Programme Specification - MSc Digital Architecture

1. Awarding Institution	The University of Newcastle Upon Tyne
2. Teaching Institution	The University of Newcastle Upon Tyne
3. Final Award	MSc
4. Programme Title	Digital Architecture
5. Programme Accredited by	N/A
6. UCAS Code	N/A
7. QAA Subject Benchmarking Group	Architecture
8. Date of production	April 2001

9. **Programme Aims**

The course aims to equip students with the knowledge, skills and experience required to apply digital theories and technologies in their professional careers and to contribute to research in the field of digital architecture.

To this end, three interconnecting areas of digital architecture are examined in order to develop a strong understanding of the theory base as well as practical experience and skills in the use, customisation and development of Information and Communication Technologies (ICT). The three areas of study are:

- Digital Design: An appreciation of the impact an application of virtual environments and the role that ICT can play in the design and realisation of buildings and the built environment.
- Digital Theories: An understanding of the theory base of digital technologies and digital architecture. An appreciation of the interplay between the virtual and physical environments
- Digital Practice: Knowledge and understanding of the way that digital technologies support business and awareness of the new business models that are developing in response to these technologies

The course aims to be at the forefront of current debate on the future of architecture as well as providing knowledge and skills on innovative aspects of professional practice.

In addition, the course will equip students to design, undertake and communicate advanced research projects.

Intended Learning Outcomes (Objectives)

By the end of the degree programme, student will have:

A) Knowledge and understanding of:

1 The impact of ICT on architecture and the built environment

2 The theoretical basis of developments in information and communication technologies for the design of the built environment

3 The application of software and hardware tools and techniques to the creation and management of buildings.

4 Research methodology with relevance to design

5 The relationships between emergent information and communication technologies and urban environments

6 The software tools, techniques and their application to the design, creation and use of virtual environments.

7 The application and influence of information and communication technologies on business and practice models.

Teaching/learning methods and strategies

Specialist knowledge and understanding (A1-A7) are primarily taught through lectures and student lead seminars. Where appropriate, teaching also takes the form of workshops and project work to promote knowledge and understanding through hands-on experience of analysis and problem solving (A3 and A5-7) Case studies also provide the opportunity for students to gain in depth knowledge and understanding

Students are encouraged and expected to undertake independent reading and study to complement and consolidate what is being taught and to allow students to broaden their individual understanding of the subject area. This independent study is seen as vital and is supported through the development of comprehensive reading lists and provision of appropriate computer technologies to allow students to carry out the independent project work required (A3, A5-7) Peer learning is promoted through group projects (A3, A5-7)

Assessment strategy

Knowledge and understanding (A1-A7) are assessed through written coursework submissions. These employ a range of approaches including essays (A1 and A4), group and individual presentations and project work

B) Intellectual Skills – able to:

1 Reason critically

2 Identify problems and develop and carry out strategies for solving them

3 Analyse and interpret information and critically evaluate current research and practice

4 Plan, conduct and report a programme of research

5 Evaluate designs, processes and products and propose improvements

Teaching/Learning methods and strategies

All of the modules contribute to the development of cognitive skills (B1-5). Student-lead seminars play a particularly important role in the development of skills B1, 3 and 4 and form the basis of much of the teaching and learning in modules A (*Architecture in the Information Age*), D (*Research Methods*), E (*the Digital City*) and G (*Digital Buildings*). Problem solving and analytic skills (B2, 3 and 5) are developed through the project-based activities in modules B (*Digital Theories and Technologies*), C (*Digital Design for the Built Environment*), F (*Virtual Design*) and H (*Virtual Practice*). The individual research project (module J) will also provide a significant contribution to the development of all cognitive skills (B1-5)

Independent reading will provide students with the opportunity to examine problem solving strategies (B2) as well as exposing them to examples of critical reasoning (B1 and 3). These skills (B1-3) will be further developed in students through their contribution to seminars in all modules. Modules with a high degree of project work (modules B, C, F and H) will require students to define and understand problems (B2), design strategies for solving them in the light of current research (B2-4), carry out the work and report the results (B1 and 4). Participation in these projects and introduction to a wide range of technologies and theories will develop evaluation skills (B5)

Assessment strategy

Cognitive skills (B1-5) are assessed by means of submitted coursework in the form of essays, case studies and project work and by presentation of this work. Depending on the student's chosen topic, the Individual Research Project (module J) will also assess the cognitive skills (B1-5)

