SYLLABUSES FOR THE DEGREE OF
MASTER OF SCIENCE IN URBAN DESIGN AND TRANSPORT (MSc(UDT))

(These syllabuses are applicable to candidates admitted to the Master of Science in Urban Design and Transport curriculum in the 2023-2024 academic year and thereafter)

(See also General Regulations and Regulations for Taught Postgraduate curricula)

The Department of Urban Planning and Design offers a postgraduate course leading to the degree of Master of Science in Urban Design and Transport.

CURRICULUM STRUCTURE

The curriculum shall include assessment of the prescribed and elective courses subject to the approval of the Head of the Department of Urban Planning and Design, the Urban Design Studios and the Research Dissertation and Urban Design & Transport Thesis Project. Candidates studying the full-time curriculum are required to complete a total of 120 credits of courses.

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

Core courses (Compulsory)

MUDP1030 Morphologies and Urban Design Theories	6 credits
URBA6011. Programming and Foundations in Urban Data Analysis	6 credits
URBP7005 Planning Future Cities and Regions	6 credits
URBA6004 Spatial Mobilities Analytics	6 credits
URBA6008 Spatial Planning Analytics	6 credits
MUDP2010 Research Methods and Techniques	6 credits
GEOG7001 Survey and Data Analysis in Transport Studies	6 credits
MUDT5010 Transport Network Analysis and Modelling	6 credits

Studio Courses (Compulsory)
Candidates shall complete the following studios courses:

MUDT7001 Strategic Urban Design and Transport, New Town Studio	12 credits
MUDT1002 Public Transport Interchange Urban Design Studio	12 credits

Capstone Experience (Compulsory)
Candidates shall complete the following capstone experience course:

MUDT1003 Research Dissertation and Urban Design & Transport Thesis Project	30 credits

And a total of 18 credits of Elective Courses as specialization selected from a list approved from time to time. Candidates' selection of courses shall be approved by the Head of the Department.

Elective Courses | 18 credits

CIVL7006 Optimization Techniques for Transportation Applications
CIVL6007 Behavioral Travel Demand Modelling
URBP6157 Transport Economics
URBP6131 Transport Policy and Planning
URBP6123 Public Transport Systems

URBP6006 Planning, Managing and Financing the Development Process
URBP6003 Planning Practice, Law and Ethics in Hong Kong
URBP8003 Land and Real Estate Markets: Smart Governance, Finance and Business Models
URBP7006 GIS and Smart Technology in Spatial Planning

MHCD7001 Design, Survey and Modelling for Urban Health
MHCD7002 Principles of Healthy Cities
MHMP6858 Housing Economics
MHMP7007 International Housing Policies and Practices
MHMP8008 Transitional Cities: Urban and Housing Development
MHMP8013 Smart and Sustainable Cities
URBP6904 Housing Planning, and Sustainability

CORE COURSES (Compulsory)

MUDP1030 Morphologies and Urban Design Theories | 6 credits

This course introduces the three natures of urban morphology: natural, built environment, institutional configurations and urban design theories. Introduction to urban morphologies will examine key concepts, the study of the formation of urban fabric, the relationship of these components through time and at different spatial scales in local and international contexts. Urban design theories describe the state of the art of research about the relationship between urban morphology and human effects and other impacts referenced to the key historical urban design thinkers.

Assessment: 100% continuous coursework assessment

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 techniques on spatial data analysis.

Assessment: 100% continuous coursework assessment

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

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

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

MUDP2010 Research Methods and Techniques | 6 credits

The course introduces research design and research methodology and their limitations appropriate for urban design. Topics include: research paradigms, the emergence of design research, formulation of research questions; range of research methods and resources needs; choices of research methods and limitations; formulation of research proposals; use of digital techniques in urban design research.

Assessment: 100% continuous coursework assessment

GEOG7001 Survey and Data Analysis in Transport Studies | 6 credits

Surveys are commonly used to collect useful data in transport studies. A myriad of survey methods and instruments are available. This course covers the major aspects including survey design, sampling, hypothesis testing, interview and questionnaire design, survey implementation and administration, computer-based data processing, analysis and retrieval and report writing. Different aspects of surveys are discussed with reference to the transport-related professions and disciplines in different political and socio-economic contexts. Examples include travel characteristics, origin-destination, freight and public transport surveys conducted in Hong Kong and the other parts of the world. The fundamentals of spatial and non-spatial data analysis are covered using selected software. Moreover, some key opportunities and challenges of big data are discussed.

