



Course Syllabus

Course Code	Course Title	ECTS Credits
ARCH-311	Construction I - Masonry/Reinforced Concrete	4
Prerequisites	Department	Semester
ARCH -112/ARCH-212	Architecture	Fall
Type of Course	Field	Language of Instruction
Required	Architecture	English
Level of Course	Lecturer(s)	Year of Study
1 st Cycle	Markella Menikou	3 rd
Mode of Delivery	Work Placement	Corequisites
Face to Face	N/A	ARCH-331

Course Objectives:

The main objectives of the course are to:

- Introduce students to the application of a knowledge base that clearly differentiates architecture from other processes of cultural production.
- Present the basic material characteristics and properties of concrete and masonry.
- Develop a foundational knowledge of the manufacturing processes and properties of concrete and masonry as applied in building construction.
- Introduce the principles of concrete and masonry structures and their behaviour in load carrying.
- Encourage students to appreciate the historic significance of technological development in architecture and how materials, techniques in structure, construction and environmental modification are integrated in the generation and realisation of architectural designs.
- Introduce the principles underlying performance criteria in construction, identify reference texts to build knowledge and understanding and explore contemporary case studies to test analytic capability and develop a 'language of construction'.
- Introduce students to the construction and structural principles of masonry and concrete, both as principal systems of primary structure as well as infill materials.
- Present technical and functional aspects of the construction of masonry/concrete through advanced studies.
- Inspire students to engage in experimental/ alternative use of materials through a solid understanding of the basic/ traditional applications.
- Introduce students to detail drawing as a tool for studying and devising construction applications.

Learning Outcomes:

After completion of the course students are expected to be able to:

1. Recognise the terminology used in concrete and masonry construction, and the performance criteria applied to construction.
2. Comprehend the basic material characteristics and properties of concrete and masonry.
3. Interpret the principles, possibilities and limitations in using these materials as load carrying structures.
4. Identify how sustainability and the principles of environmental modification are applied in concrete and masonry construction.
5. Analyse construction drawings in the context of both 'instrumental' and 'experiential' performance.
6. Demonstrate their ability to undertake research, analysis and develop understanding from directed reading and published precedent that supports the acquisition of technological knowledge.
7. Assess, apply and integrate appropriate concrete and masonry construction systems in response to user needs, architectural intentions, building regulations, context and performance criteria.

Course Content:

- Principles underlying performance criteria in building construction
- Materials and processes
- Properties of Masonry/concrete construction
- Masonry/concrete terminology
- Types of masonry/concrete construction
- Systems with linear concrete structural members
- Systems with planar structural concrete members
- Loading and deformation
- Reinforced concrete
- Thermal movement
- Grades, reinforcement cover and formwork
- In-situ / pre-cast construction
- Prestressing / post tensioning
- Claddings
- Roof systems
- Water Penetration Resistance
- Repetition : degree of duplication / economy of production
- Dimensional co-ordination : manufacturing tolerances / precision of fit/ standardisation/ modularisation
- Handling : component dimensions / manufacture>transportation>assembly
- Prefabrication
- The process of construction and the concept of Buildability
- Rules for detail
- Degree of conversion
- Time : weathering / wear

- Sensual qualities of construction
- Preliminary sizing

Learning Activities and Teaching Methods:

Lectures, directed readings, case studies analysis, desk-crits, group discussions, student participation, presentations.

Assessment methods:

Case study analysis assignment (Midterm Exam), Final assignment, Attendance + Participation, Final Exams

Required Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
CONSTRUCTING ARCHITECTURE, Materials Processes Structures (2 nd Edition)	Andrea Deplazes	Birkhauser	2008	3764386304
Lecturer's Notes	Markella Menikou			

Recommended Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Building Construction Illustrated(4 th edition)	Francis Ching	Wiley	2008	0470087811
Modern Construction Envelopes	Watts Andrew	Ambra	2014	9783990436042
Modern Construction Handbook	Watts Andrew	Ambra	2013	9783990434550
Mitchell's - Introduction to Building (3rd edition)	Derek Osbourn & Roger Greeno	Longman Group, UK	2002	0582473039