MSc Computer Network Administration and Management

Programme Specification

School of Engineering

Reference: C1704
Release: Version 2.0
Issue Date: March 2011

Primary Purpose:
Course management, monitoring and quality assurance.

Secondary Purpose:
Detailed information for students, staff and employers. Current students should refer to the related Course Handbook for further detail.

Disclaimer:
The University of Portsmouth has checked the information given in this Programme Specification and believes it to be correct. We will endeavour to deliver the course in keeping with this Programme Specification but reserve the right to change the content, timetabling and administration of the course whilst maintaining equivalent academic standards and quality.

Contents

Programme Specification

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1. Named Awards

Computer Network Administration and Management

2. Course Code (and UCAS Code if applicable)

C1704 F/P

3. Awarding Body

University of Portsmouth

4. Teaching Institution

University of Portsmouth

5. Accrediting Body

IET (Institute of Engineering and Technology)

6. QAA Benchmark Groups

Engineering

7. Document Control Information

Version 2.0, March 2011

8. Effective Session

2012-13

9. Author

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10. Faculty

Technology

11. Department

School of Engineering

12. Educational Aims

The course aims to equip students to work as technologists/scientists, at an advanced level, in the fields of network administration and management. In addition, and more generally:

- Provide a challenging and stimulating study environment.
- Develop a range of key skills by means of opportunities provided in the study units.
- Accommodate student needs in relation to maximising their career potential by enabling them to develop knowledge, understanding and skills in their chosen subject area.

Being an MSc course, students are encouraged and expected to be able to reach a level of competence and professionalism where they can effectively integrate their technical and non-technical knowledge to solve a range of problems of a complex nature.

The course enables students to develop both analytical and design skills across the range of subjects. This is achieved through theoretical studies alongside practical design projects and laboratory experiments. Students also become conversant with industrial practice and familiar with industrial strength analysis and simulation tools.

The course is accredited by the IET and meets the educational requirements for Chartered Engineer in full. Students who do not pass the final Individual Project at the first attempt, will not be deemed by the IET to hold an accredited degree.

13. Reference Points

- University of Portsmouth curricula framework
- The university policy on Key Skills
- The scholarship and research expertise of academic members of staff
- Framework for Higher Education Qualifications (FHEQ)
- National Qualifications Framework
- UK Standard for Professional Engineering Competence
- QAA Code of Practice for the Assurance of Academic Quality and Standards in Higher Education
- QAA's Engineering Subject Benchmark and the Engineering Council's UK-SPEC

The core elements of the engineering benchmark, interpreted in the context of electronics and communication engineering, are:

Underpinning Science and Mathematics (US): Comprehensive knowledge and understanding of scientific principles and methodology appropriate to electronic design and related disciplines, to enable appreciation of its scientific and engineering context, and to support their understanding of historical, current, and future developments and technologies; with particular reference to principles governing: analogue circuits and systems; digital and microprocessor systems, including hardware description languages; analogue and digital telecommunication systems; data communications and network systems; microwave systems. An awareness of developing technologies, Knowledge and understanding of mathematical principles and methods, mathematical and computer models appropriate to electronic design, and an appreciation of their limitations, with particular reference to methods required in analogue electronics, telecommunications and signal processing. Ability to apply and integrate knowledge and understanding of other engineering disciplines to support study of their own discipline, and the ability to apply them effectively in engineering projects.

Engineering Analysis (E): Understanding of engineering principles and the ability to apply them to analyse key engineering processes and investigate new or emerging technologies; ability to identify, classify and describe the performance of systems and components through analytical methods and modelling techniques; ability to apply quantitative methods and computer software to electronic engineering problems and the ability to assess the limitations of particular cases; understanding of and ability to apply a systems approach to engineering problems in such areas as analogue circuits and systems; digital and microprocessor systems, including hardware description languages; analogue and digital telecommunication systems, network systems. Ability to extract data pertinent to an unfamiliar problem, and apply in its solution using computer based engineering tools when appropriate.

Design (D): Creation and development of an economically viable product or system to meet a defined need and an ability to generate innovative design to fulfil new needs. Knowledge, understanding and skills to: identify constraints including environmental and sustainability limitations, health and safety and risk assessment issues; understanding of customer and user needs; identify and manage cost drivers; use creativity and innovation; ensure fitness for purpose for all aspects of the problem and manage the design process. Wide knowledge and comprehensive understanding of design processes and methodologies and the ability to apply and adapt them in unfamiliar situations;

Economic, Social and Environmental Context (S): Knowledge and understanding of commercial and economic context of engineering processes; knowledge of management techniques which may be used to achieve engineering objectives, sustainable development; awareness of the framework of relevant legal requirements including personnel, health, safety, and risk (including environmental risk) issues; the ability to make general evaluations of commercial risks through some understanding of the basis of such risks; extensive knowledge and understanding of management and business practices, and their limitations, and how these may be applied appropriately; understanding of the need for a high level of professional and ethical conduct in engineering.

