with professionalism

PROGRAMME AIMS

Foundation Degree programme aims:

- To provide students with a range of cyber security cognitive abilities and skills.

- To develop skills in network engineering; with regard to design, implementation, maintenance and securing network systems; thus enabling students to formulate decisions and administrate network systems.

- To develop a range of transferable skills, techniques and personal qualities that are essential for successful performance in Higher Education and in working life.

- To provide a platform for further undergraduate study.

Bachelor Degree programme aims:

- To further develop knowledge and skills to enable students to formulate managerial and strategic decisions in the administration and deployment of secure systems.

- To provide the opportunity to accurately deploy established techniques of critical analysis and enquiry in network engineering systems and security administration.

- To develop conceptual understanding which enables students to devise, develop and sustain arguments, using ideas and techniques from research and the wider subject discipline.

- To enable students to manage their own learning and to make use of scholarly reviews and primary sources.

PROGRAMME LEARNING OUTCOMES

Level 5

Upon successful completion of this level, students will be able to:

1. Identify, explain and discuss the technical and theoretical disciplines and applications involved in the development and deployment of secure systems
2. Analyse the social, legal and ethical aspects of design, implementation and evaluation of a secure system
3. Apply mathematical principles required to design, implement and maintain security mechanisms
4. Design, implement, and secure information infrastructure drawing on supporting evidence and critically analyse, select and apply suitable tools and techniques
5. Communicate information in a variety of formats to a range of audiences using a range of media which evidences both academic and digital literacy skills
6. Work effectively as an individual and as a member of a team undertaking critical self-appraisal to support continued professional development, employability, lifelong learning and transferrable skills
7. Integrate and apply essential concepts, principles and practice in the development and implementation of sustainable secure systems

Level 6

Upon successful completion of this level, students will be able to:

8. Generate ideas, concepts, proposals, solutions or arguments independently and/or collaboratively exercising critical judgement to inform system security administration practices, techniques, applications and transferrable skills
9. Employ both convergent and divergent thinking in the processes of observation, investigation, speculative enquiry and visualisation to formulate effective solutions to problems including selection of tools and techniques
10. Critically analyse and evaluate the professional, economic, social, environmental, moral and ethical issues involved in the sustainable exploitation of secure systems and apply appropriate professional, ethical and legal practices

11. Undertake critical self-appraisal and manage own learning and development identifying the need for continuing professional development and lifelong learning
12. Produce work involving critical problem identification, analysis, design and development of secure systems based on evidence which explains the relationship between these features, the need for quality and applies problem-solving and evaluation skills

PROGRAMME STRUCTURE & ASSESSMENT OVERVIEW

Pathway	Module	Level	Credits	Coursework	Practical	Written Exam
Stage 1: Year 1 Stage exit award: LU Certificate of Higher Education (Awarded by Lancaster University)						
All	B4SCNET-CS: Introduction to Academic Study (Mandatory)	4	20	60%	40%	
	NET401: Network Principles (Mandatory)	4	20	50%	30%	20%
	NET402: Network Programming and Scripting Concepts (Mandatory)	4	20	100%		
	NET403: Introduction to Routing and Switching (Mandatory)	4	20	50%	30%	20%
	NET404: Introduction to Systems Security (Mandatory)	4	20	100%		
	NET405: Network Disaster Recovery (Mandatory)	4	20	75%		25%
Stage 2: Year 2 Stage exit award: B&FC Foundation Degree in Science (Awarded by Blackpool And The Fylde College)						
All	BFC501-I: Work Based and Placement Learning (Mandatory)	5	20	100%		
	NET501: Project Management (Mandatory)	5	20	70%		30%
	NET502: Virtualisation and Cloud Computing (Mandatory)	5	20	50%	50%	
	NET511: Cyber Security Process Management (Mandatory)	5	20	70%		30%
	NET512: Database and Web Security (Mandatory)	5	20	100%		
	NET513: Data and Evidence Recovery (Mandatory)	5	20	100%		
Stage 3: Year 3 Stage exit award: LU Bachelor of Science (Honours) (Awarded by Lancaster University)						
All	CMP601: Dissertation (Mandatory)	6	40	100%		
	NET601: Cyber Ethics and Law (Mandatory)	6	20	60%		40%
	NET602: Distributed Systems (Mandatory)	6	20	100%		
	NET603: Corporate Network Strategies (Mandatory)	6	20	70%		30%
	NET611: Cryptography and Cyber Security Trends (Mandatory)	6	20	60%		40%

WHERE WILL I STUDY?

This programme may be studied at one of the following locations:

B&FC University Centre

The majority of higher education courses are delivered at our University Centre in central Blackpool, within easy reach of student accommodation, shops, restaurants, bars and the promenade. This multi-million pound complex provides higher education students with a dedicated campus, with the major teaching and support facilities conveniently converging in an attractive central courtyard. The open-plan Central Hub houses a refectory, chill-out zones and the central learning resource centre. A unique and important addition to the Centre is our Gallery, housing works by both our own students and independent artists.

B&FC Bispham Campus

Courses in Construction, Engineering and Automotive are delivered at our Bispham Campus. Here you can access a central reception, vital student support functions and a convenient number of retail outlets all within one attractive Hub development. Bispham Campus has recently been the focus of a stunning £3.5m upgrade, with the result that it is now dramatically more energy efficient, along with the multi-million pound development of the Advanced Technology Centre. The Bispham campus hosts a range of specialist equipment and facilities tailored towards computing, engineering and construction.

GETTING STARTED

At the start of your course, your tutors will guide you through an initial induction which is designed to ease you into university life and higher level studies. Activities generally focus on helping you to find your feet, make friends and plan your studies. It can also traditionally be the time when students get to let their hair down and familiarise themselves with both the College and the local area before getting down to the more serious business of studying.

Our annual Freshers' Fair is a fun, vibrant event and a great chance to find out more about what's on offer locally, with representatives from the B&FC Student Union, Higher Education Learning Mentors (HELMs), The Loop LRC, Careers Team and our Disability team who can provide information on Disabled Students' Allowances, access arrangements and reasonable adjustments. Representatives from local attractions, restaurants, health and fitness centres, clubs, bars and more will also be there. Support organisations and charities are represented too, along with B&FC's own clubs and societies and sports teams.

LEARNING AND TEACHING

Our strategy for teaching, learning and assessment is based on good practice identified in research literature for the subject discipline. In particular we adopt an approach that will draw on your experience and that of other students to inform different approaches to practical tasks and theoretical case studies, updates content based on contemporary developments in the subject area and develops your professional skills through reflective practice.

There is an emphasis on formative assessment whereby you will have opportunities to test your skills in practical sessions and submit draft written tasks to receive written and/or verbal feedback to help you improve your work prior to final submission of assessments. The formative assessments will be delivered in the context of the module content and additional support to help you improve will be identified through our tutorial framework where your Personal Tutor will liaise with key agents throughout the college (such as Higher Education Learning Mentors) to support your development.

YEAR 1 (LEVEL 4)

At Level 4 the 'Academic and Digital Literacies' module will prepare you in research, collation and presentation of information in a range of styles to a range of audiences. This is linked to the wider subject material of the curriculum including reflection upon activities and feedback received in other modules in Semester 1. A focus on reflecting upon your work in other modules will help you improve your practice and the development of academic skills with help you achieve in future module assessments and start you well on your development of transferrable graduate skills.

The 'Network Principles' and 'Introduction to Routing and Switching' modules feature hands-on practical activities utilising NetLab equipment reinforcing concepts provided as blended (online / multimedia) learning resources by Cisco and reinforced through lecture-led discussions. Consideration is given to the environments in which these skills would be practiced in industry, inclusive of equipment selection and deployment which would be driven by business needs The 'Introduction to the Routing and Switching' module also employs the usage of Packet Tracer, which can simulate complex network architectures. This is employed as a practice tool before the application of hands-on practical skills so that particular issues can be avoided and this is also utilised to simulate more complex network architectures.

'Network Programming and Scripting Concepts' follows a similar style integrating practical activities into sessions based on demonstrations and discussions of how concepts are applied, supported by blended (online / multimedia) learning resources. Supported practical sessions on programming tasks will enable you to be supported when bugs are encountered and practice problem solving techniques to overcome coding issues. This module provides a basis for skills further developed in 'Systems Configuration and Management'

'Introduction to Systems Security' features practical activities embedded within larger scenarios with discussions on case studies considering the wider impact of security breaches including legal and ethical dimensions.

'Network Disaster Recovery' utilises case studies to help relate your understanding of concepts to real-world situations and allow for practice planning in a range of contexts. As the module moves towards the database management aspects more practical activities are integrated starting with demonstrations and then supported workshops where you will practice your skills with the ability to reflect and refine them through experience and feedback.

Overall, a largely practical approach is taken at Level 4 with an emphasis on you learning through doing, reflecting upon these tasks to develop your skills. This provides a foundation to become more critical and analytical as well as developing more complex practical skills at Level 5.

YEAR 2 (LEVEL 5)

At Level 5, the 'Project Management' and 'Work Based / Placement Learning' module are delivered throughout the year. Themes of leadership, collaboration and organisational contexts support each other in both modules. In 'Project Management', lecture-led discussions on group dynamics and collaboration can be applied in the workplace and reflected upon. Professionalism and approaches to handling change and risks amongst other themes can be examined from these lenses. These elements of the curriculum delivery support each other in viewing concepts in different contexts allowing for deeper construction of understanding.

'Project Management' makes use of lecturer-led discussions, analysis of case studies and seminars where approaches can be shared and you can gain a better understanding of core project management issues.

'Cyber Security Process Management' makes use of lecturer-led discussions, analysis of case studies and group tutorials enabling you to share approaches with other students to the theoretical content and how it applies in real-world scenarios. 'Data and Evidence Recovery' and 'Web and Database Security' both contain a large practical element underpinned by theoretical concepts and frameworks. Lectures and lecturer-led discussions as well as reflection on blended resources are used to introduce, reinforce and reflect upon the concepts. Then more practical elements will be introduced through lecturer-led

walkthroughs and supported workshops so you can hone their skills and receive feedback from the tutor.

YEAR 3 (LEVEL6)

Delivery at level six will place more emphasis on you as an independent learner and bring your research to disseminate, analyse and discuss where appropriate. There is a larger emphasis on theoretical content at Honours level and our aim will be to support you in developing high level skills such as deeper analysis, critical evaluation and reflection.

Where there are practical activities, the basics will be delivered through demonstration and supervised labs however extending the skills to achieve highly will be your responsibility; the more additional work and research you put in the better the outcomes will be for you.

This is all the more important as the dissertation will be self-managed. Supervisors will be allocated based on level of knowledge academically or technologically to aid in completion of the dissertation yet appointments need to be managed by students to build their ownership of academic progress.

The 'Cyber Ethics and Law' module explores social, legal and ethical principles. There will be some lecture-based delivery, in which you will learn about existing ethical philosophies, legislation and codes of conduct; however, the very nature of the module content requires you to take control and apply an independent approach to these topics through utilisation of current news articles and contemporary case studies to illustrate the concepts. You are encouraged to be independent and research-led bringing your contributions to the class for informed debate and discussion. Seminars will be held throughout with students leading the topics of discussion allowing various perspectives to be explored and a deeper understanding to be socially constructed.

'Distributed Systems' and 'Cryptography and Cyber Security Trends' both incorporate practical aspects as an experiential reference point to help you explore the wider context of the subject matter; this will be based on tutor-led demonstrations and practical activities which are then reflected upon in relation to fundamental theories and emerging technologies. The delivery will then move on to a more research-led format with lecture-led discussions drawing on individual professional experiences of the students. This aids in informing critical approaches to selecting, deploying and maintaining appropriate technologies for distributed systems in a range of contexts.

'Corporate Network Strategies' incorporates peer collaboration in research-led activities where groups will then make presentations or contribute to seminar sessions. Through this sharing of different approaches, effective strategic thinking and approaches can be fostered, inclusive of critical evaluation, analysis and synthesis techniques.

The 'Dissertation' emphasises your self-management, information discovery and experimental practical experience. Timetabled sessions will revisit Academic and Digital Literacy skills at a higher level, emphasising scholarly activity, critical evaluation, comparison and contrast of a wide range of reliable and valid sources, data analysis techniques, structure and planning. Outside of these sessions you will need to arrange appointments with your assigned Supervisor to get one-to-one feedback and direction. The dissertation module is delivered all year and the teaching and learning approaches emphasised in the other modules aid in the development of independence and high level academic skills.

Overall, at Level 6 a more discursive approach is taken in delivery where you are expected to bring more of your own knowledge in a journey of shared discovery through subject areas. Whilst there are still lectures and activities, a much more student-led approach is utilised to build your expected graduate skills.

Independent Learning

All higher education programmes are designed so that you are able to progressively develop independent learning skills and aptitudes. Learning independently is a key skill of all graduates when they enter the work place and one which we aim to develop further during your time with us.

As you begin your programme you will be more intensively supported to develop the skills of learning and learning how to learn. As you progress you will be given the opportunity to apply these skills and to manage your own study time and activities with the goal of becoming a truly independent learner ready to get the most out of graduate employment opportunities.

Your Personal Development planning activities are a key component in developing these independent learning skills and your tutors, support mentors and peers can help you to organise and structure this aspect of your learning and development.

