SYLLABUSES FOR THE DEGREE OF MASTER OF DIGITAL URBAN MANAGEMENT (MDUM)

(See Also General Regulations and Regulations for Taught Postgraduate Curricula)

These syllabuses are applicable to candidates who are admitted to the Master of Digital Urban Management curriculum in the academic year 2025-26 and thereafter

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A.   CURRICULUM STRUCTURE

The curriculum shall include assessment of the prescribed courses, subject to the approval of the Head of Department of Urban Planning and Design, and a Dissertation/Capstone Project. Candidates are required to complete a total of 69 credits of courses, with 36 credits of compulsory courses, 18 credits of elective courses and a dissertation with 15 credits, or a capstone project with 15 credits. The grading system to be used in the curriculum is letter grades and grade points.

Candidates are required to follow courses of instruction and satisfy the examiners in the following Core Courses:

Core Courses (Compulsory)

MDUM1010	Management of Urban Systems	(6 credits)
MDUM1020	Urban Economics	(6 credits)
MDUM1030	Municipal Finance for Urban Practitioners	(6 credits)
MDUM2010	Urban Sustainability and ESG	(6 credits)
MDUM2020	Digital Technologies and Smart Cities	(6 credits)
MDUM2030	Urban Governance and Policymaking in the Digital Age	(6 credits)

and complete a total of 18 credits of Elective Courses selected from a list approved from time to time. Candidates' selection of courses shall be approved by the Head of Department of Urban Planning and Design. In addition, candidates are required to complete satisfactorily a Dissertation/Capstone Project by a date as prescribed in the course outline .

Elective Courses

Elective courses are grouped under different specialisms. Candidates are required to take *three* elective courses with 18 credits. Choosing *three* elective courses from the same category will form a specialism of the curriculum. The specialism of the candidates will be shown on the academic transcript. Candidates can choose not to focus on any specialism. This list may vary from year to year.

Urban Policy and Management Specialism:

URBP6002	Urban Development Theories	(6 credits)
URBP6003	Planning Practice, Law and Ethics in Hong Kong	(6 credits)
URBP6006	Planning, Managing and Financing the Development Process	(6 credits)
URBP6131	Transport Policy and Planning	(6 credits)
URBP6157	Transport Economics	(6 credits)
URBP8002	International Planning Policy and Practice	(6 credits)
URBP7005	Planning Future Cities and Regions	(6 credits)
MHCD7002	Principles of Healthy Cities	(6 credits)
MHMP8013	Smart and Sustainable Cities	(6 credits)

Urban Technology and Analytics Specialism:

URBA6002	Urban Big Data Analytics	(6 credits)
URBA6004	Spatial Mobilities Analytics	(6 credits)

URBA6006	Science of Cities	(6 credits)
URBA6007	Geographical Information System (GIS) for Urban and Regional Planning Development	(6 credits)
URBA6008	Spatial Planning Analytics	(6 credits)
URBA6009	Artificial Intelligence for Future Cities	(6 credits)
URBA6011	Programming and Foundations in Urban Data Analysis	(6 credits)
MUDT5010	Transport Network Analysis and Modelling	(6 credits)
MHCD7003	Health Impact Assessment of Urban Development Projects	(6 credits)

Capstone Experience
MDUM8010   Dissertation (15 credits)
MDUM8020   Capstone Project (15 credits)

B.   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 Digital Urban Management.

C.   COURSE LIST

Core Courses

Students are required to take all Core Courses:

MDUM1010   Management of Urban Systems (6 credits)

The course provides a solid foundation for understanding the complexities of managing urban systems. Students will learn the main challenges that urban systems are confronted with today, and the management and governance of interrelated urban systems, such as land, transportation, energy and environment systems. The course will also analyse real-world scenarios of using digital smart technologies for urban system management, and offer insights into the transitions to smart urban systems.

Assessment: 100% continuous coursework assessment

MDUM1020   Urban Economics (6 credits)

This course provides an introduction to urban economics. The course will cover fundamental models in land use, transportation, and housing markets. It will also discuss the role of government in urban economic development. Students will learn the economic factors that influence decisions about where to live, work, and invest in cities. They will also explore the impacts of public policies on urban economies, including taxation, transportation, and housing policies.

