

**SYLLABUSES FOR THE DEGREE OF
MASTER OF SCIENCE IN SUSTAINABLE ENVIRONMENTAL DESIGN
MSc(SED)**

(The syllabuses are applicable to candidates admitted to the Master of Science in Sustainable Environmental Design in the 2022-23 academic year and thereafter.)

(see also General Regulations and Regulations for Taught Postgraduate Curricula)

1. CURRICULUM STRUCTURE

Candidates entering the Master of Science in Sustainable Environmental Design are required to complete a total of 60 credits of courses, consisting of 48 credits of core courses and 12 credits of elective courses.

The curriculum shall normally require one academic year of full-time study, or two academic years of part-time study. Candidates shall not be permitted to extend their studies beyond the maximum period of registration of three academic years of full-time study, or four academic years of part-time study, unless otherwise permitted or required by the Board of the Faculty.

Candidates are required to follow courses of instruction and satisfy the examiners in each of the following core courses:

- SEED6101 Bioclimatic Building Design (6 credits)
- SEED6102 Innovation and Smart Technology for Sustainable Development (6 credits)
- SEED6103 Environmental Simulation and Performance Assessment Tools (6 credits)
- SEED6104 Dissertation Part 1 (Capstone Experience) (6 credits)
- SEED6201 Green Building Assessment and Climate Responsive Design (6 credits)
- SEED6202 City Risk and Resilience: Emerging Planning Theories and Practices (6 credits)
- SEED6203 Designing for a Changing Climate (6 credits)
- SEED6204 Dissertation Part 2 (Capstone Experience) (6 credits)

In addition, candidates are also required to select and complete 12 credits of elective courses from the list of courses below. It should be noted that not all elective courses listed in the syllabuses would be offered every year and that new elective course(s) may be introduced from time to time. Candidates' selection of elective courses shall be approved by the Programme Director.

Elective Courses:

- SEED6301 Building and Urban Acoustics (6 credits)
 - SEED6302 Selective Environment-Landscape– Case Studies (6 credits)
 - SEED6303 Environmental Policy and Management for Megacities (6 credits)
 - SEED6304 Life Cycle Assessment and Net-Zero Carbon Emission (6 credits)
 - SEED6305 Topical Study I in Environmental Design (6 credits)
 - SEED6306 Topical Study II in Sustainable Design and Urban Development (6 credits)
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2. ASSESSMENT

Each of the courses followed by candidates is examined either by an assessment of coursework, or by a combination of coursework assessment and a written examination. To complete the curriculum, candidates shall satisfy all the assessments and the relevant requirements prescribed in the Regulations for the Degree of Master of Science in Sustainable Environmental Design.

3. COURSE LIST

Core Courses

SEED6101 Bioclimatic Building Design (6 credits)

This course introduces the principles of bioclimatic building design, so as to maximize thermal comfort and minimize the need for energy for heating and for cooling of the buildings. The effect of various architectural decisions on the indoor climate is discussed in details. The effect of any design feature, such as that of building's orientation, is not "fixed" but depends on the design details of other design features, such walls' color and windows' shading conditions. These quantitative interactions between the effects of the various design details will be discussed in details in the class.

Assessment: 70% continuous coursework assessment; 30% examination

SEED6102 Innovation and Smart Technology for Sustainable Development (6 credits)

The course first looks into the theoretical framework of an integrated approach to smart and sustainable development. A brief introduction to technicalities of the modeling structure as well as the simulation engines will lay the foundation for how the tools could be applied in practice. The rest of course focuses on methods to apply these tools to design studies, and how useful information could be interpreted from the simulation results.

Assessment: 100% continuous coursework assessment

SEED6103 Environmental Simulation and Performance Assessment Tools (6 credits)

This hands-on course runs in day-long weekly sessions that follow the tasks of the Term 1 team projects, introducing the analytical procedures and computational tools that drive the research agenda of the Master Programme. The course will begin with fieldwork techniques based on indoor and outdoor observations and environmental measurements. This is followed by computer modelling of selected processes and spaces, testing of models against measurements and performing simulations to assess the effects of solar, thermal, airflow and daylighting processes against targets and benchmarks. A range of computational tools will be introduced

and applied to diagnostic tasks as well as generative processes. Their application will initially be explored on the team projects providing the essential expertise required for undertaking the master dissertation research in Terms 2.