WORK BASED AND PLACEMENT LEARNING

During the Foundation Degree you are expected to complete a minimum of approximately 100 hours of work placement. You are encouraged to secure these placements yourself through seeking out employers within the sector and through interview, applications or negotiation ascertain what your responsibilities will be and how they will be supported. It is expected that your placement has a direct relationship to the course content and so therefore you need to keep the academic staff aware of your intentions with regards potential placements. There are also legal requirements that must be met by employers including insurance and health and safety procedures; the Work Placement Co-ordinator will visit employers to ensure that the required information is in place. Periodically, the Work Placement Co-ordinator will check your progress with the employer.

A timetabled module on the second year of the programme will include delivery on aspects of professionalism and employability such as CV writing, Codes of Conduct, relevant legislation and interview techniques. In addition to these activities you are expected to maintain a digital log of your placement which will log hours, reflect upon the skills and techniques you have applied, how they relate to the course content and also planning for future graduate employment.

The tutorial sessions towards the end of the first year will provide you with more information in order to prepare you to seek out your placements as sometimes these can be completed in the summer break. Also, some placements may require DSB checks and staff can aid you with the completion of the required forms.

If you have difficulty securing a work placement, the Work Placement Co-ordinator maintains contacts with local employers and will work with you to be placed. If a placement cannot be located, a live employer related project will be undertaken for the required hours. It should be noted however that students who have shown the initiative in securing placements in areas of their interest have gone on to be successfully employed graduates with these and similar organisations.

The work placement elements of the course will have occurred on the pre-requisite FdSc. Network Engineering (Cyber Security).

ASSESSMENT

YEAR 1 (LEVEL 4)

Formative Assessment

Formative assessment in ‘Network Principles’ and ‘Introduction to Routing and Switching’ utilises Cisco End of Chapter quizzes which are aligned to the Cisco curriculum and allow for an on-demand analysis of your achievement. In addition to this, formative tasks based around case study activities including network infrastructure designs, addressing schemes and example rationales are set to enable opportunities for constructive feedback ultimately enhancing your overall achievement. Within sessions

there are practice practical sessions to provide opportunities for troubleshooting and improving techniques.

The ‘Academic and Digital Literacies’ module provides formative assessment opportunities through group discussions and reflective logs. Tasks include reports where you analyse sources and critique them, applying cognitive skills integral to academic enquiry. The feedback from these activities aims to build your skills in researching, analysing and synthesising information.

‘Systems Management’ makes use of supported practical sessions where formative feedback can be given verbally to improve your practical techniques. For the coursework element of these modules, draft tasks related to coursework reports will be set helping you to improve your technique and interpretation of underpinning knowledge in real-world scenarios.

‘Network Programming and Scripting Concepts’ will initially have draft written and design tasks for theoretical elements to enable opportunities for written and/or verbal feedback. For the programming elements there will be supported workshops where issues with debugging techniques and problem solving can be aided with through small demonstrations or discussions of potential techniques to enhance your practice.

‘Network Disaster Recovery’ will enable formative feedback opportunities through setting disaster recovery planning task related to case studies. The database design and implementation aspect of the module will set formative tasks for providing designs and server links so that aspects of the implementation can be improved upon.

‘Introduction to Systems Security’ includes practical activities in sessions that are supported by verbal feedback to aid in troubleshooting and improving your techniques where links to underpinning knowledge are established. This module includes research and development of a security strategy and so formative tasks will be set to draft key elements of this, providing opportunities for you to improve.

Summative (Graded) Assessment

In ‘Network Principles’ and ‘Introduction to Routing and Switching’ there are timed practical sessions, online multiple choice exams and report based case studies where network equipment is specified and justified as well as designs for network infrastructure and research into core networking concepts. The ‘Network Principles’ module integrates the Cisco End of Chapter quizzes as part of the summative component; these are then used throughout the other Cisco embedded modules as formative tasks.

‘Network Programming and Scripting Concepts’ includes two pieces of coursework. The first will focus on theoretical concepts and where scripting tasks would be appropriate to increase efficiency for network professionals and also design tasks for a small-scale program. The second assignment will include developing a network-based program according to the design, testing and evaluating it.

The ‘Network Disaster Recovery’ module includes a large coursework element; the first assessment includes disaster recovery planning linked to a real-world scenario to be justified based on referenced evidence. The second coursework assessment includes the design, implementation, backup and transfer of a database with choices made requiring justification based on core database principles. There is a written exam in this module which will revisit concepts from different lenses and applied to different situations; the placement of this exam in the programme also aids in preparing you for exams in later levels of the programme which are a larger weighting of the module assessment.

‘Introduction to Systems Security’ will include practical activities embedded in larger coursework-based assessments to reinforce the links between practical techniques and underpinning concepts with a range of analysis techniques assessed. Comparisons and contrast of a range of reliable sources is also emphasised to base judgments upon.

YEAR 2 (LEVEL 5)

Formative Assessment

'Work Based / Placement Learning' will include reflective tasks throughout although some will count towards the summative assessment of the module. Other formative assessment activities include writing CVs and PDP to develop your employability skills.

'Project Management' will include as part of the formative assessment tasks draft plans, draft documentation (such as Risk Assessments, PID) and tasks based on case studies with a view improving your approaches to planning, documentation, judgment and consideration of legal, social, ethical and economic impacts.

'Virtualisation and Cloud Computing' includes practical activities in sessions that are supported by verbal feedback to aid in troubleshooting and improving your techniques where links to underpinning knowledge are established. In this module the practicals will have several 'mock' sessions beforehand to allow you to hone you skills prior to summative assessment. Tasks will be set based on elements of the coursework including writing up research into evolving cloud technologies and comparing different cloud solutions.

'Cyber Security and Process Management' is a largely theoretical module and so therefore there will be class tasks based on case studies and professional frameworks from which to receive verbal and/or written feedback. Lecturer-led class discussions will enable you to share different approaches with other students to topics whilst providing opportunities to clarify and challenge assumptions. There will be revision sessions with direct questioning / mock exam questions on which verbal and/or written feedback can be provided.

'Database and Web Security' and 'Data Evidence and Recovery' initially include theoretical concepts and then a larger practical focus. Exploration of case studies, reflection on blended learning resources and lecturer-led discussions will provide opportunities for verbal and/or written feedback. Supported workshops for practical tasks will give you opportunities to practice the skills and receive feedback to reinforce concepts and refine techniques.

Summative (Graded) Assessment

'Work Based / Placement Learning' will include a work placement negotiated with an employer in industry and also comprise several reflective logs that link practice in modules to experience in the workplace and resolving where theoretical and practical skills are utilised in this environment. This will also include their experiences of developing as a professional and building towards their career goals. A second assessment will include a poster presentation reflecting upon the experience as a whole. The summative assessment for this module reinforces reflection, employability and transferrable skills with the poster presentation also preparing you for the Level 6 dissertation module.

'Project Management' has a coursework element that involves the planning and management of a networking based project including completion of all relevant documentation, justifications for choices made based on established methodologies and good practice in the profession. Critical analysis and judgement is emphasised in the assessment of the coursework. There is also an examination component which revisits core concepts from different angles and applies problem-solving skills to particular scenarios.

'Cyber Security Process Management' includes an in-depth report into Security Information Management that will explore concepts, definitions frameworks and techniques of information assurance, information security, threat modelling and risk management in the context of organisations. The written examination will cover roles, responsibilities, security policies, procedures, legal frameworks and security development lifecycles.

'Database and Web Security' and 'Data Evidence and Recovery' include a written piece of coursework and a larger piece which embeds practical elements. In 'Database and Web Security' the piece will focus on architectural concepts and trends in vulnerabilities and security mechanisms; the second piece will include a small-scale development to apply configuration and development techniques which guard against vulnerabilities with testing to ensure this. In 'Data and Evidence Recovery' the first piece

will focus on technical fundamentals of data recovery and legal responsibilities in recovering evidence; the second piece will include the selection of a suitable methodology to recover data in a range of given contexts.

'Virtualisation and Cloud Computing' includes two timed practical assessments that focus on the deployment, configuration and testing of alternative virtualised solutions. The coursework element will examine wider issues and trends in cloud computing and implications this will have for network managers, comparing, contrasting and evaluating a wide range of reliable sources.

YEAR 3 (LEVEL 6)

Formative Assessment

'Cyber Ethics and Law' includes formative assessment tasks that rely upon your contributions to the class and your own research building your self-management and critical skills. This will include applying ethical principles to recent news articles and presenting judgements through seminars, discussions and written activities. Drafts on the summative essays will form part of the formative assessments enabling you to improve your writing, being more critical and concise. You will also undertake revision tasks revisiting principles and applying them to different cases to prepare you for the written exam.

'Distributed Systems' will include practical tasks where you will practice coding and debugging a prototype small scale program to demonstrate key concepts. In these sessions you will have opportunities to be supported through feedback and help with debugging as well as discussing the links to the broader theoretical concepts. You will also be expected to research emerging technologies and core concepts in this subject area using academic papers to share with the class in discussions and build a shared understanding of the topics under discussion. There will also be opportunities to submit draft tasks related to the summative coursework submission enabling you to improve your writing and academic approach.

'Corporate Network Strategies' includes group tasks based on case studies to present to the class and provide opportunities for discussion based feedback to occur, questioning rationale, assessing where critical judgement has taken place and considering the approaches taken. Draft tasks based on the coursework will also be set helping you to improve prior to the exam.

'Cryptography and Cyber Security Trends' will include discussions based on your own research into topics related to the module content and the focus of discussions can be guided by them. There will be supported workshops for the small practical element where an encryption algorithm is produced which will enable feedback to be given on approaches. Draft tasks related to the written coursework and examination topics will be set to enable verbal and/or written feedback to be given.

The 'Dissertation' has a number of formative points throughout the year including proposal, ethical approval, project plan, literature review drafts, methodology drafts, design drafts, data analysis tasks, progress report and online reflective logs. Formative tasks are set every week according to a scheme of work that applies across Computing programmes and every two weeks this is recorded so that Personal Tutors can monitor progress and provide support where necessary.

Summative (Graded) Assessment

'Cyber Ethics and Law' includes multiple essays applying ethical principles to case studies and considering relevant legislative constraints and social impacts of evolving technologies. The exam revisits these principles and applies them to different contexts.

'Distributed Systems' includes the development of a small scale prototype to illustrate the importance of middleware and external data representation forming the basis for critical reflection on development and comparing this to the wider literature. The second assessment is a longer form investigative report which examines other aspects of distributed systems with an emphasis on exploring such topics in significant depth.

‘Corporate Network Strategies’ coursework involves the formulation of a corporate strategy which considers alignment of IT with other organisational operations, integrating a wide range of frameworks, theories and approaches with an emphasis on exercising critical judgement. The exam revisits these underpinning concepts from different angles.

‘Cryptography and Cyber Security Trends’ includes two written pieces of coursework. The first one examines cryptography in-depth and includes the writing of an encryption algorithm. The second piece is where Cyber Security trends are analysed and projections made for evolving threats / practices / technologies. The examination revisits concepts from the first two assignments from different lenses.

The ‘Dissertation’ summative assessment breakdown (to be taken as one whole assessment) is:

- Self-Management (15%)
- Dissertation Report (40%)
- Implementation / Development Work Done (35%)
- Poster / Demonstration (10%)

The overall summative piece will be blind cross-marked to ensure that the grade reached is an accurate reflection of your performance. Where an agreement cannot be reached then the Dissertation Co-ordinator will arbitrate to reach a final grade.

Assessment Methods

Some assessments may already be very familiar, such as essays, exams, and reports. However, in higher education there are a great many varieties of assessment depending on the subject, the level and the type of course. Our higher education courses often integrate academic and work-based learning so assessment may include aspects of personal reflection, portfolio building and case studies. Here’s a bit more detail about some of the more common types of assessment:

Essay
An essay is an answer to a question in the form of continuous, connected prose, usually with a word limit. Often these are set by the tutors but you may also be asked to formulate your own question with the tutor’s help. Essays test your ability to organise your thinking, discuss, evaluate, analyse, summarise and criticise. They also test your skills at making essay plans and reaching a robust conclusion or decision.

Assignment or brief
An assignment or brief is a learning task that allows you to cover a fixed section of the curriculum predominantly through independent study. Different methods of presenting the results can be used dependent on the nature of the task - a report (oral or written), a design solution, a newspaper or magazine article, a video, a poster, a research bid, a book review, a contribution to a debate, etc.

Group project or assignment
This is where either an assignment or project is undertaken by groups of students working collaboratively, helping to develop team working skills and other graduate attributes. In some cases, particularly where the same thing happens in industry, there are particular assignments that can by definition only be achieved in a group. Such assessments will incorporate mechanisms which allow the tutor to assess the contribution of individual members of the group or team in order to allocate individuals with a personalised assessment grade.