Assessment: 50% continuous coursework assessment, 50% examination

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MDUM1030   Municipal Finance for Urban Practitioners (6 credits)

This course aims to equip urban practitioners the necessary knowledge to participate in financing and funding decisions for cities. The objectives include teaching financial concepts at a municipal level for practical application, comparing financing choices among different countries, comprehending the diverse social, political, and historical contexts that influence institutional financing structures, and linking sectoral insights with financing decisions to enhance urban practices on local, regional, and global scales.

Assessment: 100% continuous coursework assessment

MDUM2010   Urban Sustainability and ESG (6 credits)

This course introduces the concepts of urban sustainability and Environmental, Social, and Governance (ESG) principles within the context of city management. The focus will be on understanding how cities can be developed and managed to balance economic vitality, environmental protection, and social equity. It will discuss the challenges and opportunities in sustainable urban development.

Assessment: 100% continuous coursework assessment

MDUM2020   Digital Technologies and Smart Cities (6 credits)

This course explores the role of digital technologies in smart cities. It provides a comprehensive understanding of how technologies such as the Internet of Things (IoT), Artificial Intelligence (AI), Big Data analytics, and Geographic Information Systems (GIS) are transforming urban environments and services. The course will also cover the impacts of these technologies on urban planning, public administration, and citizen engagement.

Assessment: 100% continuous coursework assessment

MDUM2030   Urban Governance and Policymaking in the Digital Age (6 credits)

This course explores the evolving dynamics of urban governance and policymaking in the context of the digital age. The course will cover the concepts and forms in governance and policymaking, and delve into algorithmic governance and data-driven policymaking. Students will also learn how cities around the world integrated technology into their governance models, as well as the ethic and privacy associated with the use of data and algorithms in city management.

Assessment: 100% continuous coursework assessment

Elective Courses

URBP6002   Urban Development Theories (6 credits)

This course reviews the theoretical frameworks for the understanding of urban development processes. It analyses the economic, spatial and socio-political dimensions of urban activities. The dynamics of urbanisation in the global production system, the relations between capital accumulation and urban development, place marketing and the rise of the creative cities will be discussed.

Assessment: 100% continuous coursework assessment

URBP6003   Planning Practice, Law and Ethics in Hong Kong (6 credits)

This course provides a detailed understanding of professional planning practice in Hong Kong. It deals with the practical dimensions of planning in both the public and private sectors. The course reviews the history, policies, strategies, administrative and legal procedures of planning. It also examines issues surrounding the ethical basis of professional planning activity.

Assessment: 60%-70% continuous coursework assessment and 30%-40% examination

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URBP6006   Planning, Managing and Financing the Development Process (6 credits)

Planning in a development process needs to take into account a variety of spatial, sectoral, resources management and financial factors. This course examines the interactions of these factors in development processes initiated by the public sector, the private developers or through various modes of public-private partnership. The intersectoral and spatial implications of the development processes will be explored through case studies of planning at different geographical scales in the context of Hong Kong.

Assessment: 100% continuous coursework assessment

URBP6131   Transport Policy and Planning (6 credits)

This course focuses on key issues in transport policy and the implementation of transport plans and programmes. It examines the role of private and public modes within the overall urban transport system as well as pedestrian movement planning, airport development and seaport development. The course uses examples drawn from various countries to evaluate the appropriateness and effectiveness of alternative policies and implementation mechanisms.

Assessment: 100% continuous coursework assessment

URBP6157   Transport Economics (6 credits)

This course helps to develop a specialist appreciation of the economics of urban transport provision. It highlights the economic principles and techniques employed in planning, operating and managing our city transport systems and concentrates on topics such as: travel time valuation, road congestion costing and pricing, public transport finance and cost-recovery, and economic appraisal techniques employed therein.

Assessment: 40%-60% continuous coursework assessment; 40%-60% examination

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URBP7005   Planning Future Cities and Regions (6 credits)

In this course, class participants explore prevalent and emerging challenges cities and regions confront in pursuing sustainable development and discuss potential planning and policy solutions to such challenges. In detail, the course covers three main topics: key concepts/theories of sustainable development and global megatrends, such as slow growth, ageing, inequality, and climate change; available planning and policy tools for sustainable development—and in response to the megatrends— and related performance/impact assessment systems; and contemporary practice in both local and international contexts.