Assessment: 100% continuous coursework assessment

SEED6104 Dissertation Part 1 (Capstone Experience) (6 credits)

The written dissertation allows student an opportunity to conduct a scholarly investigation into a chosen aspect of sustainable and environmental design. Dissertation Part 1's teaching focuses on the research methodology, literature review and case studies.

Assessment: 100% continuous coursework assessment

SEED6201 Green Building Assessment and Climate Responsive Design (6 credits)

This course first introduces the background and development of green and sustainable development. It then examines the environmental impact of building activities on the eco-system through a number of more established environmental concepts (for example, embodied energy, carbon dioxide emission, energy life cycle assessment, environmental impact assessment). Tools and methods for assessing building's environmental impact will be critically evaluated and applied through case studies.

Assessment: 100% continuous coursework assessment

SEED6202 City Risk and Resilience: Emerging Planning Theories and Practices (6 credits)

This course provides an introduction of city risk and resilience. As cities with the capacity to plan for and mitigate adverse impacts of disasters and climate change, thus enabling them to save lives, reduce losses and unlock economic and social potential. The aim of the Course is to catalyze a shift from a primarily solid, single-stream city-level resilience operations approach to longer term, more comprehensive, multi-disciplinary packages of technical and financial services, building the pipeline for viable projects at the city level that, in turn, build resilience.

Assessment: 70% continuous coursework assessment; 30% examination

SEED6203 Designing for a Changing Climate (6 credits)

This course provides an introduction of climate-sensitive design principles and solutions for solving the climate change related environmental problems. Students are encouraged to team up to conduct their own group project. The aims of this module are (i) to provide an introduction

to the physical basis of climate change; (ii) to discuss how a changing climate might impact upon the built environment; (iii) to consider what adaptation and mitigation actions can be taken to reduce this impact; (iv) to develop an understanding of how climate-resilient built-environment and landscapes can be designed.

Assessment: 70% continuous coursework assessment; 30% examination

SEED6204 Dissertation Part 2 (Capstone Experience) (6 credits)

Dissertation of part 2 allows student an opportunity to conduct an original research for their selected case studies and develop the environmental design solutions and related findings to meet the need of sustainable development.

Assessment: 100% continuous coursework assessment

Elective Courses

SEED6301 Building and Urban Acoustics (6 credits)

Designing buildings for sound and acoustics involves an empirical appreciation of sound and music, as well as the technicalities of hearing and acoustic modeling. This course introduces the fundamentals of room and space acoustics. Various acoustic testing, evaluation and monitoring techniques will be discussed. This is followed by an examination of design techniques (for example, room geometry, reverberation time, use of acoustic materials, noise buffer and barriers, building geometry and configurations and so on) for various building types and urban spaces.

Assessment: 100% continuous coursework assessment

SEED6302 Selective Environment-Landscape – Case Studies (6 credits)

The art of architecture not only embraces the fundamental need for shelter from the natural elements, it also has other purposes and meanings. The selective environment-landscape is an approach to environmentally responsive architectural and community design that seeks to make connections between the technical application of building sciences and the sustenance of cultural identity during rapid global changes. Through a number of critical case studies of buildings and communities worldwide, the course aims to explore a number of themes and to relate theory to practice.

Assessment: 100% continuous coursework assessment

SEED6303 Environmental Policy and Management for Megacities (6 credits)

This course provides an advanced introduction to public policies for protecting the natural environment, and to conflicts over the use of those policies and who has the authority to make decisions about them. The course will introduce students to some core concepts in environmental economics and to familiarize students with the dilemmas and trade-offs that governments face in making decisions with respect to the natural environment. It also aims to make students aware of a range of factors that need to be considered when making environmental policy.

Assessment: 100% continuous coursework assessment

SEED6304 Life Cycle Assessment and Net-Zero Carbon Emission (6 credits)

How do you tell that a building is green? On what basis a green and sustainable building could be evaluated. There are many methods in use nowadays. The course will introduce some of the more popular methods such as life cycle assessment and net-zero carbon emission and their underlining principles. Students are expected to try some of these methods out themselves in the class.

Assessment: 100% continuous coursework assessment

SEED6305 Topical Study I in Environmental Design (6 credits)

The course consists of directed investigation into selected current issues and practice in Environmental Design in cities.

Assessment: 100% continuous coursework assessment

SEED6306 Topical Study II in Sustainable Design and Urban Development (6 credits)

The course consists of directed investigation into selected current issues and practice in sustainable design and urban development.

Assessment: 100% continuous coursework assessment