Exams
Exams can take a variety of different forms, with the most common sort being done under timed and observed conditions to ensure it is the student's own work. Exams test your ability to think critically, to respond in a structured way to a question and to plan on the spot as well as your knowledge and understanding of the subject. Some of the most common types of exams are:

- 'Seen' where the questions to be answered are given at a pre-specified date beforehand. The intention is to reduce the need for 'question-spotting', to reduce the anxiety and to increase the emphasis on learning

- 'Open-book', where you will have access to specified texts and/or your notes. the intention is to reduce the emphasis on memorising facts, to reduce anxiety and allow more demanding questions to be set
- 'Unseen' where you don't know what the questions are until you sit the exam. Arguably these make you focus on the whole syllabus because anything may appear on the paper
- Multiple choice exams where you simply select from a bank of potential answers. These also assess your decision making skills

Logs and Portfolios
These are an increasingly popular kind of assessment, and involve a collection of all sorts of evidence of your work (often including others' testimony about your work, and feedback you've collected). Portfolios are intended to be a measure of the work of the 'whole candidate', rather than just particular aspects of the candidate's work. They also measure your ability to organise a collection of evidence, in a readable, navigable way. Not least, they test your ability to stick to deadlines with a big, multifaceted job.

Reports
There are many kinds of reports – laboratory ones, field-trip ones, business ones, and so on – each has its own conventions and preferred formats – your tutors will tell you more. Assessed reports measure your skills at finding out about, and adhering to, the expected report formats and conventions in your subject discipline. They also measure your ability to put forward an organised piece of writing, coming to conclusions, making suggestions for further work, and so on. They often test your skills at interpreting data, making sense of your findings, and so on.

Calculations and problem solving
Usually given in sets – with a deadline for tutor marking, or to bring along completed to a tutorial. These, unsurprisingly, tend to measure your ability to solve problems and do calculations.

Presentations
Lots of students worry about presentations – you normally build up to these as your course progresses and you'll be given lots of support and time to prepare. You may be involved in group or solo presentations, perhaps to some or all of your class, usually with the tutor present. Sometimes peer assessment is used. Presentations measure your ability to talk fluently about a topic, and to answer questions from the group. They also measure your skills at preparing visual aids (overheads, handouts, PowerPoint presentations) to support your presentation. On some courses there are very few presentations. However, in the workplace, more and more people have to be involved in them, so practising on your course is a very good way of developing your skills.

Self and peer assessment
There is strong evidence that involving students in the assessment process can have very definite educational benefits. Not so much a type of assessment like those already listed, this is something which can be done in conjunction with any type of assessment. The important aspect is that it involves the student in trying to apply the assessment criteria for themselves. This might include: a marking exercise on 'fictitious' or previous years' student work; the completion of a self-assessment sheet to be handed in with your work; 'marking' a peer's work and giving them feedback (which they can then possibly redraft before submission to the tutor); or really marking other students' work (i.e. allocating marks which actually count in some way) - a seminar presentation, for example, or a written product using a model answer. The evidence is that through trying to apply criteria, or mark using a model answer, you will gain much greater insight in to what is actually being required and subsequently your own work improves in the light of this.

When will I be assessed?

In the majority of courses you will be assessed throughout your course and you will receive on-going feedback to help you develop academically. This is sometimes called formative assessment and is designed to help you learn as you go through your course. Some formative assessment is quite informal; it may be your tutor asking specific questions in class, for example. Other types of formative assessment can include written reports, essays, tasks for seminars etc., some of which are handed in so that written feedback can be provided. You will also be assessed summatively. This just means that

in each module or unit, often at the end, you will complete work that is then graded, where the mark counts towards your final qualification.

At the start of your course you will be given an **assessment schedule** which details the deadlines for the assessments in all the modules you will be studying. This will help you to plan your work effectively. Your tutors understand that you have lots of commitments so will always try to spread the assessments out as much as they can, although inevitably many will come towards the end of each semester.

How will my work be marked and graded?

The majority of your assessments will be awarded a letter grade as outlined in the table below. Some of your assessments may however be assessed by percentages, which are converted into an aggregation score. Some assessments may also be identified as pass/fail assessments. Such assessments must be successfully passed in order to pass the module, however the aggregate score for the module will be derived from other assessments which are graded. Overall, you must achieve an aggregation score of 9 or above to pass a module.

Further information is available at: http://www.blackpool.ac.uk/he-regulations

Category	Grade	Aggregation Score	Grade Description
Excellent Pass	A+	24	Exemplary range and depth of attainment of intended learning outcomes, secured by discriminating command of a comprehensive range of relevant materials and analyses, and by deployment of considered judgement relating to key issues, concepts and procedures
	A	21	
	A-	18	
Good Pass	B+	17	Conclusive attainment of virtually all intended learning outcomes, clearly grounded on a close familiarity with a wide range of supporting evidence, constructively utilised to reveal appreciable depth of understanding
	B	16	
	B-	15	
Satisfactory Pass	C+	14	Clear attainment of most of the intended learning outcomes, some more securely grasped than others, resting on a circumscribed range of evidence and displaying a variable depth of understanding
	C	13	
	C-	12	
Weak Pass	D+	11	Acceptable attainment of intended learning outcomes, displaying a qualified familiarity with a minimally sufficient range of relevant materials, and a grasp of the analytical issues and concepts which is generally reasonable, albeit insecure
	D	10	
	D-	9	
Marginal Fail	F1	7	Attainment deficient in respect of specific intended learning outcomes, with mixed evidence as to the depth of knowledge and weak deployment of arguments or deficient manipulation
Fail	F2	4	Attainment of intended learning outcomes appreciably deficient in critical respects, lacking secure basis in relevant factual and analytical dimensions
Poor Fail	F3	2	Attainment of intended learning outcomes appreciably deficient in respect of nearly all intended learning outcomes, with irrelevant use of materials and incomplete and flawed explanation
Very poor Fail	F4	0	No convincing evidence of attainment of any intended learning outcomes, such treatment of the subject as is in evidence being directionless and fragmentary

What if I experience circumstances which mean I will not be able to complete an assessment?

The Personal Mitigating Circumstance (PMC) procedure gives you the opportunity to inform the College of serious medical or personal circumstances, which you believe, have affected your academic performance in an adverse way before the meeting of the Board of Examiners.

You may have had genuine and unavoidable circumstances that have affected your performance in coursework. These circumstances may have prevented you from being assessed or from submitting coursework on time. In all cases, it is important that you contact the HELM team at HELMinfo@blackpool.ac.uk to say that you are having difficulty completing work and are planning to apply for PMC.

A Personal Mitigating Circumstance Application Form must be completed by you and is available via the College website / Student Administration / Reception. It is your responsibility to complete and submit the form to the HE Student Administration Manager within 10 days of the assessment deadline.

You cannot request an extension to the assignment deadline date. Assignments must be handed in as soon as possible even if they are incomplete. If your PMC application is approved, you will be given an amended deadline and the opportunity to improve your work further.

For full details of this procedure please refer to: http://www.blackpool.ac.uk/he-regulations

What if I miss a deadline?

Managing your time effectively is a key graduate skill and you are therefore encouraged to plan your programme workload alongside your other commitments. If you fail to meet an assessment deadline, it will be penalised. Work submitted up to three days late will receive a penalty of one full grade and zero (non-submission) thereafter.

Deadlines are normally set on Mondays and Fridays to avoid the third day occurring at a weekend. Where the third day does fall on a weekend, students will have until 10 am on Monday to hand in without receiving further penalty. The penalties associated with the late submission of percentage coursework are outlined in the academic regulations for your programme.

For more information, please refer to: http://www.blackpool.ac.uk/he-regulations

What happens if I fail a module?

Most students pass their work, but if your mark for an individual module is less than the minimum pass grade you will be referred on that module. This means that you will have to be reassessed in the relevant work, however a second attempt will be subject to a penalty as specified within the academic regulations for your programme.

Where Personal Mitigating Circumstances are approved, this will typically prevent any penalties being applied and usually allow the work submitted to be marked as a first attempt.

Moderation

All work that you submit for assessment is marked by your module tutor. A suitable sample is then selected to be moderated by another tutor. This is to ensure that the mark awarded is reliable and not just the judgement of one marker. All of the work you submit is retained by the College to assist our external examiners in the quality assurance of your programme. This may mean that the results you receive during the year may change and should therefore be considered provisional.

External Examiners

Every higher education programme has its own External Examiner whose role is to support the academic staff team in ensuring that the standard of your programme of study is comparable to other programmes in that subject discipline. The External Examiner will confirm that the work that you have produced is of a standard that is expected and identifies any issues that the academic staff team needs to take into account to continually improve the programme. The External Examiner also feeds back on the key strengths that make your programme a really effective and valuable learning experience.

External Examiner reports for your programme can be requested by emailing highereducation@blackpool.ac.uk

Board of Examiners

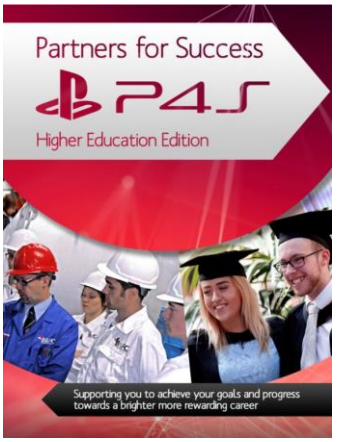
Once a module is complete, the marks for all assessments are compiled together to create an overall module mark.

The module board of examiners sits at the end of each semester to consider modules in scope. Your overall marks for the year are considered by a programme board of examiners that will make recommendations regarding your progression between levels, reassessment and eventually the award of your qualification. The majority of programmes within the college run an academic year between September and June. Reassessment work will therefore normally be completed during the summer months and submitted by the end of July (the precise date is set by the board).

The board of examiners sits again prior to the start of the next academic year in September where the results of any summer reassessment work will be considered.

Where programmes fall outside of the standard academic year, the timing of the board identified above may vary, however the general process remains the same.

PARTNERS FOR SUCCESS



The Partners for Success framework has been developed from our considerable achievements and successful review outcomes in supporting students and ensuring that they are provided with the best possible opportunities to engage fully with their learning experience and the full life of the college. It outlines how staff, students and the wider college community work to provide a seamless network of support to enable all students to achieve their potential.

Studying at University level can mean quite a life change, particularly if you have to move away from home, juggle study with work or have caring responsibilities while studying. You may also be returning to study after a period away and feel unsure exactly what to expect. Most students new to higher level study also comment on the fact that it can be quite different to their previous studies.

Our central aim is to enable all students to become confident and competent independent learners and achieve to the maximum of their potential through the development of their academic skills, personal well-being, literacies and professional employability attributes.

- We will work in partnership with all stakeholders, students, staff and others to ensure and assure personal change and development through mutual expectations, mutual agency and clear communications.
- We will provide students with a network of support to enable their development and achievement of their personal, academic and professional goals

Key partners in your success are:

- Your Progress Tutor and the programme delivery team
- Careers team

- Student Support and Wellbeing including HE Learning Mentors (HELMS)
- Learning Resource Centre teams
- Student Union
- You!

Your Progress Tutor and the programme delivery team

Here at Blackpool and the Fylde College every student is entitled to receive tutorial support on their programme of study. Tutorials are an important learning activity; they give you the opportunity to engage in dialogue with your tutor on matters of academic progress as well as personal and pastoral issues which may impact on your learning experience.

The benefits of tutorials are that they help you to individualise your learning on programme and to receive constructive feedback on your work specifically and progress generally. Tutorials are an essential component of the B&FC Partners for Success framework which aims to enable your personal and academic development, and maximize your opportunities for success, through coordinating the range of support services available to you through your progress tutor. Tutorials can help you to critically engage with your subject in a way that you may not be able to do in lectures and other forms of learning. Your tutors will encourage creativity and originality of thought that will help you to gain a better understanding of the subject discipline helping you to achieve your potential and experience high levels of success.

You can ensure that you get the most out of tutorials by:

- Proactively seeking out information before the tutorial to prepare yourself for the discussion and dialogue
- Actively engaging in discussion with your tutor.
- Using the tutorial opportunity to ask questions of your tutor and engage in critical discussion.
- Receiving feedback and using this to plan your next piece of work or setting personal and academic targets for future learning activities

The Careers Team

University Centre
Located in the Foyer, ground floor, South Building
Tel. 01253 504474

Bispham Campus
Located opposite the main Reception area in the Hub
Tel. 01253 504298

Student Advisors

Student Advisers provide you with confidential and impartial information on a range of areas, and work to matrix quality standard to ensure excellence of support, advice and guidance to all our Students and prospective Students. Quick-query interviews usually last approximately ten minutes. For example, you might want to ask about job vacancies, for help with preparing for an interview, or advice on financial assistance etc. If you have a more complex query the Student Adviser will make a mutually convenient appointment with you for a longer interview. Careers Information Advice and Guidance and financial Help Group sessions also take place throughout the academic year.

Student Advisers also provide a drop-in service at all Blackpool and The Fylde College Campuses, so you don’t need to book an appointment to see an Adviser.

Financial Help and Support

Student Administration can provide you with information and advice on access to help with transport, childcare and HE bursaries.

The Careers Team can help you if you find yourself in financial difficulties and will also help with advice and guidance regarding student loans.

Accommodation

Our Student Advisers can help you find student accommodation and provide advice on costs, and other expenditure i.e. rent bond, gas, electric, TV, phone, travel etc.

Careers Information, Advice and Guidance

The Careers Team are all highly qualified in careers information, advice and guidance and can help you with UCAS applications for entry to Higher Education, with making decisions about progression to other courses, job application, CV preparation and interview techniques alongside career and further training pathways and opportunities. Our team of professional Student Advisers are available to help you with all aspects of your career planning and decision-making, such as:

- Making decisions about your future career
- Planning your job search strategy
- Curriculum Vitae (CV) writing
- Getting relevant work experience - including volunteering
- Making applications and preparing for interviews
- Researching postgraduate study options

At Blackpool and The Fylde, our careers service extends far beyond helping you to pinpoint your ideal career. The emphasis is on tailoring a 'careers package' to your particular aims and aspirations that gives you the skills and experience needed to make you highly employable from the moment you graduate.