C) Subject-specific/Practical Skills

1 The use of ICT in design projects
2 Designing of virtual environments
3 The modelling and analysis of aspects of the built environment
4 Simulation of aspects of building performance
5 The evaluation of ICT tools and their application and management in a business context
6 The construction, operation and management of virtual project teams
7 Software customisation and development

Teaching/learning methods and strategies

Skills in the use of ICT in design projects (C1-4) are developed through the lectures, seminars, workshops and project work in modules B (*Digital Theories and Technologies*), C (*Digital Design for the Built Environment*), F (*Virtual Design*), G (*Digital Buildings*) and H (*Virtual Practice*). Design of virtual environments (C2) forms the basis for the teaching in module F, backed up by the lectures in module B. Analysis and Simulation (C3-4) are central to the use of ICT in architecture and are developed over a wide range of modules (B, C, E, F and G). Skills in the application of ICT in a business context (C5, 6) are developed through the lectures, seminars, workshops and projects of modules B, C, F and H. Software customisation and development (C7) is taught mainly in module B, with additional aspects covered in the project work for modules C, F and H

The primary vehicle for the development of these subject specific/practical skills (C1-7) is through hands-on use of the ICT technologies involved. Initial, lecture based teaching is supplemented by supervised workshops where students are encouraged to experiment with the technologies. More advanced skills are developed particularly through the project work in modules B, C, F and G that build on knowledge and understanding of the underlying concepts developed through the lectures and seminars. Peer learning is supported in the project work through group working and the availability of a dedicated computing environment where students are strongly encouraged to work. Some or all of the subject specific skills will further developed through the Individual Research Project (module J)

Assessment Strategy

Subject specific and practical skills (C1-5) are assessed by means of submitted coursework in the form of essays, case studies and project work and by presentation of this work. Depending on the student's chosen topic, the Individual Research Project (module J) will also assess skills (C1-5)

D) Key (transferable skills)

1 Structure ideas and concepts and present them orally and in writing
2 Learn independently through self-directed study and research
3 Manage time and resources
4 Work as part of a team or individually
5 Information management skills (library and other information sources)
6 Computing skills

Teaching/learning methods and strategies

Formal teaching of key skills (D1-3, D5) is through the lectures and seminars of the research methods module (module D). Teamworking skills (D4) are developed through the group working elements of modules B (*Digital Theories and Technologies*), C (*Digital Design for the Built Environment*), F (*Virtual Design*) and H (*Virtual Practice*). Skills for individual working (D2, D4) are developed through the individual coursework in all modules. Information management skills are taught both for Research Methods (module D) and in a business context in modules C (*Digital Design for the Built Environment*) and H (*Virtual Practice*). Computing skills (D6) are fundamental to the learning outcomes of the course and will be extensively developed through the lectures, workshops and project work in modules B, C, F and H. The Individual Research project (module J) provides an opportunity for students to further develop key skills (D1-6)

Students are encouraged to develop key skills (D1-3, D5) through participation in the seminars for module D. Participation in seminars for modules such as A (*Architecture in the Information Age*), E (*The Digital City*) and G (*Digital Buildings*) will develop skills in independent learning (D2), and the structuring and presentation of ideas (D1). Undertaking project work for modules B, C, F and H will require students to manage their time (D3), work as part of a team and individually (D2, D4) and develop their computing skills (D6). The dedicated computing environment and available software will further support students in the development of their computing skills (D6) The Independent Research Project (module J) also plays an important role in the development of key skills (D1-6) for example through the design and planning of the research (D2, D3), literature search and review (D1, D5, D6) and conducting the research (D2, D3, D5, D6) and reporting the results (D1, D6)

Assessment Strategy

Key skills (D1-6) are indirectly assessed by coursework in the form of essays, case studies and project work and by presentation of this work. Computing skills (D6) will be assessed by the project work for modules B, C, F and H, and teamworking (D4) is also assessed by this project work. The coursework for module D (Research Methods) assesses key skills D1-3, D5) All key skills (D1-6) are assessed as part of the Individual Research Project (module J)

11. Programme Features, Curriculum and Structure

i. Special Features

The MSc in Digital Architecture is an innovative and timely addition to postgraduate teaching in the built environment field. The course is unique in offering students the opportunity to understand and become skilled in a board range of information and communication technologies (ICT) and theories in the context of architectural practice, construction project teams, the digital building and the digital city. The course will examine ICT as an influential factor in changes in society and in the theory and practice of architecture and the resultant built (and virtual) environment.