Assessment: 100% continuous coursework assessment

URBP8002   International Planning Policy and Practice (6 credits)

This course examines different planning systems across the world and the ideologies and values behind the planning processes and approaches. Understanding the key approaches to urban planning in different countries and regions of different governance regimes is important in developing an appreciation of how different ideologies and political economies give rise to different planning policies and practices to shape the urban landscapes of various localities within their own contexts. The course takes a comparative approach to understand and evaluate planning policy and practice and the planning outcomes across a spectrum of international case studies, and attempts to explain their differences and similarities by probing into the dynamics between government intervention and market freedom, diversity in development certainty vis-à-vis land use controls and planning governance modes.

Assessment: 100% continuous coursework assessment

MHCD7002   Principles of Healthy Cities (6 credits)

This is a theoretical course focusing on fundamental concepts, theories and models on a wide range of emerging urban health issues at local, regional and global scales. The aim is to employ systems thinking to elucidate the intrinsic multifactorial interactions between urban space and human behaviour and lifestyle resulting in the socio-spatial production of health. Urban planning, design and policy aspects at building-, neighbourhood- and city-levels promoting active-living, salutogenicity, social cohesion and racial inclusivity, age-friendliness, climate change-resilience, pandemic-resilience and longevity-readiness, and their role in population health and wellbeing will be discussed.

Assessment: 0%-70% examination and/or 30%-100% continuous coursework assessment

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MHMP8013   Smart and Sustainable Cities (6 credits)

This course examines the rise of smart and sustainable cities, as mobilized by a range of governance actors from the urban to global scale, including their origins, construction and management. It explores the underlying motivation for these specific urban models - often grounded in the UN Sustainable Development Goals (SDGs) - their potential, but also their more problematic aspects. The course will introduce key theories that have been used to understand smart and sustainable cities, and relevant planning and governance issues. Learning activities will involve case studies, debates, and field research intended to enhance student engagement.

Assessment: 0%-70% examination and/or 30%-100% continuous coursework assessment

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URBA6002   Urban Big Data Analytics (6 credits)

This course further develops students' knowledge and skills in handling, analysing and modelling urban data, especially big data. Students will learn conceptual frameworks for analysing and modelling urban issues, methodologies and software tools for processing and modelling urban data; as well as applying urban models and analytics to empirical cases. The aim of this course is to equip students with advanced urban modelling and analytics to explain current urban conditions and predict future urban changes beyond the smart era.

Assessment: 100% continuous coursework assessment

Prerequisite: URBA6011 Programming and Foundations in Urban Data Analysis

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URBA6004 Spatial Mobilities Analytics (6 credits)

This course discusses how space, society (institutions) and accessibility are related and how accessibility should be defined, analysed and designed/improved in light of the existing, possible or proposed spatial arrangements of socially valued goods, services and opportunities, which are embedded in, and shaped by social norms, values and institutions. It argues that complex relationships exist between space, society and accessibility, which should be accounted for in related policy/planning interventions. Students will learn to understand, analyse, manage and harmonise such relationships to deliver desirable outcomes such as efficiency, equity, quality of life and sustainability.

Assessment: 100% continuous coursework assessment

Prerequisite: URBA6011 Programming and Foundations in Urban Data Analysis

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URBA6006 Science of Cities (6 credits)

This course introduces fundamental theories and models for an emerging field of urban sciences, with emphasis on the urban economics, regional science, and spatial planning literature. The primary goal of this course is to strengthen students' theoretic and scientific bases for cities and regions as a prerequisite for the mastery of advanced data analytics or urban modelling techniques. A thorough understanding of the city and the system of cities is essential in developing expertise in urban science, and taking advantage of advanced data analytics and modeling tools would not be possible without the former.

Assessment: 100% continuous coursework assessment

URBA6007 Geographic Information System (GIS) for Urban and Regional Planning Development (6 credits)

This course introduces the basic concepts and methods in the use of geographic information system as a spatial planning support system in different areas of urban and regional planning and development. It examines the basic principles and functions of geographic information system in data input, manipulation, retrieval, visualization and modelling of geographical data for supporting spatial planning decisions.