That's why all our degrees have a strong employment focus, with opportunities to try out your chosen career area, learn skills that employers are specifically looking for and practice interview and assessment techniques with representatives from industry. We also run an online job shop, backed up by a highly trained team of staff dedicated to making your career goals a reality.

You may be starting your course already clear about what you want to do when you graduate or you may not be sure at this stage. Our experienced and professional team of careers student advisers offer careers and progression advice to guide you towards making the right decisions about your future. Choose from e-guidance, telephone and face-to-face interviews within a small and supportive environment. We also offer pre-course advice and guidance. Underpinning all of this is a vast range of careers library resources together with access to internet-based resources, video resources and computer-aided guidance packages.

Enhancing your Employability

The opportunity for you to develop your graduate skills and attributes is built into all our courses to ensure you graduate not just with subject knowledge but with the ability to embark on your chosen career and hit the ground running. Our programmes also provide an opportunity to discover more about your chosen career area through visits from external speakers and trips to local employers and industry. Some programmes even contain a workplace learning module, where you'll get to spend time with an employer, putting your knowledge into practice and gaining valuable employability skills at the same time.

Getting Ready to Graduate

About a year before you're due to graduate we will invite you to take part in our graduate employability workshops, covering topics such as making the right career move, effective applications and successful interviews. In addition, local employers run mock interviews and facilitate role-play scenarios for students, which replicate the assessment centre experience for newly qualified graduates. These experiences are vital for developing an awareness of your strengths (and playing to them) and gaining an understanding of what graduate recruiters are looking for. Some of our students have even been offered a permanent position on the strength of them.

Grad Intelligence

B&FC in partnership with **Grad Intelligence** provide you with a Higher Education Achievement Report (HEAR) which will be published when you finish your degree.

An account will be created for you as part of your enrolment and you will receive an email to your student email account from accountregistration@gradintel.com, which will give you instructions on how to activate your account.

There is a range of psychometric tests and other tools available that can help you develop your employability skills. You can also create your own e-CV on the platform and access opportunities to search and apply for graduate jobs and/or further study.

HEAR (Higher Education Achievement Report)

The HEAR provides verified information about your academic and college verified non-degree related achievements.

You will be issued with an updated 'interim HEAR' annually in the summer, and a 'Final HEAR' will be issued when you graduate.

Engage with **'DegreePlus'** to evidence your employability skills and attributes to enhance your future employment opportunities.

Degree*Plus* awards will give you a head start as you enter the highly competitive graduate job market. Each award captures the additional activities you have undertaken which improve and develop your employability.

Gaining additional qualifications can help you stand out as someone who is passionate about professional development.

More information is available on the VLE

Student Support and Wellbeing

The Student Support and Wellbeing team offer a range of support tailored to you to promote independence and maximise your potential through a range of enhanced study, mental health and wellbeing strategies.

- Higher Education Learning Mentors (HELMs) email: helminfo@blackpool.ac.uk telephone 01253504494
- Disability Support: email dsainfo@blackpool.ac.uk telephone 01253504494
- Wellbeing self-referral form online at http://www.blackpool.ac.uk/getwellbeingsupport
- Wellbeing Support: email general enquiries wellbeingsupport@blackpool.ac.uk
- Support for care leavers, carers and students who do not have contact with their family: succeed@blackpool.ac.uk
- Safeguarding College Hotline 01253 504444 (9am to 4.30pm)

HE Learning Mentors (HELM)

The HELM team can support with aspects of student academic life, from settling into higher education, helping you gain and enhance study and digital skills and creating wellbeing strategies to work as independent learners. Examples of some of the study skills development and enhancement that we offer include:

- Improving your academic writing style.
- Grammar, sentence structure and developing expression.
- Critical and reflective writing.
- Information skills development, such as research, applying theory to your practice / study and referencing.
- Effective study techniques, planning, structuring and polishing assignments, time management and organisation.
- Revision and examination techniques.
- Digital literacy
- Support with Personal Mitigating Circumstances and Interruption of Study to help you get back on track and complete
- Keeping in touch support for Care Leavers, Carers and students with no family support contact.
- Signposting to other Partner for Success services

In addition to individual support, HELMs deliver a range of study and wellbeing skills through workshops including the ‘Flying Start’ and ‘Flying Further’ programmes. These are designed to complement the knowledge and information gained from your course. If you wish for the HE Learning Mentors to deliver a workshop for you liaise with your tutor or direct with the HE Learning Mentors team.

For help, advice and information:

- Phone: 01253 504494
- Email: HELMinfo@blackpool.ac.uk
- Drop in: to the University Centre South Building Entrance

SUCCEED is Blackpool and The Fylde College’s package for Higher Education care leavers, carers and students who do not have any contact with your family, we can support you.

We offer you help with:

- Finance including application for B&FC Access Scholarship. For further information of all B&FC financial support visit the following link https://www.blackpool.ac.uk/support/funding/degrees
- Assignments and exams
- Wellbeing
- Signposting to other services

In addition we offer regular contact, one-to-one support with a named HELM to help you stay on track. For more information on support and eligibility.

For help, advice and information:

- Phone: 01253 504494
- Email: Succeed@blackpool.ac.uk
- Drop in: to the University Centre South Building Entrance

Disability Support

We understand everyone has different needs and some students with disabilities, sensory loss, learning differences, medical and/or health conditions (including mental health) or Autistic Spectrum conditions may need additional support to get the most out of College life. Student Support and Wellbeing offer a range of support tailored to you to promote independence. We work closely with your curriculum teams, supporting accessibility and inclusion.

There is specialist support available to help you succeed at studying with your declared condition. If you are able to provide evidence from a suitably qualified professional (please see below for examples), Exam Access Arrangements and support via the Disabled Students' Allowances (DSA) can help reduce many potential barriers.

Conditions and evidence required

Disabilities or long-term health condition
A photocopy of a report or letter from your doctor or consultant - you can also fill in the disability evidence form from your Funding Body (PDF, 65KB)

Mental-health condition
A photocopy of a report or letter from your doctor or consultant - you can also fill in the disability evidence form from your Funding Body (PDF, 65KB)

Specific learning difficulty like dyslexia
A photocopy of a 'diagnostic assessment' from a practitioner psychologist or suitably qualified specialist teacher

Support with gaining diagnostic evidence

If you do not have medical evidence of your condition, or a report available, we can offer advice on how to obtain this and in most cases provide funding.

If you are moving locally to Blackpool for the purpose of your study, you may want to consider temporarily transferring your health support to ensure cover for medication/prescriptions and referrals to local support groups. To find a local GP you can use the national NHS link https://www.nhs.uk/Service-Search/GP/LocationSearch/4

Disabled Students' Allowance

DSAs are Student Finance grants that pay directly for extra Assistive Technology and Specialist Support (out of class) that may benefit you as a direct result of your medical/health condition. Visit the DSA pages on the UK Government website to learn more about the application process.

B&FC offer (subject to eligibility) the Advantage Bursary or hardship funding to cover the £200 contribution cost of a computer as part of the DSA.

Examination Arrangements

Exam Access Arrangements are pre-examination adjustments put in place for you based on your individual need, for example, readers, scribes, rest breaks. You will need to refer yourself to Student Support and Wellbeing for exam access arrangements for approval prior to your exams.

Final dates for evidence to be received and assessed for exam access arrangements:

Semester One exams- 31/10/19
Semester Two exams- 28/2/20

General Support

Campus Access:

Visit AccessAble website for access information for our campus sites. This includes details of B&FC facilities.

Wellbeing Support

The Wellbeing Service at Blackpool and The Fylde College offers a wide range of support, including wellbeing and short term counselling appointments, interactive workshops and support to access self-help resources.

To access support from the wellbeing team, please complete the wellbeing referral form.

Responses to this form are monitored twice a day (9-4pm) from Monday to Friday during term time.

Please note that this is not an emergency service. If you are concerned about your safety or the safety of someone else call your **GP**, **NHS 111** or attend **Accident and Emergency** at Blackpool Victoria Hospital**.**

Visit the Wellbeing area on the VLE for more information and guided self-help.

Visit the Contemplation rooms for quiet meditation, prayer or just 'time out'.

The Contemplation rooms can be found at:

- Bispham Campus - C307 - Third Floor Room - Cleveleys Building
- University Centre - SB130 - Second floor Room - South Building
- Fleetwood Campus- Room A33 Ground Floor- Halls of Residence
-

To use the contemplation rooms, visit the main campus reception and sign for the room key.

For help, advice and information:

- Phone: 01253 504494
- For general enquiries please email wellbeingsupport@blackpool.ac.uk

- Drop in: to the University Centre South Building Room 26c)

Need help now?

B&FC Safeguarding - If you feel unsafe or at risk at College contact your tutor or the Student Direct Safeguarding College Hotline: 01253 504444 (9am-4.30pm). If you require advice or assistance about disclosing a safeguarding concern you should discuss this with your Progress Tutor or any member of staff.

If you feel you are at risk of harm to yourself or others and need immediate help, contact the National Health Services (NHS) such as your GP or alternatively ring 111 as soon as possible, if you are in an emergency situation ring 999 or go to Accident and Emergency (24 hour) Victoria Hospital Whinney Heys Rd, Blackpool, FY3 8NR and request a mental health assessment.

Alternatively go to your nearest Walk in Medical Centre:

- Whitegate Health Centre,Blackpool,FY3 9ES
- Fleetwood Health & Wellbeing Centre, FY7 6HP

Need to Talk?

Support is also available externally from the following organisations:

Mental Health Helpline Freephone 0800 915 4640. http://www.lancs-mentalhealthhelpline.nhs.uk

Samaritans (24 hour) Freephone 116 123 http://www.samaritans.org

HOPELINE - Call: 0800 068 4141, Text: 07786209697 or Email: pat@papyrus-uk.org (10am – 10pm weekdays, 2pm – 10pm weekends and bank holidays)

LEARNING RESOURCE CENTRE TEAMS

Whichever campus you study on, the Learning Resource Centres (The Loops) will play an important part in your studies. Our flexible learning spaces can provide you with a mixture of computer, group work and quiet study areas. You should make maximum use of this facility to log-on to a PC, access printing and copying facilities or ask the Resource Advisers for help and advice.

You will have access to a wealth of information through a wide range of physical and online resources such as e-books and full text journal databases giving 24/7 support for your academic work. Our online search tool Discovery is available for you to search for high quality, relevant journal articles to support your studies. Our online catalogue - https://libcat.blackpool.ac.uk - is also available 24/7 allowing you to check reading lists, reserve titles, renew borrowed items and provide direct links to the titles in our extensive eBook library. We can also provide material from other libraries through our inter library lending scheme.

Our teams are always happy to offer help and advice. They have in-depth knowledge of your subject area and can support you in finding good quality research material, as well as developing your IT and research skills through one-to-one sessions. Interactive support materials are available through the Learning Resources area on the virtual learning environment. More information about The Loops, including the opening hours for each centre, can also be found on the college website

Term time opening hours

The Loop at UC
Monday – Thursday 8.30 – 21.00
Friday 8.30 – 17.00
Saturday 10.00 – 15.45
Email: CentralLoopLRC@blackpool.ac.uk
Telephone: 01253 504414

The Loop at Fleetwood
Monday - Thursday 8.15 – 19.45
Friday 8.15 – 17.00
Saturday 10:00 – 15.50
Email: lrcfle@blackpool.ac.uk
Telephone: 01253 504714

The Loop at Bispham
Monday – Tuesday 8.30 – 17.00
Wednesday 8.30 – 20.00
Thursday - Friday 8.30 – 17.00
Email: lrcbis@blackpool.ac.uk
Telephone: 01253 504290

Self-issue / return facilities are available in the Bispham, Fleetwood and University Centre Loops. There are drop-in IT-based facilities with networked computers (including Macs in the Loop at UC) and wireless laptops, colour printing and scanning facilities. In addition, the Loop teams can help you get connected to the Wi-Fi and other college systems. Help with IT issues is available through an online HelpDesk.

You can access computing and copying facilities at any campus, if this is more convenient for you when engaged in independent study, but the majority of course specific materials will be located in the Loop on the campus where your course is based.

You will find the essential texts for your course available in the library stock and these are regularly updated. Relevant journals and online resources are purchased on an annual basis. For all Higher Education courses you will have access to online reading lists via the Keylinks software. These online reading lists directly link you to the core eBooks and print resources in the library catalogue, thus enhancing their accessibility.

Following an initial Welcome Tour of your local Loop, your tutor will arrange for us to work with you in follow-up in-depth sessions on key skills such as effective searching of online resources and referencing. Induction sessions are also provided at the start of your programme to help you find your way around technology in the college. Additional one-to-one tutorials are available to all students. LRC support is supplemented by a range of interactive resources on the VLE.

The services provided by the Learning Resources Centre will be an integral part of the Induction Programme for this course.

