MRes Architecture and Digital Theory

2015-16

MRes Architecture and Digital Theory

Programme Structure and Content Description
PRELIMINARY DRAFT - NOT A CONTRACTUAL DOCUMENT

01. Plan

Term 1:
Students have a choice of 2 out of 3 offered transferrable skills modules, each worth 15 credits. Students also undertake a research mini-project worth 30 credits. This is meant to be preliminary to the main research project students will develop in terms 2 and 3.

Term 2
Students undertake a subject specific taught course worth 30 credits and commence their 90 credit research project. This research project is the core of the programme, and it will be submitted at the end of the summer, in the modes and formats indicated here below.

Total: 180 credits

02. Content

Term 1

2 out of the 3 transferrable skills modules that follow:

BENVGD21, Architectural Design: Historical, Cultural and Theoretical skills
This module is managed by the Bartlett MArch Architectural Design programme. It offers an introduction to post graduate writing skills and literature survey skills. Students are asked to produce an essay of 2500 words.
15 credits

Format: 15 hours of lectures, 15 hours of seminars or tutorials

The module has been established to ensure that students write at Masters level and can analyse text to establish relevant content to their individual programme of study. The vehicle for this is an introduction to key architectural design theoretical concepts so that these can be taken forward in Terms 2 and 3. These concepts are varied but specific to the clusters research for that year. Learning outcomes: Knowledge of the theoretical and historical issues that underpin a study of architectural design; understanding of the skills required to undertake a theoretical and historical study at post graduate level, specifically how to undertake a literature search and how to construct an appropriate bibliography.

Module tutor: Professor Stephen Gage

(This is a new module: more details on content to follow as soon as available)

BENVGAAD, Design as a Knowledge-Based Process
This module is managed by the Bartlett Space Syntax Laboratory. It offers an introduction to design as knowledge based process. Students are asked to produce an essay of 2500 words.
15 credits

This module introduces theories of design as a knowledge-based or evidence-based process and provides a range of concepts that suggest how the nature of design may itself become the object of research. The course explores contrasting perspectives in architecture, theories of scientific knowledge, linguistics, social theory and theories of technology via student debate on issues of design practice, the nature of collaboration, machine intelligence and creativity. The module is intended to get students reflecting on what they do as practitioners by asking them to consider design as a knowledge domain with a particular knowledge base--rather than simply in terms of a tacit community of practice.
Compulsory module for students in the MSc/ MRes in Spatial Design: Architecture and Cities and MSc/ MRes Adaptive Architectural Computing, managed by the Bartlett Space Syntax Laboratory.

Module tutors: Dr Sam Griffiths and Dr Sean Hanna

BENVGACH, Introduction to Processing for Architecture and Design

This module is managed by the Bartlett Space Syntax Laboratory. It offers in introduction to the use of programming scripts. Students produce a demonstration portfolio of work.
15 credits

This module covers the rudiments of programming using Processing, a Java-based language created for visual designers, architects and artists. Through the course, students learn how to use core Processing methods, and transferable programming techniques, to create programming solutions to visualisation and analysis problems.

The course begins with the elements of a Processing sketch, through variables, methods, classes, loops and conditionals, into applications in data visualisation, 3D environments, image processing and user interaction. The module is designed to take beginners through to intermediate programmers, learning about Java syntax and Processing's powerful capabilities.

Compulsory module for students in the MRes Spatial Data Science and Visualisation managed by the Bartlett Space Syntax Laboratory, and elective for students in some other programmes.

Module tutor: Dr Martin Zaltz Austwick

BENVGRD1, First Research Module

This module is managed by the "Architecture and Digital Theory" MRes programme. This is a mini-project to be presented at the end of the first term in December. Students are asked to present and defend their work verbally. The presentation will be videoed.
30 credits

Format: 6 hours of lectures, 30 hours of seminars or tutorials

Lectures will be delivered by Professors Carpo and Migayrou.
It is expected that during the inaugural year of the programme, lectures will bear on one or more of the following subjects:

1 - Archaeology of discretization. A history of digital notations (alphabet vs numbers) from Renaissance to today, but also referring to ancient astronomy and cryptography (Greek, Arab...). The history of computing (John Napier, Charles Babbage, Daniel Bernoulli, Ada Lovelace, Alan Turing...). Analog vs digital, discrete vs continuous. Contemporary debates.
2 - The role of spatial disciplines as architecture and urbanism in the history of computation (Desmond Bernal, Leslie Martin and the LUBFS research groups, Christopher Alexander and Serge Chermayeff, Bill Mitchell, Nicholas Negroponte
3 - A global mapping of the recent history of computational architecture and urbanism defined by :
- the development of CAD software (Form Z to Autocad, Catia, Rhino, Depthmap, Mathematica...) and their contribution to structural and spatial understanding
- aspects of the early digital field and recent developments (file to factory, generic computation, 3D printing, modelization and simulation...)
- A history of digitally intelligent design seen in its relationship with the development of computational tools (Peter Eisenman and Chris Yessios, Frank Gehry and Catia, Non-standard architecture...)

Each lecture will be prepared with readings and followed by one of more sessions of questions and answers and discussion.

Students' individual projects during this term will focus on researching and preparing a critical bibliography related to digital design theory in general, and to their own chosen research subject or ambit in particular. Bibliographic material will be assembled during the term, commented upon, and presented at the end of the term. Professors Carpo and Migayrou will mentor and supervise this phase of documentary collection, which may include some form of publication of the findings.