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

Studio Courses (Compulsory)

The Studios are the critical component of the MSc programme. The design studios link the theories and issues raised in the core and elective courses with the practical analysis of urban design, transport and accessibility issues and the formulation of proposals for soft and hard interventions. The courses lead students through the process of experiential and problem-based learning in urban design, transport and accessibility and engaging with the different ways urban design, transport and accessibility relates to policy development, planning processes, legal contexts, financing Instruments, multi-scale configuration and organisation and the existing and emerging values of complex urban societies. Each studio focuses on important aspects of urban design, transport, mobility and accessibility fields both informed by research about design and creative modes of research for design and by/through design.

MUDT7001 Strategic Urban Design and Transport, New Town Studio | 12 credits

This is the first urban design and transport studio in the Programme. The course introduces key concepts and principles of strategic urban design, transport, and accessibility at a range of spatial scales (both process and content) with a focus on spatial intervention scale such as New Town, New Area, New District, urban extension and their contemporary equivalent (e.g., eco-city). A deep experiential format includes recent past spatial studies of HK, Shenzhen, and Singapore New Towns (NT), NT visits, NT projects reviews, studio-based tutorials, and engagement with Hong Kong generation of NT. Students acquire strategic urban design and transport-mobility-accessibility analytical and design skills through a series of project-based stages. Students are also introduced to and develop a proficiency in graphic (computer 2D/3D visualizations) and 2D and 3D urban design analytics visualisation, written and oral communication skills associated with urban design reviews attended by external professionals. Students get experience of working in teams of four or five preparing and making presentations of preliminary strategic urban design options while further developing individual urban design capacity, learning critically the importance of spatial configuration and their resulting impacts.

Assessment: 100% continuous coursework assessment

MUDT1002 Public Transport Interchange Urban Design Studio | 12 credits

In large metropolis, Public Transport Interchange (PTI) and its service area is an everyday experience. PTI are associated with Transit Oriented Development as one of the most successful attempts made worldwide to achieve sustainable urban development through promotion of high-density public transport nodes. Increasingly interchange service area and TOD have become multi-levels, mixed uses, integrating community amenities and public spaces to become proliferating mega-structure. PTI and TOD design investments are variable with mixed results. This studio is designed to engage student's understanding and designing of the complex multi-faceted transport, mobility-accessibility and urban design nature of contemporary interchange and its service area. Hong Kong has a wide range of PTI-TOD configurations. An international field study visit expands the understanding of emerging issues and design. Students will have opportunities to practise and refine questionnaire design, survey, and data analysis. Students get experience of working in teams preparing and making presentations of preliminary strategic urban design options while further developing individual urban design capacity, learning critically the importance of spatial configuration and their resulting impacts.

Assessment: 100% continuous coursework assessment

Capstone Experience (Compulsory)

MUDT1003 Research Dissertation and Urban Design & Transport Thesis Project | 30 credits

The research dissertation in urban design and transport and the urban design thesis project are the culmination of the

MSc Programme. The course is independently led by the student with supervision.

The course has three components: a research dissertation about urban design and transport in the manner of academic research paper, an urban design & transport thesis project proposal and an urban design & transport thesis project report in the manner of a design report. The urban design project should be informed by the research component and should demonstrate knowledge, use and limitations of research about design, research for design and research by design.

The research dissertation and the design report are respectively 6,000 words ±10% and 3,000 words ±10% long excluding bibliography, abstracts, contents, list of illustration etc. Supplementary materials are allowed as appendix.

The urban design & transport thesis project includes mandatory design review of options and preferred option.

The candidate shall present the research dissertation no later than 30 May or on a date approved by the Head of Department in the final year of study. The dissertation must be related to the candidate's area of optional specializations selected. The examiners may prescribe an oral examination about the dissertation.

Assessment: 100% continuous coursework assessment

ELECTIVE COURSES[1]

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

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; 30%-40% examination

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CIVL7006 Optimization Techniques for Transportation Applications | 6 credits

Linear programming, non-linear programming, network optimization, and integer optimization methods for solving transportation problems.

Assessment: All courses offered by the Department of Civil Engineering are assessed through examination (70%) and coursework continuous assessment (30%), the weightings of which are subject to approval by the Board of Examiners.

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[1] Choice of the courses is subject to prior approval by the Head of Department/Programme Director concerned. Not all courses are available each year. Priority will be given to students of the relevant curricula. Please refer to the respective curriculum syllabuses for the course descriptions.