Information Technology Resources

Being able to access resources and materials to help you on your course when you need them is very important. Our virtual learning environment, and contains lots of key information about your course and is accessible 24:7. As part of your induction we will make sure you are able to make the most of this resource.

As a student at Blackpool & the Fylde College you will be provided with a web-based Microsoft Office 365 account. This account provides anytime, anywhere access to a suite of Microsoft programmes including Outlook email and web-based versions of Word, Excel and PowerPoint. You also get access to your own online storage area so you can download, edit and save your college work wherever you are.

Included in your Microsoft Office 365 account is access to our MyDay portal. The portal provides you with access to your calendar (including timetables), email and links to the VLE and eTrackr. Timetable data is updated every hour so you can see all room changes. It is accessible from a web browser and as a mobile device app on Apple and Android devices. MyDay will be launched automatically whenever you login into a College desktop computer.

To find your course materials, log-on to the VLE, the College's virtual learning environment. The VLE contains lesson notes, multimedia materials, quizzes, forums and lots of different tools to help you achieve your academic goals. You may submit your assignments through the VLE and receive online feedback from your tutors. The VLE also provides easy ways for you to communicate with your tutors and fellow students using messaging, chat rooms and forums. You can access your Office 365 and VLE accounts by logging into one simple webpage MyDay which also contains useful college information, news and links:

https://blackpool.mydaycloud.com/dashboard/home

Induction sessions are provided to all students at the start of their course to help you find your way around technology in the college. 'The Loop' LRC's are located on each campus. You can pop into The Loop and log-on to a PC, access printing and copying facilities or ask the Resource Advisers for help and advice.

STUDENT UNION

The Students' Union (SU) at B&FC is *your* union. It's made up of students that *you* elect each year, who listen to the student voice and respond to *your* wants and needs. The SU represents students on a range of issues, including equality and diversity, education and social activities, with the aim of ensuring your time here is as interesting and enjoyable as possible.

As a student at Blackpool and The Fylde College, you are automatically free members of the Students' Union and you are encouraged to play an active role. Our Students' Union is actively engaged in student affairs at local and regional levels so there are opportunities for you to become involved in various campaigns and fund-raising activities. Our aim is to work for the good of the student community and to take an active interest in the development of all students. As such the Union represents the students on a number of academic and College committees where student involvement and comment is welcomed.

The Union provides the framework and financial backing for students to organise trips and events, which can be a great way to broaden your interests and meet new people. With a wealth of information, our Students' Union can also advise you on places to go and things to see and do.

If you need to get in touch, you can contact your Student Union Sabbatical Officer by phone or email.

B&FC Student Union Sabbatical Officer
Tel: 01253 504 517
Email: studentsunion@blackpool.ac.uk

BEING A PARTNER IN YOUR OWN SUCCESS

Higher education is as much about personal change and development as it is about subject knowledge and skills development. By facilitating your development we enable you to take responsibility for your own learning. Students who are fully informed about the opportunities available to them, but who are also aware of their responsibility to engage with those opportunities, are more likely to make effective use of services and resources. It is important that you take advantage of every opportunity to facilitate your success, and to creatively engage with the knowledge you encounter, constructing and reconstructing your own understanding. We will support you to set clear goals, reflect on your progress and develop key graduate skills.

ABSENCE REPORTING

If for whatever reason, including ill health, you are going to be absent from College then you will need to ensure that you make contact with us to discuss how we can support you. This is particularly important if your absence could have a significant effect on your assessment requirements. Should this be the case then you will need to consider the College Personal Mitigating Circumstances procedure the full version of which is available at the link below.

https://www.blackpool.ac.uk/he-regulations

Any personal mitigating circumstances, such as ill health, which may have affected your studies or performance in assessments and examinations, would need to be submitted to the HE Student Administration Manager mitigating.circumstances@blackpool.ac.uk formally by you with supporting evidence, e.g. a medical certificate, following the procedures and in accordance with the deadlines laid down in the College's Personal Mitigating Circumstances Policy.

In the event that you are unable to attend an examination because of illness or other unforeseen circumstances, you must immediately inform your programme leader before the start of the examination. If you are absent from the whole or part of an examination because of illness, a Personal Mitigating Circumstances application form together with a valid medical certificate or other appropriate independent documentary evidence must be forwarded to the HE Student Administration Manager normally within ten working days of the examination.

STUDENT IDENTITY CARD

You must wear your ID badge at all times whilst on College premises. Access to College facilities is dependent on Students having their ID badge. You will also be asked to show your ID badge when sitting exams. You will be challenged if you are not wearing your badge when on College premises. This is to help students and staff feel safe in College.

FOOD ON CAMPUS

When you want to take a break for refreshments on campus, you're well catered for. At the University Centre's Central Hub refectory, **Café Grads,** you can sit down and tuck into a proper meal or just grab a bite and relax in one of the chill-out areas. A **Starbucks** outlet has also just opened in South Building.

A similar-style refectory, **Retreat**, is available at our Bispham Campus or if you fancy a little treat there is also a range of freshly made sandwiches and smoothies in the **Grab and Go** and a **Starbucks.** At the Fleetwood campus the **Refectory** offers traditional breakfast, a wide range of hot food, sandwiches, snacks and beverages. Visit http://www.blackpool.ac.uk/facilities/shops for more information. At all our campuses, there are also plenty of vending points providing snacks on the go.

Get off to a great start every morning! All Blackpool and The Fylde College students are entitled to a free healthy breakfast.

SPORTS FACILITIES AND COLLEGE TEAMS

Sports facilities are mainly based at the Bispham Campus where there is a sports hall, an all-weather floodlit sports pitch and a well-equipped gym. Our Fleetwood campus has sports facilities. We have numerous College teams, both men's and women's, with other available sports ranging from volleyball and five-a-side football to table tennis and canoeing. To find out more ask your progress tutor.

ENRICHMENT

Enrichment is about providing you with opportunities to bring your learning to life, developing your range of interests, meeting new friends and growing as a person. Some activities will be related to your area of study whilst others may not be directly linked. More information is available in your Partners for Success Guide; via the Students' Union and through your progress tutor.

Curriculum-based activities

Whilst studying your chosen subject at College, you will have the chance to see how your subject works in real life and apply that insight to your studies. We also aim, during your programme of study, to develop your employability skills and interview techniques. To provide this valuable enrichment, your programme may feature such activities as guest speakers, trips into industry and overseas visits, 'real life' assignments, competitions, work experience and work placements (some of which can lead to permanent positions).

Extra-curricular activities

College is also as much about the social side as it is about learning. At Blackpool and The Fylde College we offer a vast range of activities, from discounted theatre trips to lunchtime sports activities and book club. Activities are free to everyone enrolled on a course and in most cases, there's no need to book. For more information about what's on check your Partners for Success Guide; visit the Students' Union website or speak to your progress tutor.

Fee-based activities

For those of you who wish to engage in a further range of activities there are fee-based sports activities.

The Enrichment Team can also organise one-off fitness activities, such as trips to Manchester's Chill Factor for skiing or outings to Grizedale Forest for mountain biking. For more information please visit the Students' Union website or contact the Enrichment Team on 01253 504134.

GETTING INVOLVED IN THE QUALITY OF YOUR PROGRAMME

At Blackpool and the Fylde College we believe that you are a member of our higher education and College community and as such your views and experiences are extremely important to us. We want to work in partnership with you to ensure that your experience is the best that it can be both for you and others who study with you. To this end we work hard to engage all students in dialogue about the quality of their learning experiences. You can engage by providing useful feedback on your experiences of modules through Module Evaluation Questionnaires, through being an elected course representative attending student forums and college meetings and through surveys such as the Post-induction survey and the National Student Survey (NSS).

ACADEMIC APPEALS

An academic appeal is a procedure which allows you in certain circumstances to ask for a review of a decision relating to your academic progress or award. You can ask for a review of a decision by one of the following:

- A Board of Examiners, both Module and Programme Boards.
- A Personal Mitigating Circumstances Panel
- An application to the College
- An Academic Malpractice Panel

It should be noted that students may only appeal against a decision if they can show that they satisfy one or more of the grounds detailed in the academic regulations. The appeal process cannot be used to challenge academic judgement or appeal simply because you disagree with the marks you have been given.

An academic appeal is different from a complaint so appeals and complaints are looked at under different procedures. A complaint is dissatisfaction about the provision of a programme or academic service or facility or any other service provided by the College.

Students studying either a:

- **Blackpool & The Fylde College Programme**
- **Lancaster University Validated Programme**
- **Liverpool John Moores Validated Programme**
- **Scottish Qualifications Authority Programme (SQA Higher National)**
- **BTECHigher National Programme**

To lodge an academic appeal, you must do so by submitting your appeal within 10 working days of the publication of your results or decision of a panel either by writing to the HE Academic Registrar, Bennett Avenue, Blackpool, Lancashire, United Kingdom, FY1 4ES or by email to: appeals@blackpool.ac.uk

The Academic Appeals regulations and application pro-forma can be found on The Blackpool & The Fylde College website https://www.blackpool.ac.uk/he-regulations

COMPLIMENTS, COMPLAINTS AND FEEDBACK

Blackpool and the Fylde College welcomes feedback from all its students and is committed to improving the quality of the services it provides; we are committed to openness and transparency by providing well publicised and accessible information on how to give feedback or make a complaint.

Compliments, complaints and feedback will be dealt with courteously, fairly and objectively.

We hope that you will never have cause to do so but if you wish to raise a complaint (or you wish to compliment us or provide feedback) please take a look at our Compliments, Complaints and Feedback Procedure which is located on our website here: https://www.blackpool.ac.uk/college-policies

GRADUATION

Our annual higher education awards event is a spectacular occasion, representing the culmination of masses of dedication and hard work, and the gateway to an exciting and rewarding future.
The graduation ceremonies will take place at the Winter Gardens and Opera House, 97 Church Street, Blackpool, Lancashire, England FY1 1HL.

Your graduation day may seem a long way off now, but you will be there quicker than you think! Blackpool and the Fylde College's Awards Ceremonies are a part of the celebration of your achievement and we hope you will be able to attend. You will need to budget for the cost of guest tickets, academic dress and photography. Awards Ceremonies are held each year at the Winter Gardens. If you attend the Awards Ceremonies we publish the names and awards of all graduates in the Awards Ceremony booklet and in a graduation supplement in the local press. If you do not wish your name to appear, you must contact Student Administration to inform us. We will print the name we have recorded for you on your degree certificate, so it's important that you tell us in advance of any spelling or other changes. After we have printed the certificate we will not be able to change it for you.

This is a very special day for all our graduates and their friends and families and is a marvellous opportunity to share and celebrate your academic achievement and accomplishments.

MODULE OUTLINES

The following module outlines provide you with a brief overview of the modules and their contents, together with the intended learning outcomes.

B4SCNET-CS: Introduction to Academic Study
Level 4 - Mandatory

Module Abstract

This module aims to give you specific knowledge, skills and understanding required for successful higher education study and engagement with industries related to computing, science or engineering. It will draw explicit attention to the introduction and/ or development of such skills; encourage you to consider your approaches to learning and enable opportunities for discussing multiple perspectives of your subject and wider related issues.

You will become familiar with analysing data sets and examples of practice to produce graphical representations of data. You will develop the strategies and understanding needed to find, interpret and evaluate academic sources, examples of practice and statistical data in order to compare approaches to your subject and form new ideas.

The module will provide opportunities to communicate your developing knowledge and practical application of mathematical constructs both formally and informally, requiring you to express your ideas verbally, graphically, in writing and digitally. Reflection on such communications will involve identifying personal attitudes and skills levels and establishing potential ways to enhance skills needed for the remainder of the course and beyond.

A key focus of the module is the importance of academic practice when communicating your interpretations of subject specific material. Formative and summative activities will provide you with a sound basis for expressing ideas, solving problems and analysing perspectives related to industry in a style and format appropriate for higher education. This will include structuring a written piece of coursework, adhering to standards such as word count, evaluating secondary sources and referencing accurately.

Learning Outcomes

1 Find, interpret and evaluate a range of digital and traditional sources to produce written communication that meets academic expectations of higher education.

2 Reflect on personal attitudes and skill levels and identify further learning needs to support future studies and enhance transferable skills for employment.

3 Analyse data sets to produce graphical representations of data OR analyse a case study to identify and discuss theoretical perspectives, models and research.

4 Produce verbal presentations appropriate to audience and level of complexity.

Indicative Content

Academic Writing
- Conventions
- Terminology
- Paraphrasing
- Summarising

- Reports / Essays
- Referencing
- Academic integrity

Ethical Research and Practice
- Confidentiality, anonymity, secure storage, vulnerable participants, netiquette

Secondary Research
- Use of digital and traditional tools for discovery; open access journals
- Referencing and in text citation, plagiarism, reliability and validity of sources
- Comparison, contrast and critical evaluation
- Critical reading and note making

Data Collection
- Working with raw datasets, cleaning and processing
- Spreadsheet tools

Data Analysis
- Statistical analysis Mean, median, mode, standard deviation, correlation
- Accuracy, precision, error and uncertainty
- Reporting data (graphical methods, tabular grouped vs ungrouped etc.)
- Interpreting data (confidence intervals and p values

Reflective Practice and Writing
- Models of reflection

Critical Reflections
- Academic formality voice / academic, personal and professi

NET401: Network Principles
Level 4 - Mandatory

Module Abstract

It is imperative to have a solid base on which to build the knowledge required to become a network specialist, and Network Principles is the first step. This module introduces the architecture, structure, functions, components and models of LANs, WANs as well as the Internet. Initially, the focus will be on an overview of these, and focus will be narrowed to constructing, addressing and implementing a LAN in the college specialist lab. Network hardware, software and media will be explored and configured and troubleshooting techniques will be demonstrated and implemented.