Engineering Practice (P): Solution of engineering problems to meet specified technical requirements as well as time and resource constraints. Knowledge of characteristics of particular equipment, processes, or products; extensive knowledge of materials and components; workshop and laboratory skills; engineering project management methods, including planning, monitoring, control and reporting; use of technical literature and other information sources; awareness of nature of intellectual property and contractual issues; understanding of appropriate codes of practice and industry standards; awareness of quality issues; ability to work with technical uncertainty; electronic design practices, including: electronic components and data sheets; use of laboratory instruments and equipment; pcb design, fabrication, assembly and test; design and proving of analogue and digital circuits, understanding or engineering practice and limitations, appreciation of new developments; ability to apply engineering techniques with consideration to commercial and industrial constraints.

The abbreviations in parentheses are used for cross reference purposes in the learning outcomes in 14.

14. Learning Outcomes

A. Knowledge and Understanding of:

A1. Client Server Network Architecture (US, E, D, S, P)
A2. ICT Configuration and Administration (E, P)
A3. Data Communications and Networking (US, E, D, P)
A4. Unified Communications (US, E, D, S, P)
A5. Network Design and Management (US, E, D, P)
A6. Communications Network Security (US, E, D, P)

Learning and Teaching Strategies and Methods

In depth knowledge is acquired mainly through lectures, computer laboratory work and experimental laboratory work. Individual learning is supported by directed reading, study guides, tutorial questions, worked examples, and design problems. Practical design considerations are learned through lectures, practical exercises, simulations and project work.

Assessment

Knowledge and understanding will be tested through unseen examinations, in class tests and coursework. Project work and laboratory work are assessed by observation and submission of reports.

B. Cognitive (Intellectual or Thinking) Skills, able to:

B1. Systematically use knowledge of computer system and network principles and practice as tools to analyse complex requirements in order to solve system and network problems (US, E)
B2. Apply critically, knowledge and understanding of communication engineering, data communication and networking creatively to generate practical products, systems and services (D, S, P)
B3. Advise and make judgments on the management of and strategic use of network systems (S, P)

B4. Evaluate and justify the various methodological approaches to communication network design and select appropriate strategies to meet defined needs (E, D)
B5. Plan, conduct, interpret and report on experiments (D, P)
B6. Plan, manage, undertake, evaluate, interpret and report on a significant project (P)

Learning and Teaching Strategies and Methods

Intellectual and analytical skills are mainly developed through lectures, supported by practical work, case studies and worked examples. The ability to apply knowledge creatively is acquired through design exercises and involves theoretical analysis, simulation and practical design. The ability to plan and manage laboratory work and project work is acquired through a range of practical laboratory and simulation exercises, together with the individual project.

Assessment

Use is made of in class tests, examinations and coursework for assessing intellectual and analytical skills, together with submission of reports for practical and project work.

C. Practical (Professional or Subject) Skills, able to:

C1. Use systematically standard and specialist measuring instruments in appropriate situations to acquire data for identified purposes (P)
C2. Use systematically computer systems for simulation, analysis and presentation within defined problem domains (D, E)
C3. Model computer network systems systematically using appropriate techniques and software (D, E)
C4. Design, construct, test and evaluate systems applicable to computer network (D, P, E)
C5. Prepare schedules for the systematic building of complex computer network systems (D, P)
C6. Use appropriate codes of practice, informed by legislation and best practice as they apply to Information Technology (D, P, S)

Learning and Teaching Strategies and Methods

Experimental work is used to develop skills in Network administration and management. Use is made of CAD systems to synthesise and evaluate complex computer network designs.

Assessment

Laboratory work and simulation work are generally assessed by submission of reports and by observation.

D. Transferable (Graduate and Employability) Skills, able to:

D1. Work effectively individually and in group settings to achieve set goals (D, S)
D2. Communicate effectively in writing and through graphical representations in professional and academic settings (D, S)
D3. Apply appropriate mathematical techniques in analysis and problem solving (E, P)
D4. Assess problem domains and formulate appropriate problem solving strategies (E, D, P)
D5. Build on previous experience in order to generalise (D, P)
D6. Use appropriate information technology to handle text, data, simulation, design and testing (P)

Learning and Teaching Strategies and Methods

The emphasis is generally on individual learning through self-management within the study programme and through planning, managing and reporting on project work. Mathematical techniques and familiarity with IT systems are fundamental to the nature of the course.

Assessment

The ability to achieve goals and communicate effectively is particularly assessed through project activities. Numerical skills are assessed through the mathematics content of units. IT skills are assessed as part of those units which include computing, CAD, and the presentation of reports.