MHMP6858 Housing Economics | 6 credits

This course provides a basic introduction to economics and the application of economic concepts in the analysis of housing issues. The course also deals with the principles of cost-benefit analysis and economic evaluation in general in the housing context. Other topics covered include land policy and economics, cycles in housing activity, the financing of housing development and privatization. The course also introduces the functions, principles and methods of valuation.

Assessment: 100% continuous coursework assessment

URBP6904 Housing, Planning and Sustainability | 6 credits

This course aims to provide an integrative and in-depth understanding of Hong Kong's housing system and its relationships with urban planning and the concepts of sustainable development. It discusses the theoretical and practical aspects of housing, making special reference to their relationships with urban planning and sustainable development. Major topics include the housing system concepts, the political economy of housing policies, land use planning and housing affordability, principals of residential planning, housing policy analyses, housing market analyses, and the application of the sustainable development perspective to housing analyses.

Assessment: 100% continuous coursework assessment

MHCD7001 Design, Survey and Modelling for Urban Health | 6 credits

This is a methodology course aimed at assessing key attributes of urban environments for population health improvement. The course will introduce concepts of: 1) study design (descriptive and analytical [observational study and experimental study]); 2) study populations (sample size calculation, data collection/sampling approaches); 3) exposure assessment (survey and management of urban environments: air pollution, water, wastes etc.); 4) outcome assessment (physical and mental health, economics, policy etc.); 5) describe and analyse evidence (disease mapping, spatial analysis models, and health effects assessment of environmental exposures). Students will be also encouraged to form groups to appraise and interpret existing evidence of the links between urban exposures, behaviour and health outcomes.

Assessment: 0%-70% examination and/or 30%-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

MHMP7007 International Housing Policies and Practices | 6 credits

This course aims to compare housing policies and practices at an international scale and to explore global housing issues. It examines and compares the evolution of housing policies in different housing systems, the modes of intervention in the housing markets, the roles of the public and private sectors in housing provision, housing finance systems, and the relationships between housing standards and societal conditions. Prevailing global trends and issues in housing are also examined.

Assessment: 100% continuous coursework assessment

MHMP8008 Transitional Cities: Urban and Housing Development | 6 credits

Building upon comparative concepts and introductory materials of local knowledge, this course aims to provide students with the opportunity to explore contemporary urban changes both in the countries that are undergoing the transition from the planned to a market-oriented economy and in newly industrialised economies. The course has a regional focus on cities in Pacific Asia, in particular Chinese cities, and cities in Central and Eastern Europe. By the end of the course, students should be able to gain an empirical understanding of diverse local contexts and to broaden the concepts discussed in urban and housing studies.

Assessment: 100% continuous coursework assessment

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

URBP7006 GIS and Smart Technology in Spatial Planning | 6 credits

This course introduces the basic concepts, methods and techniques in the use of geographic information system (GIS) and smart technologies as a spatial planning support system in urban planning and smart cities development. It examines the challenges and opportunities of using emerging urban data for the development of smart cities and regions through urban analytical methods such as GIS, remote sensing, big data, and open data.

Assessment: 100% continuous coursework assessment

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

URBP8003 Land and Real Estate Markets: Smart Governance, Finance and Business Models
| 6 credits

This course provides a land and real estate development perspective on urban development. Cities face continuous processes of both expansion and transformation. Population growth and economic growth lead to expansion, while processes of obsolescence and decline lead to a demand for urban transformation projects. These processes usually require investments in land and property (re)development, while planning interventions provide guidelines to investors, sometimes as opportunities, but also as barriers to what an investor might see as a profitable investment. The interaction between planning interventions on the one hand and land and real estate investments on the other hand is the central theme of this course. Starting from that interaction the course pays attention to different planning approaches and their impact on land and real estate markets, the dynamics of land and real estate markets, investment

behaviour by private and public developers, public private partnerships, land management strategies and value capturing mechanisms and smart land and real estate investment strategies.

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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CIVL6007 Behavioral Travel Demand Modelling | **6 credits**

Demand theory; statistical models; survey methods in transport; land use transportation models; disaggregate choice models; behavioural concepts in choice modelling.

Assessment: All courses offered by the Department of Civil Engineering are assessed through examination (70%) and coursework continuous assessment (30%).

URBP6123: Public Transport Systems | **6 credits**

This course is designed to examine the nature and the role of public transport systems mainly in the urban context with special reference to high-density development. Topics include the nature and the characteristics of passenger transport, the operation and management of public transit systems, deregulation and privatisation, the role of para-transit, and multi-modal cooperation and competition.

Assessment: 100% continuous coursework assessment.