The theory of the OSI and TCP/IP layered models are examined to explore the roles of protocols and services at the application, network, data link and physical layers. The principles and structure of IPv4 and IPv6 addressing and the fundamentals of Ethernet concepts are introduced to provide a foundation for developing the necessary skills and knowledge. Practical experiments will help you analyse protocol and network operation and build small networks in a simulated environment. At the end of the module you will build simple LAN topologies to a scenario by applying the basic principles of cabling; performing basic configurations of network devices including routers and switches; and implementation of network addressing schemes.

Learning Outcomes

1 Identify and describe the devices and services used to support communications in data networks and the internet including the role of protocol layers in data networks.

2 Explain the importance of addressing and naming schemes at various layers of data networks in IPv4 and IPv6 environments.

3 Design, calculate and apply subnet masks and addresses to fulfil given requirements in IPv4 and IPv6 networks.

4 Design and build a simple Ethernet network using routers and switches.

5 Apply Cisco command-line interface (CLI) commands to perform basic router and switch configurations.

Indicative Content

Exploring the Network
- Investigate how and why LANs, WANs and CANs are used
- How the internet works and what it is used for

Network Hardware and Media
- Overview of the roles of client machine, routers and switches
- Analysis of various cable types (cat 5e, cat 6, co-ax, fibre) and their suitability for use in different environments and under a set of requirements

Configuring Cisco Devices
- Use hyper terminal software for connection to CISCO devices
- Configure routers for IP address, subnet, access and user messages

Network Protocols and Communication
- OSI model: Explore the seven layers and how they relate to network communication
- TCP/IP model: Explore the four layer model and how and why this maps to the OSI model

IP Addressing
- IPv4 and IPv6 addresses
- Binary conversion
- Subnetting IPv4 networks

Building a Network
- Configuring client machines with IPv4 and IPv6 addresses
- Connecting and configuring client to router
- Troubleshooting network configu

NET402: Network Programming and Scripting Concepts
Level 4 - Mandatory

Module Abstract

In day-to-day management of a network there are many tasks that could be automated using basic scripting and programming approaches. These could include transfer of user account lists; backup and restore scripts; and adjusting configuration settings. Having an understanding of programming concepts and how these can be utilised by network technicians enables people in these professions to become more efficient.

This module will explore how automation could be of benefit to network professionals, consider the basic features of programming and scripting languages as well as include practical application of common techniques. Among the techniques applied include File input / output, batch file usage, and socket programming.

Learning Outcomes

1 Investigate where automation provided by scripting can enhance productivity in systems administration

2 Design an application to meet a specified remit

3 Compare and contrast blocking, non-blocking and asynchronous sockets

4 Evaluate process and scheduling algorithms, and memory management systems in the context of modern operating systems

5 Demonstrate application of networking concepts utilizing sockets and message passing

6 Perform file input / output operations and create batch scripts

7 Implement suitable testing methods to ascertain correct working operation of programs

Indicative Content

Automation and Scripted Task
- Transferring files / updating configuration data
- Languages and features (Python / C# / C++)

Basic Programming Concepts
- Variables / functions / loops / conditional statements
- Libraries / APIs

Program Design
- Flow charts / functions catalogues / test plans

Operating Systems Architecture and Memory Management
- Basic functions of modern operating systems
- Multicore / multiprocessor / multithreaded systems
- Vendor differences and similarities / common features
- Process and scheduling algorithms
- Memory addressing and management

Sockets
- Asynchronous / synchronous / blocking / non-blocking
- Port binding / TCP / UDP

File I/O
- File streams / saving / manipulation / loading

Testing
- Black box / white box / grey box / unit testing / fuzz testing

NET403: Introduction to Routing and Switching
Level 4 - Mandatory

Module Abstract

This module builds on the introductory knowledge acquired in Network Principles and extends your understanding of routers and switches, exploring the architecture, components and operations in a small network. The module introduces the concept of VLANs and routing in a VLAN environment. Switches are explored in more detail and you will learn to allocate ports to VLANs and specifically as trunks using dot 1Q encapsulation; this is the basis of creating a VLAN. You will learn about securing ports and hiding them in a “black hole” VLAN so they cannot be accessed by hackers. Finally, you will learn how VLANs are routed using “router on a stick”.

From there, you will move on to more advanced routing concepts Static routing such as RIP will be examined and implemented, before moving on to dynamic routing in the form of the OSPF protocol. Additionally, you will engage in building and troubleshooting more complex routing solutions applying these protocols in the Packet Tracer software and also on the lab routers and switches. In addition,

you will also implement access control lists (ACL) on routers to allow or prevent access to certain machines or services.

Finally, the module will allow you to examine DHCP and NAT services which can be implemented from the router. You will configure, test and troubleshoot various configurations for their integrity and security.

Learning Outcomes

1 Compare and contrast enhanced switching technologies such as VLANs, VLAN Trunking Protocol and 802.1q.
2 Describe basic switching concepts and the operation of Cisco switches.
3 Configure and troubleshoot basic operations of a small switched network, and the basic operations of routers in a small routed network.
4 Configure and troubleshoot VLANs and inter - VLAN routing.
5 Describe and implement the DHCP Protocol, NAT and PAT address translation, and ACLs to ensure a robust and efficient network construction.

Indicative Content

Introduction to switched networks:
- LAN Design,
- The switched Environment (Frame forwarding, Switching Domains).

Basic switching concepts and configuration:
- Configure Initial settings and ports,
- Switch security – remote access, port security and best practices.

VLANS:
- Segmentation and assignment,
- Trunking (dot 1Q encapsulation),
- VLAN design, protocols, troubleshooting and security.

Routing concepts:
- Inter-VLAN routing,
- Static Routing,
- Routing Dynamically.

Single area OSPF routing:
- Characteristics and features,
- Configuration of IPv4 and IPv6 OSPF.

Access control lists:
- Operation,
- Standard and extended IPv4 ACLs,
- IPv6 ACLs,
- Configuring & troubleshooting ACLs.

DHCP:
- Configure DHCP on server,
- DHCP relay (IP helper addresses),
- Configure DHCP client,
- IPv6 DHCP configuration.

Network address translation for IPV4:

- NAT characteristics and variations,
- Benefits of NAT,
- Configuring & troubleshooting NAT.

NET404: Introduction to Systems Security
Level 4 - Mandatory

Module Abstract

Digital technologies and internet use are essential in education, business and industry and data held by organisations is a key focus for those engaged in criminal activities. There are many ways that systems can be compromised and experienced hackers can take advantage of a range of vulnerabilities. One category of vulnerabilities is network management and poor practices in this area could expose organisations to threat. Non-enforcement of password policies, allowing unencrypted mobile devices and permitting USB devices are examples of poor practice that will be examined in this module. Another category is the web interface of the company, which is the main way into the company's infrastructure. Hackers can take advantage of poor coding in applications connecting to databases, open ports on the firewall, poorly configured encryption and many other potential exploits. The focus of this module will be to explore these categories and develop strategies to defend against attacks in this area.

You will look at problem domains from two perspectives, firstly that of the hacker who performs reconnaissance to find weaknesses, and secondly from the network manager's perspective to fix these issues and also gather information on an individual or organisation.

Learning Outcomes

1 Analyse common threats posed to networks within given scenarios
2 Compare and contrast current and evolving Counter-Measures used in the Computer
3 Design and justify a reconnaissance strategy for a real-world simulation
4 Investigate legal matters and ethical considerations of penetration testing
5 Construct and implement counter measures within security strategies
6 Develop Penetration Testing strategies and use Penetration Testing tools

Indicative Content

Passive Reconnaissance Methods
- HTTPtrack
- Nslookup
- Publicly available information (search engines, WHOIS)

Active Reconnaissance - Penetration Testing and Monitoring Frameworks
- NESSUS
- Nmap
- Kali Linux
- Social Engineering

Network Operating System / Web Server Threads
- Unpatched operating systems
- Vulnerable web applications
- DDoS
- Unsecured Services

Network Security

- Poor practices (weak passwords, USB devices)
- Mobile devices

Counter Measures
- Anti-virus
- Firewalls ± Stateful and Deep Packet Configuration
- DMZ
- Honey pots
- Change management
- Server hardening and configurations

Legal Aspects
- Computer Misuse Act
- Data Protection Act
- Communications Act
- Regulation of Investigatory Powers Act
- Telecommunications (Lawful Business Practice (Interception of Communications Regulations))
- Ethical implications

NET405: Network Disaster Recovery
Level 4 - Mandatory

Module Abstract

To maintain effective communication, organizations need to manage computer networks often in a heterogeneous environment. The Network Disaster Recovery module will introduce students to a range of networking protocols and technologies to provide the students with the knowledge to enable them to provide a reliable secure network, along with giving students an understanding of some of the key elements and tasks involved in Disaster Recovery Planning. IT systems are ubiquitous to an organisations operation and it is necessary to have ‘disaster recovery strategies in place in order to take over should the worst happen. ‘Disaster’ will mean different things for different organisations, so it is important that students are able to define what it means for a particular organisation.

The aim of this module is to develop, students’ understanding of the various network technologies to manage and maintain a network. Students will also investigate and apply network configuration and security settings for a networked environment.

The module will provide students with skills to create and design disaster recovery plans for a given network environment.
In particular, a focus is on common skills appropriate to database configuration and recovery as many critical systems running in organisations require this knowledge and practical ability.

Learning Outcomes

1 Investigate and describe common components of a Disaster Recovery Plan

2 Compare and contrast different Disaster Recovery strategies and evaluate the impact of approaches on an organisation

3 Assess the effectiveness of current disaster recovery measures, analyze the risks and the recovery objectives for an organization in order to develop a disaster recovery strategy

4 Apply data modelling techniques in relational databases to 3rd Normal Form

5 Describe the ACID principles and compare and contrast practical means of providing durability

6 Perform database backup and redeployment techniques on a range of database servers including use of replication managers

Indicative Content

Disaster Recovery Plan
- Common components / risk analysis / cost of hardware/software / procedures / processes

Disaster Recovery Strategies
- Cost / legal issues / social impact

Entity Relationship Diagram Using Suitable Software (VISIO)
- ERDs to 3NF
- Data types / attributes / naming for entities
- Business rules / logging is followed

Database Maintenance, Backup and Transfer
- MySQL database / Populate / test queries and transactions
- Backup / recovery / transfer processes
- Snapshot points / means of re-applying transactions
- Scripts which can transfer MySQL backups to SQL Server

Acid Principles
- Approaches to providing durability

BFC501-I: Work Based and Placement Learning
Level 5 - Mandatory

Module Abstract

This module will provide you with the opportunity to undertake a period of work based learning under the direction of an employer and an academic supervisor enabling you to learn and develop in a working environment. The module will provide you with opportunities to develop an understanding of the key factors associated with working in industry and provide a framework for you to evidence key transferable skills gained in the work setting. During your work based learning experience you will be expected to undertake a task or project negotiated between you, your tutor and the employer and set in the context of work and industry. Throughout your work based learning experience you will be expected to actively and critically reflect on the range of different processes engaged in for both productive work tasks and the completion of your project/task. It is also vitally important for you to work on integrating your knowledge from a theoretical perspective into a pragmatic work based context, this will support your critical analysis and reflections and help you to review, evaluate and make decisions based on the integration of theory and practice. Critical reflection is essential for the achievement of the outcomes in this module and a substantial part of the assessment requires you to critically reflect, evaluate and make recommendations for action, a key skill in graduate employment. To conclude this module you will be expected to design and deliver a presentation which reflects the processes and outcomes of your work based project and will be delivered to a selected audience. This presentation activity will help you develop and evidence your research, communication and organization skills and provides an interactive and fitting conclusion to your work in this module.

This module aims to draw together both your academic and practical development and prepares you for the nature and scope of the demands future graduate employment will make of you. It is an opportunity to combine practical experience with theory and has the potential to support your learning in all other modules on your programme.

Learning Outcomes

1 Negotiate and undertake a work based project/task

2 Critically evaluate the process and work undertaken

3 Integrate theory and practice when proposing solutions and evaluating outcomes in work based settings.
4 Present the outcomes of the project to selected audiences.
5 Critically reflect and make recommendations to improve both personal and professional practice.

Indicative Content

Principles of Work Based Learning and negotiated projects

Identification of appropriate work based task/project and agreement from employer and tutor

The work based learning contract – roles and responsibilities

Project methodologies and tasks

Project management

Work based competencies

Reflective Practice

Integrating theory and practice

Subject specific sessions will be provided to contextualise the generic WBL content

NET501: Project Management
Level 5 - Mandatory

Module Abstract

This module will introduce the students to the tools and techniques used by Project Managers for computing related projects. Students will investigate the processes involved in project management, the roles and responsibilities of the team, the phases of the project lifecycle, scheduling and budgeting techniques.

Students will investigate issues that impact on Project Management, such as planning and scheduling, change and risk monitoring, and project team management. The module will develop students' skills in using the tools and techniques involved in successful project planning and control and introduce them to Project Management software packages.