Assessment: 100% continuous coursework assessment

URBA6008 Spatial Planning Analytics (6 credits)

Spatial planning shapes the built environment and human activities across sites, neighbourhoods, cities and regions. This course introduces the basic concepts and methods in the use of spatial analytics and modelling to support sustainable urban development across different spatial scales. It is applied oriented and designed to equip students with analytical and modelling techniques for measuring, modelling and predicting urban spatial changes. It covers a wide range of topics, including urban form metrics, geodesign, location choice models, frameworks for land use and transport interaction, and scenario planning. Students will be required to reflect on and design context-specific strategies for a sustainable urban future, based on spatial planning analytics and modelling.

Assessment: 100% continuous coursework assessment

URBA6009   Artificial Intelligence for Future Cities (6 credits)

This course provides an introduction to programing, computational thinking, and artificial intelligence (AI), which have become essential skills in the fields of smart cities and urban science. Students are expected to reflect how software, data, smart technologies and AI are becoming integral to future smart cities; learn key concepts, algorithms, and data structures; acquire skills and experiences in computer programing; and understand how programing can be applied to solve urban problems.

Assessment: 100% continuous coursework assessment
Prerequisite: URBA6011. Programming and Foundations in Urban Data Analysis

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URBA6011   Programming and Foundations in Urban Data Analysis (6 credits)

Spatial data has become indispensable for building a smart city, particularly in city planning, design and management. This involves new means of capturing spatial data by different types of sensors, advanced application of Artificial Intelligence (AI) and rapid development of spatial analytics in the area of Geographic Information System (GIS) and Building Information Modelling (BIM). The main objective of this course is to equip students from relevant disciplines (e.g. land use planning, surveying, architecture, landscape architecture, engineering, environmental science and social sciences) with foundational knowledge and programming techniques on spatial data analysis.

Assessment: 100% continuous coursework assessment

MUDT5010   Transport Network Analysis and Modelling (6 credits)

This course introduces a variety of advanced analytical methods for analyzing and modelling urban transportation systems, stressing a qualitative understanding and the applications of these methods in urban transport design. The primary methods introduced will include complex networks, machine learning, and simulation-based methods. Throughout the course, we will focus on the applications of these methods to the design of transport systems, with an eye towards how these designs can facilitate urban vitality, sustainability, accessibility, and various factors of well-being (for example resilience, disease spread, social integration, and equity).

Assessment: 100% continuous coursework assessment

MHCD7003   Health Impact Assessment of Urban Development Projects   (6 credits)

Urbanisation is one of the leading global trends of the 21st century. It has been found that urban development is closely associated with significant human health in both direct and indirect way. This course will introduce Health Impact Assessment as a tool to internalize evidence in our decision-making process with focus on health externalities. The process of full-chain health impact assessment including exposure assessment, health risk assessment and economic evaluation of various aspects of urban design and urban and transport development projects will be elucidated.

Assessment: 30% - 100% continuous coursework assessment and/or 0% - 70% examination

Not all elective courses are available each year and list of courses may vary from year to year. Selection of elective courses offered by other taught postgraduate curricula of the Faculty of Architecture is subject to prior approval by the Head of Department in consultation with the respective Programme Directors. Please check the courses offered by these curricula at the time of enrolment and refer to the respective syllabuses for the course descriptions.

Capstone Experience

Students can choose between a dissertation and a capstone project.

MDUM8010   Dissertation (15 credits)

The candidate shall present a dissertation of not more than 15,000 words by a date as prescribed in the course outline. The dissertation must be related to the candidate's specialisation. The examiners may prescribe an oral examination on the subject of the dissertation.

Assessment: 100% continuous coursework assessment

MDUM8020   Capstone Project (15 credits)

The capstone project provides students with an opportunity to apply the techniques learned in the programme in analyzing real world smart technology applications. Students work in a team of 4-5 members to define their research problems, undertake literature review, identify research gaps, develop appropriate research methods, collect and analyse data, and write research reports. There will be two assessment components, namely a group report (around 12,000 – 20,000 words) and individual papers (around 3,000 – 6,000 words). Students will undertake the project under the guidance of a supervisor and meet with the supervisor every week to ensure the progress and quality of the project. The capstone project shall be presented by a date as prescribed in the course outline.

Assessment: 100% continuous coursework assessment

September 2025