The course is modular, and combines a variety of teaching and learning strategies to suit the range of subjects covered. Theoretical modules will mainly take the form of a lecture/seminar based teaching and learning, and this is combined with extensive “hands-on” experience in the form of workshops and project work in those modules that examine technologies and new working practices. To support this, a dedicated computing facility has been established within the Construction Informatics Research Centre to provide students with a suitable study environment. In line with the aims of the programme, all coursework will be submitted electronically, and extensive use will be made of ICT in the day-to-day communication requirements of the course.

The majority of the teaching will be based within the Research Centre, providing students with the opportunity to interact with Research Associates and Academic Staff working in the field. Students are also able to draw on the resources of the School of Architecture Planning and Landscape and the wider University. Students are encouraged to be innovative in their choice of Individual research Projects and to collaborate with academic or industrial partners. Publication of research results is actively encouraged and supported.

As far as possible, the programme structure and timetabling has been designed to ensure that teaching is delivered in “blocks” of time rather than scattered across a teaching week, This will be particularly appropriate to the needs of part-time students who are also working. This means that for the most part, all of the teaching for a particular module will take place on a single day in any given week and the timetabling is also coordinated across modules so that teaching days run consecutively.

ii. The Curriculum

The course structure is outlined below. Students must take a total of 180 credits, which comprise 120 credits of taught modules and 60 credits of independent research project. All modules will initially be compulsory, but it is intended to offer a range of optional modules in future years. Students who do not complete the individual research project, but successfully complete 120 credits of taught modules will be awarded a Postgraduate Certificate in Digital Architecture

The curriculum is designed to provide a systematic progression from key computing skills and a core theoretical base in semester one to areas of more specialised study in the second semester that will inform and focus the area of individual research projects.

The curriculum has been designed to be informed by (and inform) the research expertise of the School, and in particular of the members of staff responsible for delivery of the course. For example, modules such as “Virtual Practice” and “Digital Design of the Built Environment” will draw on the experience of research and development of commercial software within the Construction Informatics Research Centre

Module	**Semester One**	**Credit Value**
A	Architecture in the Information Age	10
B	Digital Theories and Technologies	20
C	Digital Design of the Built Environment	20
D	Research Methods	10
	Semester Two	
E	The Digital City	10
F	Virtual Design	20
G	Digital Buildings	10
H	Virtual Practice	20
	Summer Vacation	
J	Individual research Project	60

In addition to the development of optional modules in future years it is intended to deliver individual modules as Continuing Professional Development Certificates to practitioners who are unable to commit time to full or part time study but wish to develop their skills through a combination of distance learning.

12. Criteria for Admission

Entry Requirements

Students are required to hold a good honours degree (or equivalent), ideally in a discipline related to the built environment. Applicants are expected to have basic computing skills and should be able to demonstrate these skills through passing the European Computer Driving Licence if required.

Applicants attention is also drawn to the University policy regarding language skills

13. Support for Students and their Learning

Academic Support

The School of Architecture, Planning, and Landscape provides each student with a specific academic staff member for pastoral and academic advice and guidance. Formal meeting with tutors are held at least once a term during the taught part of the course. All students have personal and e-mail access to their tutors.

Each student is also assigned at least one academic member of staff to supervise his/her final research project and dissertation.

Pastoral Support

Student Counselling Service

Located in the Union building, the Student Counselling service is there to provide a free and confidential service via trained counsellors. You can approach the service by phone (x7699) in person, or by email (Student.Counselling@ncl.ac.uk).

Welfare Officer

The Welfare Officer of the Student Union can help students with details of how to apply for hardship funds and he/she can be contacted on (7) 6471 or by email on Welfare.Union@ncl.ac.uk.

Facilities:

Library Services

The School Library is located on floor one of the main Architecture building. The library is open from 9.30 – 5.30. Most of the material in the library is either journals or what we call grey material that is reports, government circulars, guidance from the RTPI, etc. but not books. A small collection of text books is kept in the library and these are available on reference or overnight or four hour loans only. The library also has CD Rom and IT links to the main university catalogue.