Assessment: verbal and visual presentation (filmed for record) 100 of mark; 20 minutes presentation + questions and answers

Term 2

Taught course
BENVGAH6, "History and Theory of Digital Design"

This module is currently managed by the Bartlett MA 'Architectural History' programme. The course provides a systematic, taught introduction to some of the core topics of digital design theory. Students are asked to produce an essay of 4,500 words or equivalent if multi-media are used.
30 credits
format: lectures, 30 hours

This seminar will assess the present state of computer-based design by situating today's digital turn within the long duration of the history of cultural technologies. It will first describe the technical logics of hand-making, mechanical reproductions, and digital making, and highlight the differences between digital variability, manual and artisanal variations, and the mechanical mass-production of identical copies. It will focus on some instances of identical reproduction that were crucial in architectural history, particularly on the early modern invention of architectural notations and of architectural authorship (the rise of the "Albertian paradigm" in the Renaissance), and on the rise of the modernist principle of standardization in the 20th century. It will then outline a brief history of the digital turn and of its theoretical and technological premises: from Post-Modernism and Deconstructivism and the invention of the Deleuzian "Fold" to the spline-dominated environment of the 1990s; from free-form, topology and digital formalism to mass-customization, non-standard seriality and more recent developments in digital interactivity, participatory making and building information modeling (BIM). Lastly, it will discuss the present state of digital design theory, and particularly the issue of Big Data, its cultural and epistemological implications, and its consequences for the making of form (theories of emergence, self-organizing systems, form-finding, simulation, optimization, material computation, discretization, cellular automata and agent-based design).

Students will test these interpretive patterns by developing a case study of their choice (of a media object, object, building, software, or technology).

SUBMISSION REQUIREMENTS:
75 of the Module assessment grade is the submission of a 4500-word essay on an appropriate topic related to the course, and usually in relation to one of the seminar topics, typed or word-processed, and appropriately illustrated, footnoted and referenced with a full bibliography. 25 assessment is one or more presentations, with written summaries, during the course of the module seminars (total workload per student will not exceed the equivalent of 4,500 words, regardless of the mode of submission: more information to follow in module guide).

ASSESSMENT CRITERIA: See module documentation.

Instructor: Mario Carpo

This module is compulsory for students in the MRes Architecture and Digital Theory; and an elective for students enrolled in some other Master Programmes. Limited enrolment.

BENVGRD2, Main Research Module

This module is managed by the "Architecture and Digital Theory" MRes programme. This is the major research task, to be submitted at the end of the 12 months period. Students are asked to produce a dissertation of 15,000 words or some equivalent thereof if multi-media are used. 90 credits

Format: lectures, 6 hours; 90 hourss of seminars, problem classes or tutorials.
Lectures will be presented by Professor Carpo and Migayrou
It is expected that during the inaugural year of the programme lectures will bear on one or more of the following topics:

1 - An inventory of the new processes in industrial production and their direct or indirect impact on the production and construction of architecture (materials, robotics, real or virtual urban networks). Design applications in a transdisciplinary perspective. Case studies and analyses of design projects.
2 - General mapping of the historical and critical discourses on technology and computation. Analysis of theoretical writings by architects, urbanists, engineers, historians, philosophers, and sociologists, defined through three epistemological fields: 1- Formal ontology. Bottom up modelization, modular ontologies defined by the practices, ontology of artifacts, ontology oriented objects, new materialisms; 2- Post phenomenology structuralism (Jean-François Lyotard , Alain Badiou, Peter Eisenman...) 3- Morphological structuralism (René Thom, Jean Petitot...)
3 - Interrelations and intricacy between natural and artificial. The production of nature, ecology, ecosophy (Philippe Descola...). The simulation and the production of the living. The question of the naturalization. Theories of complexity (Santa Fe School...).
4 - Genesis of space, History of geometry, algebrization, form and cognition. Mathematics, simulation and in-formation of the objet (computation). A history of modernist sources from psychophysics (Gustav Fechner, Carl Stumpf; Theodor Lipps...) to the definition of the key concept of Gestaltung. Morphodynamic modelizations, morphological models of perception and cognition. Computation and artificial intelligence.
5 - Analysis of the global cultural mutations defined by a global datascape at a world level. Toward a new urban understanding; new modes of citizenship or exclusion. Global maps and global simulation systems. Big data architectonics.

Each lecture will be prepared with readings and followed by one of more sessions of questions and answers and discussions.
There will be additional contributions from designers and theoreticians from the Bartlett or from outside the school. In some cases, this may include visits to studios or offices in London, with on-site discussions with leading practitioners and designers. Students are welcome to suggest visits and meetings with designers or theoreticians relevant to their projects.

During the second term, students will proceed from the collection of bibliographic materials and the discussion of sources to the formulation of their research projects, to be finalized at the end of

the second term. The third term will be devoted to research and writing. Tutorials with Professors Carpo and Migayrou will take place at regular intervals throughout the second and third term.

Assessment: a written thesis of 15,000 words; 100   of the mark

03. Progression

BENVGD21 is submitted in the first week of the spring term. Students are given a formative mark. This mark will be reported to the MRes June Exam Board for Information. The summative mark will be confirmed at the MArch AD exam board in September and forwarded to the MRes September Exam Board

BENVGAAD and BENVGACH are submitted in the last week of the autumn term. Summative marks are given at the MRes June Exam Board.

BENVGAH6 is submitted in the last week of the spring term. Formative marks are given with summative marks awarded at the MAAH examination in September

BENVGRD1 is submitted in the last week of the autumn term. Summative marks are given at the MRes June Exam Board. Failing students then have the option to re submit this module by September with a mark confirmed at the MRes September Exam Board or students can resubmit in the following Academic Year.

BENVGRD2 is submitted at the end of the summer vacation. Summative marks are given at the MRes September Exam Board. Failing students can resubmit in the following Academic Year.

MC, FM 4 July 2015