The knowledge obtained during the study of this module will support students with developing a wide range of transferable skills that will enable them to become an effective member of a project team, or manage and co-ordinate a small scale project.

Learning Outcomes

1 Describe the stages of the Project Lifecycle and identify the documentation required at each stage.
2 Assess the feasibility of a computing project and explain the development of project success/failure criteria.
3 Critically evaluate ways of establishing a project organizational framework and managing a project team.
4 Using Project Management software apply project planning to a computing project, to include scheduling, cost estimation and control techniques.

5 Critically examine and evaluate Change and Risk Management processes.

6 Compare, contrast and recommend evaluation frameworks and techniques for projects, programmes and portfolios.

Indicative Content

The role of the Project Manager (responsibilities, skills & qualities)

Project teams (roles, function, formation, communication)

Project principles & methodologies (lifecycles, techniques)

Project documentation (PIDs, reporting, Gantt charts, logs &records)

Change control & risk management (processes, monitoring, assessment & evaluation)

Cost estimation & control (estimating techniques, budgeting, cost control)

Project evaluation and review (lessons learned, project requirements, success & failure criteria)

Complexity Theory and project management (Theoretical concepts for improving flexibility)

Project, programme and portfolio management (P3 management)

NET502: Virtualisation and Cloud Computing
Level 5 - Mandatory

Module Abstract

This module offers a comprehensive, theoretical and practical approach to providing students with an understanding of the principles of virtualization. The module will look at different implementations for the deployment of virtualized network solutions.

Students will be introduced to the current technology solutions by the largest virtual infrastructure providers (VMWare, Microsoft), students will also be expected to explore the use of virtual networks, why they exist and what benefits they can offer. This will lead to an understanding of why organisations are looking to consolidated server infrastructures and also consolidated storage frameworks.

Students will be expected to explore and evaluate consolidated server frameworks from online/cloud providers such as Microsoft Azure and why organisations are looking at offsite server virtualization and to identify what place it has in modern networks.

Learning Outcomes

1 Critically evaluate the potential benefits of virtualisation and cloud computing

2 Investigate the current technology requirements for implementing virtualisation, evaluating current virtualisation solutions

3 Evaluate virtualised networks and consolidated storage frameworks

4 Investigate security concerns and vulnerability within cloud frameworks

5 Implement virtualised networks and consolidated storage frameworks

6 Monitor and maintain a virtualisation environment

7 Implement, maintain, test and troubleshoot virtualisation deployments

Indicative Content

Introduction to Virtualisation
- Why virtual networks and devices are used
- What is a virtual network
- When to use virtual platforms

Current Virtualisation Platforms
- VMWare Vsphere
- Microsoft Hyper-v

Characteristics of Virtualised / Cloud Environments
- Examine Hyper-V and VMWare, VSPhere platforms
- Explore virtualised network characteristics

The Use of Scripting / Programming
- Configuration of remote management of virtual hosts
- Configuration of virtual client environments

Virtualisation / Cloud Implementations
- Developing virtualised guests
- Implementing virtualised guests and network infrastructures

The Benefits of Virtual Platforms
- How organizations benefit from virtualisation
- How organisation can best use virtual machines and virtual network environments

The Use of Virtual Storage
- Network based storage solutions / SAN / ISCSI / NFS

Management of Virtual Storage Deployments
- Backup solutions for the virtual environments and configuration

NET511: Cyber Security Process Management
Level 5 - Mandatory

Module Abstract

Information security, sometimes shortened to InfoSec, is the practice of defending information from unauthorized access, use, disclosure, disruption, modification, perusal, inspection, recording or destruction. It is a general term that can be used regardless of the form the data may take (e.g. electronic, physical). Information Security is a multidisciplinary area of study and professional activity which is concerned with the development and implementation of security mechanisms of all available types (technical, organisational, human-oriented and legal) in order to keep information in all its locations (within and outside the organisation's perimeter) and, consequently, information systems, where information is created, processed, stored, transmitted and destroyed, free from threats.

This module takes a broad view of concepts and definitions, the need for and benefits of information security, information risk assessment and management (including threat modelling techniques), organisations and responsibilities. Students will apply threat modelling and risk management techniques as well as become fully conversant with the concepts, processes, frameworks and wider contexts of information security.

Learning Outcomes

1 Investigate approaches and guidelines for information assurance and security
2 Evaluate the need for and the benefits of information security
3 Compare and contrast threat modelling frameworks and risk categorisation
4 Assess the role that risk management plays in business continuity management
5 Analyse organisational roles, responsibilities, governance and information security policies, procedures
6 Investigate the legal framework that security information management operates within
7 Critically evaluate lifecycles for secure development, deployment and management of applications

Indicative Content

Concepts and Definitions:
- Information security (confidentiality, integrity, availability, non-repudiation),
- Information Security Management System (ISMS – ISO 27000),
- Information security policy concepts,
- Identity, authentication, authorisation,
- Accountability, audit and compliance,
- Information security professionalism and ethics,
- Vulnerability assessment vs. Penetration Testing.

The need for, and the benefits of Information Security:
- Different business models and their impact on security (e.g. on-line business vs. traditional manufacturing vs. financial services vs. retail),
- Effect of rapidly changing information and business environment on information security,
- Balancing the cost/impact of security against the reduction in risk achieved,
- The need for continuous improvement.

Information Risk:
- Threat categorisation (accidental vs. deliberate, internal vs. external, etc.),
- Types of accidental threats (e.g. human error, malfunctions, fire, flood, etc.),

NET512: Database and Web Security
Level 5 - Mandatory

Module Abstract

This module focuses on the web front-end to an organisation which is the source of exposure to many vulnerabilities and exploits. Having a web development with security holes can allow an attacker to bypass other security mechanisms applied to a network infrastructure and cause damage to an organisation, including the loss of data and user privacy.

Building on the concepts in Systems Security and techniques applied in Network Disaster Recovery, this module will explore web application architecture including development and configuration techniques.

Students will implement a small-scale web development which will include a range of techniques to prevent unauthorised access to a website or database. This will then be tested using software tools and industry techniques to ensure that best-effort security can be applied in web developments.

Learning Outcomes

1 Evaluate approaches to applying defence in depth to web applications
2 Compare and contrast security vulnerabilities in dynamic web environments using different development paradigms
3 Critically analyse the potential security risks for a given web deployment scenario and recommend security mechanisms
4 Implement password encryption using salts and multiple databases
5 Create and test code which prevents session spoofing and injection attacks
6 Apply a range of coding and configuration techniques to secure web applications
7 Evaluate web application security using software tools and testing, and make recommendations for improvement

Indicative Content

Web Architecture:
- Client / Server / DNS / Browsers / Languages and features.

Security in Web Applications:
- Defence in Depth,
- Open Web Application Security Project (OWASP).

Vulnerabilities and security risks:
- Session spoofing, injection attacks, XSS, default configurations, directory crawling,
- Differences in Apache / IIS / .NET / PHP / MySQL / SQL Server.

Hashing Algorithms and Approaches:
- Password hashing, salting, dynamic functions and security risks.

Preventing spoofing and injection:
- Sanitising inputs, validation, regular expressions.

Database Configuration techniques:
- Password and server setup, coding style, ports, passwords, permissions.

Web Application Vulnerability Scanning:
- Software tools, fuzz testing, OWASP.

NET513: Data and Evidence Recovery
Level 5 - Mandatory

Module Abstract

Since computers became ingrained within society, they have drastically increased the effectiveness and efficiency of both industry and commerce. As society becomes more dependent on sophisticated computers and communication technology, the probability of something occurring that could result in the loss of valuable data increases.

If an event like this occurs then organisations could find themselves filing for bankruptcy. It is due to this importance that is now placed on data they store, that organisations have placed with equal measures; if not more importance on the ability to recover that same lost data.

This module will necessarily contain details of the fundamentals of computer architecture but will also include an overview of more contemporary wares. Students will investigate core digital forensics concepts, constraints and techniques as well as utilise tools to recover data and evidence.

Learning Outcomes

1 Analyse the different features of common and alternative data storage devices.
2 Critically evaluate the key features involved with volume analysis and file systems.
3 Investigate the importance of following the Chain of Custody in a range of contexts.
4 Compare and contrast criteria to be considered when handling evidence including legal, social, ethical and professional issues.
5 Apply a suitable strategy for seizing digital evidence based on specified criteria.
6 Implement and justify methods for the seizure of digital evidence.
7 Apply recovery techniques to a range of different devices and platforms.

Indicative Content

Features of common and non-common data storage (mobile phones, game consoles, smart phones, tablets, mp3 players)

Volume Analysis and file systems

Windows / Linux / FAT32 / NTFS / EX2FS / EX3FS / EX4FS / HFS

Evidential Chain of Custody

ACPO guidelines / appeals / evidence preservation / data cross-contamination

Approaches to securely retrieving data from a series of different devices

Volatile memory / power usage / changes to data integrity and form

Verification of retrieved data

CMP601: Dissertation
Level 6 - Mandatory

Module Abstract

The aim of the dissertation is to provide students with an opportunity to pursue an in-depth project related to their programme with a focus on both secondary research and primary application. This is where the underpinning knowledge, practical skills and higher-level cognitive abilities developed over the course of programme are combined as students pursue an area of interest in an independent fashion with limited supervision.

All computing dissertation students are to undertake a suitable complex development / implementation and documentary evidence is required including analysis, design, testing, and data collection; this will be based upon independent secondary research that supports the goals of the project and any reasonable expectations of hypotheses / research questions in the problem domain.

The choice of topic is to be agreed with the academic team to ensure that it is valid within the context of the programme and contains sufficient challenge without being unfeasible in scope. This will be determined through a Project Proposal and Ethical Approval phase in line with the college's Ethical Approval procedure. This will include an outline of the primary development / research to be undertaken; where human participants are involved (for example in user testing) then appropriate safeguards are to be approved before any work can continue.

From here, a suitably extensive literature review is to be conducted into the main themes of the topic chosen to ensure that the development / implementation to be undertaken is feasible, sufficiently complex, will confirm / add to the academic body of knowledge, and that wider implications of the development / implementation are considered. Following this, a description of the problem domain (including any hypotheses / research questions) will be produced to then lead into a detailed Methodology considerate of validity and reliability. The findings / results analysis will analyse the outcome of the activity leading to conclusions and recommendations.

This will then be presented in the form of an academic poster presentation with demonstrations of work undertaken where appropriate and feasible to do so.

Learning Outcomes

1 Conduct secondary research, evaluating classic and contemporary literature and work of others

2 Identify an area of research and development and formulate a research proposal incorporating ethical principles

3 Plan and carry out a programme of work with limited supervision producing an implementation or product supported by appropriate analysis, design, evidence of functionality and testing

4 Critically analyse and present results and findings obtained by use of the implementation or product

5 Communicate the nature, rationale and outcomes of the work to specific audiences

6 Critically reflect upon the dissertation process, critically evaluating the achievements and outcomes

Indicative Content

Ethical Research:
- “Do no harm”, confidentiality, anonymity, secure storage, vulnerable participants, safeguards

Scoping Research and Development:
- Preparing proposals, ensuring relevant content investigated, ensuring feasibility within constraints (resources / time / expertise)

Project Planning and Self-management:
- Writing aims and objectives / SMART targets
- Work Breakdown structures and critical path
- Gantt Charts and risk analysis
- Logbooks / reflective blogs

Secondary Research and Literature Reviews:
- Referencing; reliability and validity of sources
- Cross-referencing for conflict / agreement from a range of sources
- Breadth vs. Depth
- Comparison, contrast and critical evaluation
- Developing and consolidating themes, writing conclusions

Description of Problem Domain:
- How to provide context for solution development
- Hypotheses and Research Questions

Methodology:
- Reliability / Validity
- Analysis methodologies, strengths, weaknesses and rationale
-

NET601: Cyber Ethics and Law
Level 6 - Mandatory

Module Abstract

The ubiquity of the Internet as a tool for modern life; its impact on the ways in which we interact commercially and socially, as well as its role as a source of news and information sharing; has led to the development of a multi-dimensional framework of legal, ethical and quality structures that have to be understood for effective and legitimate use of this media.

Technological developments have created serious challenges for law makers in the areas of privacy, property, security and individual identity and radically reshaped life styles around the globe. While the scholarly debate continues as we define the field, it does not seem unreasonable to suggest that such a task is best handled by those who understand the capabilities and limitations of the technology, the tools of philosophical and ethical reasoning as developed over the millennia, and are sensitive to the spiritual impact of these technologies.

This module will consider the interaction between law, policy, and technology as they relate to the evolving controversies over control of the Internet. Legal, social and ethical issues that impact upon the maintenance of quality and professional standards of organisational behaviour, in the use of Internet media and technologies, will be explored in this module.

Learning Outcomes

1 Critically evaluate the legal framework, and recent history for, regulation of the internet
2 Critically evaluate the limitations of national and international laws with respect to the internet
3 Critically evaluate the need and requirements for ethical and moral behaviour
4 Apply ethical and moral frameworks and perspectives to a range of current legal/moral issues in relation to cyberspace
5 Appraise the nature and implications of legal, social and ethical issues that may impact upon quality assurance and professional standards in IT

Indicative Content

Ethical philosophies:
- Introduction to ethics,
- Deontological,
- Consequentialist,
- Virtue,
- Social contract.