Computing

Each student will have access to a high-specifications workstation provided on a hot-desking basis and equipped with the specialist software needed to tackle the most technically demanding tasks in the course. All students of the University of Newcastle can also access the public networked computer clusters available campus-wide.

Health and Safety Policy

Health and Safety issues for students on this course are in line with those in the current Architecture, Planning and Landscape guides and there are no special considerations for 3-4 Claremont Terrace.

Students with Disability Issues

At present there is no wheelchair access to 3-4 Claremont Terrace where the majority of course will be delivered. This is under discussion with the Estates Department and we are investigating mechanisms to deliver some of the programmes in other buildings.

14. Methods for Evaluating and Improving the Quality and Standards of Teaching and Learning

Student Evaluation of modules

- Student evaluation of each module and the performance of individual lecturers responsible for module delivery is obtained at the end of each module by means of questionnaires.
- Overall student feedback on the MSc programme is assessed by means of course evaluation questionnaires
- Student opinion relating to the quality of the MSc programme may be communicated to the Board of Studies by means of the Board's Student member(S)

Feedback on Student Evaluations of modules

- Data from the evaluation questionnaires is collated by the course co-ordinator and presented to a meeting of the Board of Studies for discussion of issues raised, and actions to be taken.

Module Review

- Both individual units, and the programme as a whole, are periodically reviewed in the light of the following criteria
    - Student evaluation data
    - Feedback from past graduates
    - Feedback from actual and potential employers of graduates
    - Feedback from the external examiner
    - Feedback from University Taught Programme review
    - Feedback from University Subject Review
    - Feedback from independent external reviews (QAA)
    - Relevance of the programme in relation to key technological and domain issues
    - Relevance of the programme in relation to employability of graduates
    - Relevance of the programme in relation to funding sources

Committees Responsible for monitoring and Evaluating Quality and Standards

- Board of Studies. Monitoring and evaluation of quality and standards is primarily the responsibility of the Board of Studies. Membership of the Board of Studies consists of the main course teachers , plus a student member nominated by the students
- Board of Examiners. Issues related to examinations, marks and awards are the remit of the Board of Examiners. The Board of Examiners is composed of the main teaching staff and the external examiner
- Staff-Student Committee. Wider student issues, possibly related to quality and standards of teaching and learning may also be raised at Staff-Student Committee meetings

15. Regulation of Assessment

These regulations for the degree of **Master of Science in Digital Architecture** should be read in conjunction with the University Taught Postgraduate Masters' Degree Entrance and Progress Regulations and the Examination Conventions for Taught Postgraduate programmes.

Assessment

- The following assessment methods may be used in this degree programme: unseen written examinations; seen written examinations; 'open book' examinations; take-away examinations; in-course assessment of practical, field and seminar work; assessment of essays; written and oral assessment of project work including group work; written and oral assessment of dissertation; oral examinations.
- Candidates who satisfy the examiners in the assessment specified for a module may not enter again for that assessment.

Assessment of Taught Component of Programme

- A candidate shall be deemed to have satisfied the examiners and to have passed the assessment for the taught component of the programme provided that each of the following conditions is satisfied:
- The pass mark for all modules shall be 50

Progression Requirements

- Candidates will be allowed to proceed to the dissertation only if they have passed the Research Methods module (ARC818)
- Candidates who have failed Research Methods will not proceed to dissertation and will not be awarded the MSc degree, but might still be considered by the Board of Examiners for the award of a Postgraduate Diploma, on the basis of their performance in the other taught components of the programme.

Submission of dissertation

- The precise deadline for the submission of the dissertation each year will be fixed by the Degree Programme Director and communicated to students during the induction week.
- The Degree Programme Director may, in exceptional circumstances, grant an extension of up to one month to the time for submission of the dissertation.
- An extension of up to three months can only be granted by the Dean of Postgraduate Studies.
- Extensions of over three months will have to be dealt with through the concessions route

16. Indicators of Quality and Standards

Teaching Quality

The School of Architecture Planning and Landscape teaches courses that are accredited by the Royal Institute of British Architects (RIBA) and the Royal Town Planning Institute (RTPI).

In the most recent HEFCE QAA exercises (prior to the merger of the departments) teaching in the School of Architecture was rated as "excellent" (1993/94) and Town and Country Planning was assessed as 21 out of a possible 24 (1996/97)

A recent survey by *The Guardian* newspaper ranked the Newcastle School of Architecture 2nd highest of all of the schools in the country