15. Course Structure, Progression and Award Requirements

This is a 1 - or 3 - year programme depending on whether a student elects for full-time or part-time study. The course normally consists of 20 credit point units, where 20 credits represent 200 hours of study time and usually includes up to 48 hours of time-tabled activities. The course offers a total 180 credits for the MSc award and ends with a 60 credit individual project. A Postgraduate Diploma exit award requires 120 credits. A Postgraduate Certificate exit award requires 60 credits from the taught units. The individual project may be undertaken at the University or, given agreement on supervision arrangements, in UK industry.

16. Employability Statement

- The course is aimed at the students who wish to undertake careers in the Computer Network Administration and Management. The examples and case studies used in the course are all designed to increase the students knowledge of the theory and practice of Network administration and management hence enhance their employability
- The final project allows students to investigate a significant Computer Network problem and propose results. This may (subject to availability) be industrial project.
- Seminars from experts in the field from academia and industry will, subject to availability, be arranged during the academic year and students will be encouraged to attend.
- All units have aspects which contribute to the development of employability skills and/or research skills for further study.

17. Support for Student Learning

- The Course is managed by a Course Leader.
- Extensive induction programme introduces the student to the University and their course.
- Each student has a personal tutor, responsible for pastoral support and guidance.
- University support services include careers, financial advice, housing, counselling etc.
- The Academic Skills Unit (ASK).
- The Additional Support and Disability Advice Centre (ASDAC).
- Excellent library facilities.
- The University of Portsmouth has consistently been awarded an excellent rating for student support and guidance in a number of Quality Assurance Agency inspections.
- Student course and unit handbooks provide information about the course structure and University regulations etc.
- Feedback is provided for all assessments.

18. Admissions Criteria

A. Academic Admissions Criteria

Standard University rules apply and this will normally mean that candidates are in possession of an honours degree with at least a classification of 2.2 or equivalent and in a relevant discipline. All other qualifications or experience presented must be forwarded to the Admissions Tutor for a University of Portsmouth decision. English – IELTS 6 or TOEFL 550 (215 computer-based).

B. Disability

The University makes no distinction in its admissions policy with regard to disability and will endeavour to make all reasonable adjustments in order to make it possible for students to study at Portsmouth on a course of their choice.

19. Evaluation and Enhancement of Standards and Quality in Learning and Teaching

A. Mechanisms for Review and Evaluation

- Course Leader's Annual Standards and Quality Evaluative Review.
- Head of School's Annual Standards and Quality Evaluative Review.
- Unit and Course Level student feedback considered at Board of Studies.
- Unit Assessment Board consideration of student performance for each programme.
- Annual Standards and Quality Reports to Board of Studies, including consideration of Subject and Award External Examiner Reports.
- Periodic Programme Review.
- Student Representatives and Student/Staff Consultative Committees.
- National Student Survey.
- Staff Performance and Development Review.
- Peer Review and Development Framework.
- Faculty Learning and Teaching Committee.

B. Responsibilities for Monitoring and Evaluation

- Unit Co-ordinators for unit content and delivery.
- Course Leader for day-to-day running of course.
- Board of Studies with overall responsibilities for operation and content of course.
- Head of School.
- Associate Dean (Academic).
- Associate Dean (Students).
- Quality Assurance Committee.
- Unit, Award and Progression Board of Examiners.

C. Mechanisms for Gaining Student Feedback

- Student Representation on Board of Studies.
- Student Staff Consultative Committees.
- Unit and Course level student feedback questionnaires.
- University participates in external student surveys, eg National Student Survey (NSS), Postgraduate Research Experience Survey (PRES) and International Student Barometer (ISB).

D. Staff Development Priorities

- Academic staff undertake activities related to research, scholarship, teaching and learning and student support and guidance.
- Annual staff performance and development reviews match development to needs.
- Managers undertake a variety of management development programmes.
- New academic staff required to undertake Pg Cert Learning and Teaching in Higher Education.
- All academic staff encouraged to seek Higher Education Academy membership.
- Academic staff new to teaching required to undertake Initial Professional Development Programme (iPROF).
- Support Staff are encouraged to attend short courses in areas such as minute taking, and specific IT packages.
- The School is an IET Academic Partner.

20. Assessment Strategy

The assessment is designed to allow a student through case studies and laboratory sessions to develop reliable and in-depth knowledge and understanding in the analysis and evaluation of client server network architecture, network configuration, system administration, data communications and networking, unified communications, network design and management and communication security using available technologies. Using relevant CAE tools the student will be expected to implement a solution to a complex problem. This enables students to critically assess and verify the correctness of any specification through simulation. Examination and in-class test will provide opportunity for demonstrating the knowledge and understanding of the theoretical aspects of the taught units of the course. After successful completion of all unit assessments, students should be able to organise and carry out a substantive project activity with breadth and scope appropriate for a Master of Science award.