Computing Law:
- Digital Economy Act,
- Data Protection Act,
- Copyright, Designs and Patents Act,
- Computer Misuse Act,
- Freedom of Information Act,
- Electronic Communications Act,
- Regulation of Investigatory Powers Act,
- Human Rights Act.

Professional Codes of Conduct:
- BCS Code of Conduct,
- ACM Code of Ethics and Professional Practice,

- IEEE.

Cyber Ethics in Industry:
- Net neutrality,
- Censorship,
- Privacy,
- Monitoring/surveillance on-line,
- Hacking,
- Whistle-blowing,
- Freedom of information,
- Cyber crime,
- The dark web,
- Data protection,
- The code is law.

NET602: Distributed Systems
Level 6 - Mandatory

Module Abstract

Distributed Systems, that is any system where constituent parts are spread over a network, are integral to almost all organisations. The most widely used distributed system is the World Wide Web built on the Internet using a Client / Server architecture. Big organisations however have systems that may be utilising the Web or custom programmed systems that are spread over WANs, multiple devices and environments. With more ubiquitous networked devices entering our lives this becomes a very important aspect of the networked world.

To keep these systems transparent (usable, responsive, just like a standalone system) then there are many considerations for those who develop, deploy and maintain them. These include issues of architecture, synchronisation, data representation, security, fault tolerance, concurrency and use of middleware. This brings up many complexities that affect multiple positions in industry, not only Software Developers but Network Managers, Chief Technical Officers and Technicians.

This module therefore looks at individual categories of challenge and potential solutions for distributed systems in a heterogeneous environment. Initially a prototype will be built to send some data from one language / device to another in order to gain a better understanding of the software concepts. From this point, research, investigation and a critical approach to areas of distributed systems will be emphasised, including different algorithms suitable for different environments and middleware solutions. Students will be able make recommendations to organisations about investment, replacement, deployment or maintenance of a distributed system.

Learning Outcomes

1 Produce a prototype that uses external data representation in a heterogeneous distributed system working as part of a development team

2 Critically evaluate the need for consistent data rules and synchronisation in cross-platform environments with a comparison and contrast of popular middleware solutions

3 Critically analyse approaches to fault tolerance in distributed systems, implementation of both hardware and software approaches and constraints on such approaches

4 Investigate how differing structures of naming apply to different architectural models of distributed system

5 Compare, contrast and critically evaluate different algorithms utilised in ensuring concurrency in transactions to ACID principles

6 Critically evaluate encryption algorithms and their suitability for use in modern Distributed Systems incorporating legal, ethical and social dimensions

Indicative Content

Data Representation and Programming Concepts:
- OOP Concepts / language features (native vs. managed) / data types and storage space,
- External data representation (XML / JSON).

Middleware solutions (Java / .NET):
- Architectural features / virtual machines / constraints / IDEs / performance / case studies.

Synchronisation:
- Synchronous / asynchronous communication; blocking / non-blocking program flow.

Fault Tolerance:
- Failure Models (crash / timing / value / byzantine),
- Software Based (replication managers / co-ordinator selection algorithms),
- Hardware Based (RAID / UPS / Clusters / failover).

Naming and Architectural models:
- Architecture (Client / Server, Peer-to-peer)
- Naming: Flat Naming (DHT), Hierarchical Naming (DNS).

Concurrency:
- ACID Principles,
- Deadlock detection,
- Common concurrency problems (lost update / dirty reads),
- Concurrency control (read, write locks / two-phase locking).

Security and encryption:
- Encryption: Asymmetric (SSL / TLS), Hash

NET603: Corporate Network Strategies
Level 6 - Mandatory

Module Abstract

The role of IT in organisations is a key factor at operational, tactical and strategic levels. Experienced IT and Networking Professionals may be called upon to advise on strategic developments related to the organisation and the alignment with IT services to meet these goals. Therefore it is important for students to be aware of the theories and frameworks underpinning strategic management and how IT operations align with this.

The purpose of this module is to give the student a broad overview of business practices, theories and concepts which impact on the effective strategic management of an organisation. The roles and responsibilities of a Network Manager will be explored along with concepts of motivation, change management, team dynamics, strategic and IT corporate planning.

Learning Outcomes

1 Critically analyse and evaluate a range of business theories and strategies

2 Critically analyse the roles and responsibilities of a network manager towards the overall business strategy

3 Critically evaluate the effects of change upon a workforce with particular reference to motivation, and management of team dynamics

4 Investigate the impact of innovation and specialist knowledge within strategic planning to maintain competitive advantage

5 Critically evaluate the importance of corporate strategic planning and incorporate relevant computing legislation into planning

6 Critically compare and contrast conceptual models to assist in IT corporate planning

Indicative Content

Business Theories and Strategies
- Alignment of strategies
- Centralization
- Organization
- Markets
- Growth

Roles and Responsibilities
- Accountability
- Cross-departmental liaison
- Legislative requirements

Change Management
- Intrinsic / extrinsic motivation
- Resistance
- Lewin

Team Dynamics
- Belbin
- Tuckman

Strategic Planning
- Boston Matrix
- Five Forces
- Portfolio management

Technology Management
- Management Information Systems
- Data Mining
- Forecasting
- Efficiency

Security Considerations
- Competitors
- Industrial Espionage / security policies and mechanisms

IT Corporate Planning
- Analysis
- Design
- Gathering of user data
- Cost-benefit analysis

NET611: Cryptography and Cyber Security Trends
Level 6 - Mandatory

Module Abstract

Cryptographic techniques, algorithms and protocols are constantly evolving as some traditional methods have been cracked and circumvented. Therefore an in-depth understanding of cryptography

is essential for cyber security specialists. In addition, trends in software and web vulnerabilities, malware propagation and security approaches need to be kept abreast of to ensure that cyber security specialists are not left behind, leaving organisations vulnerable. Professional trends, networks and guidance, national and international trends, as well as a range of ethical approaches to managing security should also be understood and adhered to.

This module is mainly theoretical and research-led with the latest trends, technologies, techniques and guidance discussed, investigated and critically evaluated in a range of contexts.

Learning Outcomes

1 Investigate and critically analyse historical development of cryptography
2 Critically evaluate a range of symmetric and asymmetric encryption algorithms
3 Implement and test the steps of a public key encryption algorithm
4 Compare and contrast cryptanalysis and side channel analysis techniques
5 Investigate cyber security trends including vulnerabilities, malware, labour market and skills requirements
6 Critically evaluate Ethical Hacking in consideration of legal, ethical, social and professional dimensions
7 Analyse professional standards, national and international cyber security strategies

Indicative Content

Symmetric key cryptography and its applications. Block and stream ciphers, history up to present day.

Stream ciphers. The classical combiner model. Filter models. Boolean functions and security criteria: non-linearity, autocorrelation etc. Finding excellent components. Planting trapdoors.

Cryptanalysis of various schemes etc. Linear and differential cryptanalysis, number theoretical attacks, factorisation algorithms etc.

Side channel analysis: power, timing, fault injection etc. Emerging techniques for analysis: e.g. use of leading constraint solving approaches. Applications of compute power. Special purpose and reconfigurable hardware, the cloud and GPGPU. Collaborative attacks on challenge problems.

Public key cryptography and its applications. RSA, Diffie Hellman, elliptic curves. Performance issues and approaches to implementation. Key management frameworks (e.g. PKI approaches)

Quantum Cryptography. What is possible with quantum mechanical approaches? Example protocols and analysis.

Current cyber

STUDENT PROTECTION PLAN

1. An assessment of the range of risks to the continuation of study for your students, how those risks may differ based on your students' needs, characteristics and circumstances, and the likelihood that those risks will crystallise

Blackpool and the Fylde College (B&FC) has been providing high quality career focussed education for over 125 years; the risk that B&FC is unable to fulfil its obligations and duties to you is very low because our financial performance is consistently strong. B&FC provides a range of services to a diverse student population and this economy of scale provides security that our financial position presents low to zero risk of non-continuation or closure.

The risk of campus closure is very low because B&FC has a rigorous business planning process that ensures that all our resources are matched against curriculum need. Whatever programme you are studying you can be assured that it is fit for purpose, meets the needs of industry and aims to secure long term sustainable employment. This level of planning and forecasting mitigates any risks associated with course or campus closure. In addition, new courses or those due for refreshing and updating through revalidation, conduct significant levels of market research ensuring curriculum and resources are fit for purpose, informed by employers and are subject to the highest level of scrutiny.

B&FC delivers highly specialised courses including honours degrees, foundation degrees, higher national diplomas and certificates all of these are co-created with employers. The risk that B&FC will no longer deliver courses at a specified campus is very low and as a mixed economy provider our economies of scale provide you with the added security that continuation of study will not be adversely effected.

The risk that we are no longer able to deliver material components of a course is low because courses are designed to be taught by integrated teams of academic staff who have levels of expertise matched against modules and levels, each module has at least two convenors attached thereby mitigating risks of dependency on individual members of staff. The breadth of provision at B&FC, where academic teams may deliver across multiple programmes and levels, provides highly effective continuity of service. This mitigates reliance on individual team members. In some areas where there are highly specialised skills, Marine Biology for example, we engage with a range of professional bodies, The Environment Agency and The Institute for Marine Biology for example, this provides an added layer of security to mitigate against any local skills shortage.

2. The measures that you have put in place to mitigate those risks that you consider to be reasonably likely to crystallise.

In the unlikely event that we were unable to deliver a course at a specified campus, where possible, the provision would be relocated to another campus and appropriate transport would be provided for you to ensure your studies would not be interrupted. The flexibility of our estate makes relocation the most likely and positive outcome.

It may be that over time, a course in a specialised programme may be superseded by newer provision, and together with declining recruitment may need to close. Such instances are anticipated through highly effective curriculum planning and arrangements are made to ensure that all students currently enrolled to the programme continue to receive the teaching and learning opportunities that enable them to succeed. If B&FC were unable to continue to deliver courses in such circumstances, we have a commitment to ‘teach out’ the existing programme. This means that we commit to ensuring your course of study will be completed within the time scale specified at enrolment.

Many programmes are designed with shared pathways and modular components, this provides enhancements to the student experience and mitigates against the negative impact of small group sizes. There have been instances where programmes have continued with small group numbers and in these cases the overall student experience has been positively sustained. Highly effective business planning ensures this delivery model is sustainable.

In the highly unlikely event that B&FC were unable to deliver material components of a course in any subject our breadth and depth of academic expertise would enable us to provide secure continuation of study. Our partnership organisations would be an additional support in this regard and would extend our existing highly effective recruitment processes. One of our core values is to place the student at the heart of all we do and this value ensures you are a respected partner in all learning activities.

3. Information about the policy you have in place to refund tuition fees and other relevant costs to your students and to provide compensation where necessary in the event that you are no longer able to preserve continuation of study.

B&FC is in a strong financial position with significant fixed asset values. This means we are a financially stable organisation and in the highly unlikely event of a claim for non-continuation and associated compensation you can be assured that resources are in place to meet our obligations. If you are in receipt of loans from the SLC, in receipt of sponsorship or privately funded, refunds will fall within scope of the policy document attached.

In the unlikely event that significant changes to study locations are encountered, B&FC will provide you with flexible and appropriate arrangements to ensure that continuation of study is not adversely impacted. This may include the provision of bespoke transport arrangements between sites. Where possible a minimum of 5 weeks' notice will be given for any instances of relocation.

B&FC has a well-established bursary package: These are applied for and awarded annually. The eligibility criteria is specified in the link below. There is no precedent, within B&FC, for bursary payments being suspended without fault or breach of the terms and no instances of compensation claims in light of course closure or non-continuation.

The B&FC refunds and compensation policy is available through the College website.

4. Information about how you will communicate with students about your student protection plan

We will communicate the provision of the student protection plan to you and future students through the college website.

All published prospectus materials will include a link to this web site.

For new and existing students the plan will be included in all student handbooks and accessible through the virtual learning environment.

The student protection plan will be communicated to all staff through a programme of HE fora, including bespoke staff development sessions, conference activities and curriculum planning sessions. It will be considered through initial validation and revalidation events. Although B&FC may make improvements and minor adjustments to modules any changes which will trigger the student protection plan must be authorised by the Higher Education Academic Standards and Development Committee acting through delegated authority of the Higher Education Academic Board.

The student protection plan will be reviewed through a range of student engagement groups with formalised feedback from the Student Union. This will be managed through the normal quality cycle where the plan will be a standing agenda item on a Quality Assurance Meeting. This level of engagement will establish a partnership approach to the formation and review of the student protection plan with you as a key stakeholder.

Where possible you will be given a minimum of 5 weeks 'notice, in writing, for material changes to your chosen course. The Directorate for Students will provide individualised support through 1:1 meetings to ensure effective support is in place. Heads of Curriculum will be available to support groups of students and the Higher Education Learning Mentors will provide an additional layer of support to ensure academic progression is not adversely affected. A minimum of three individual and two group meetings will be available during any transition period.

Independent advice will be delivered through the Student Union Executive and their elected representatives.

An open and transparent process of review will be conducted annually. Student representation will be managed by the Student Union Sabbatical Officer and the Student Union President with a formal report submitted to the HE Academic Board for consideration. The partnership arrangements already in place at B&FC will add a layer of cooperation to this process.