21. Assessment Regulations

Standard university rules apply (see Assessment and Regulations). However, please note that

- The School holds an approved exemption to the Academic Regulations such that the pass mark in level M units is 50%. The School holds an exemption related to units where there are different types of assessment components: in order to pass such a unit (indicated with a University p-code number) students must achieve a threshold mark of at least 30% derived from all examination based assessments; and a threshold mark of at least 30% derived from all non-examination based assessments (including any course work and laboratory assessment). These requirements are related to IET accreditation.

- IET guidance is that students must achieve at least 40% in a unit to be eligible for compensation. Compensation limited to 20 credits.

22. Role of Externals

Subject External Examiners who will:

- oversee unit assessment and usually attend Unit Assessment Boards;
- approve unit assessment strategy;
- sample assessment artefacts;
- present report to Unit Assessment Boards.

Award External Examiners (usually also a Subject External Examiner) who will:

- oversee and attend Award/Progression Boards;
- scrutinise and endorse the outcomes of assessment;
- ensure that the standard of the award is maintained at a level comparable with that of similar awards elsewhere in the United Kingdom.

23. Indicators of Standards and Quality

A. Professional Accreditation/Recognition

The course is accredited for CEng under UK-SPEC by the Institution of Engineering and Technology (IET).

B. Periodic Programme Review (or equivalent)

C. Quality Assurance Agency

D. Others

The School of Engineering is an IET Academic Partner

24. Other Sources of Information

Other sources of information may be found in

- Course Approval Document.
- Student Handbook.
- University of Portsmouth Curricula Framework.
- University of Portsmouth Postgraduate Prospectus.
- Assessment Regulations.
- University of Portsmouth (http://www.port.ac.uk/) and
- University of Portsmouth School of Engineering (http://www.port.ac.uk/eng)
- Course Unit Tables

Unit Assessment Map

UNITS						COURSEWORK				EXAMINATION			
Level	Name	Code	Credit	Delivery	Core/ Option	Total %	Type of Artefact	Duration/ Length	Weighting %	Total %	Open/ Closed	Duration (hrs)	Weighting %
7	Client Server Network Architecture	ENG720 S1 P21422	20	Sep-Dec	C	100	Coursework/Report	4000 words	100	-	-	-	-
7	ICT Configuration and Administration	ENG753 s1 P22919	20	Sep-Dec	C	50	Coursework/ Logbook	2000 words	50	50 (CBT)	C	1	50
7	Data Communications and Networking	ENG751 s1 P21433	20	Sep-Dec	C	30	Laboratory /Report	1500 words	30	30 (in class test) 40 (in class test)	C C	1 1	30 40
7	Unified Communications	ENG755 s2 P21435	20	Jan-Mar	C	100	Supervised (test)Coursework	3 hours	100	-	-	-	-
7	Network Design and Management	ENG749 s2 P21432	20	Jan-Mar	C	20	Laboratory	6 hours	20	80	C	2	80
7	Communications Security	ENG757 s2 P21436	20	Jan-Mar	C	30	Laboratory /Report	1500 words	30	70	C	2	70
7	Individual MSc Project	ENG702 P21439	60	Jun-Sep	C	100	Project/Report	10000 words	100	-	-	-	-

Unit Learning Outcomes Map[1]

UNITS						LEARNING OUTCOMES																							
Level	Name	Code	Credit	Delivery	Core/ Option	A1	A2	A3	A4	A5	A6	B1	B2	B3	B4	B5	B6	C1	C2	C3	C4	C5	C6	D1	D2	D3	D4	D5	D6
7	Client Server Network Architecture	ENG720 S1 P21422	20	Sep-Dec	C	√		√		√		√				√	√			√	√			√	√		√	√	
7	ICT Configuration and Administration	ENG753 s1 P22919	20	Sep-Dec	C		√			√	√			√	√	√	√	√	√	√	√	√	√	√	√		√	√	√
7	Data Communications and Networking	ENG751 s1 P21433	20	Sep-Dec	C	√		√	√			√	√	√	√	√		√	√	√				√	√	√	√		
7	Unified Communications	ENG755 s2 P21435	20	Jan-Mar	C		√	√	√	√			√	√	√						√	√	√	√	√		√		
7	Network Design and Management	ENG749 s2 P21432	20	Jan-Mar	C	√		√		√		√	√	√				√	√	√		√		√	√	√			√
7	Communications Security	ENG757 s2 P21436	20	Jan-Mar	C			√		√	√				√	√			√					√	√	√	√		
7	Individual MSc Project	ENG702 P21439	60	Jun-Sep	C	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

[1] A = Knowledge and Understanding; B = Cognitive (Intellectual) Skills; C = Practical (Subject Specific) Skills; D = Transferable Skills