Master Urban Innovation and Development

Program Code	4-MA-URRP
Level	Postgraduate
Credits and Duration	120 ECTS credits / 2 years: FIRST YEAR (60 ECTS credits) SECOND YEAR (60 ECTS credits)
Delivery Language	English

Program Overview:

The master's in urban planning and development – Urban Innovation and Sustainability (UPD-URBIS) program is designed to train professional experts in two main areas that align with contemporary urban development challenges in the Emirates and across the globe: (1) the eco-sustainable approach, and (2) urban and ecological innovation in planning, urban projects, and mobility.

The academic content of the UPD-URBIS Master's degree is based on three pillars: (1) ecological transition (SDGs in the planning systems, urban metabolism), (2) energy transition (built environment, urban energy systems), and (3) digital transition (urban advanced analysis and design). Other highly topical themes are covered: well-being, walkability of public spaces, health, intelligent mobility, urban innovation, inclusiveness in sustainable urban projects, low-carbon construction, etc.

Traditional methods of urban analysis are examined in innovative ways, incorporating data science and visualisation to identify problems and propose solutions within more open and participatory design project approaches.

Program Learning Outcomes:

PLO1	Apply scientific reasoning and advanced theory, with a focus on spatial analysis to create sustainable, healthy environments that respect urban heritage.
PLO2	Manage the entire planning cycle, from plan making to monitoring and evaluation, through expert analysis while developing a critical perspective.
PLO3	Evaluate, analyse, and synthesize data to develop solutions and support effective, relevant urban planning decisions, with a focus on sustainability, both in creating sustainable neighbourhoods and preserving historic

	districts
PLO4	Use advanced digital tools and integrate smart technologies to implement innovative ideas and practices for sustainable and healthy urban planning.
PLO5	Communicate urban planning challenges and mediate between all stakeholders, from professionals to citizens, promoting inclusivity and participation to create a better sustainable city.
PLO6	Conduct rigorous research in urban planning, utilizing various methodologies to generate insights and inform planning practices.

Program Structure:

Semester 1		
Modules	**Courses**	**Contact hours**
Principles of Urban Planning	From Inner Cities to Metropolitan Areas	32
	Urban Heritage and Sustainable Development	23
	Urban Planning Law and Regulation	23
Digital Engineering for Urban Planning	Advanced Urban Analysis	14
	GIS Applied to Urban Planning	14
Professional Practice of Urban Planning	Urban Planning Practices	18
	Studio: Sustainable Urban Landscape	12

Semester 2		
Modules	**Courses**	**Contact hours**
Sustainable Urban Planning and Design	Urban Planning, Climate Adaptation and Social Inclusion	36
	EcoDesign and Reversibility	18
Strategies for Healthy and Sustainable Cities	Health, Mobility, and Built Environment	22.5
	Urban Metabolism	13.5
	Digital Engineering for Urban Design	18
Professional Practice of Sustainable Urban Design	Urban Engineering	13.5
	Studio: Reversible and Sustainable Building	12

Semester 3		
Modules	**Courses**	**Contact hours**
Urban Eco-Technological Innovations	Urban Energy System & Energetic Efficiency	32
	Building an Ecocity : Innovation clusters and districts	32
	Infrastructures and Urban Innovation	23
Professional Practice of Sustainable Urban Engineering	Land Use Planning for Low Carbon City	14
	Studio: Building an Eco-Technological City	12
Innovative Research in Urban Studies	Research Methodology	23

Semester 4		
Modules	**Courses**	**Contact hours**
Research Project	Master Thesis	5

Course Descriptions

Master 1

Master 1, Semester 1

History of Urban Planning: From Inner Cities to Metropolitan Areas– URRP-543

Credits	7
Level	Postgraduate - Master 1
Semester offered	1
Contact Hours	32H

This course explores the evolution of planning theory and its influence on urban planning practice. The first part offers a critical understanding of planning's intellectual roots, major paradigms, and contemporary debates. Sessions will examine what makes planning distinct from other social sciences, trace the historical development of planning theories, and explore sustainability as a guiding normative framework in planning for city design. The second part focuses on metropolitan planning, addressing key questions about how cities are structured and governed: Are they shaped by infrastructure or master plans? How do past decisions shape present strategies? Can plans be independent of market forces? How do conflicting interests play out in decision-making? The course also investigates how different scales—local, metropolitan, and regional—can be integrated in planning, and what effective implementation looks like.

Urban Heritage and Sustainable Development – URRP-544

Credits	5
Level	Postgraduate - Master 1
Semester offered	1
Contact Hours	23H

This course explores the necessity of thoroughly understanding the historical and heritage-specific characteristics of a neighbourhood to make well-informed decisions about its development and planning from a sustainable development perspective. Many areas are rich in built and cultural heritage, and today we must balance sustainable development, attractiveness, and memory. The aim is to comprehend the heritage assets of a place, which contribute to its identity, quality of life, and prominence, and to leverage these strengths to ensure continuity within the urban planning project.
The course will be divided into several sections: (1) Understanding: The heritage of a territory (from unprotected vernacular-built heritage to preserved buildings and areas) as a matter of belonging and quality of life. (2) Anticipating: The heritage to be protected. (3) Acting: The development of a neighbourhood. The issues discussed and case studies presented cover France and Europe as well as Arab countries, including Morocco, Tunisia, the Middle East, and West Africa.

Urban Planning Law and Regulation– URRP-545

Credits	5
Level	Postgraduate - Master 1
Semester offered	1
Contact Hours	23H

This urban planning law course combines theory and practice. The theoretical part, led by Dr. Romain Micalef, introduces planning laws, including national and local rules, permits, development procedures, and judicial control. It covers systems in France, Dubai, the U.S., and Abu Dhabi, along with environmental law. Students will draft a local urban plan. The practical part, taught by Ms. Olivia Duncan, focuses on smart cities, sustainability, and the role of regulation in future development. Topics include AI, Internet of Things, mobility, ethical technology, and climate resilience. Social aspects like public engagement and placemaking are also explored. Students will complete a group project designing a future Abu Dhabi neighbourhood for 2100.

Advanced Urban Analysis– URRP-546

Credits	3
Level	Postgraduate - Master 1
Semester offered	1
Contact Hours	14H

This course provides students with a deeper understanding of spatial modelling techniques and geostatistical analysis methods used in urban planning. This class will introduce and develop fundamental concepts within quantitative geographic information analysis, including exploratory spatial data analysis and spatial statistics, surface analysis, network and locational analysis, and quantitative approaches to the description and classification of urban form and urban density to support urban planning research and practice. The course is supported by examples from research, hands-on assignments, and provides students with the opportunity to utilize spatial analysis methods and techniques as a key problem solving/analysis methodology for urban planning and planning decision making in a global context, while foregrounding specifics of UAE and GCC urbanization patterns.

GIS Applied to Urban Planning – URRP-547

Credits	3
Level	Postgraduate - Master 1
Semester offered	1
Contact Hours	14H

This course introduces the fundamentals of Geographic Information Systems (GIS) and their application in urban planning. Students learn to manage, analyse, and visualize spatial data using tools such as ArcGIS Pro and ArcGIS Online. The course emphasizes practical skills through case studies in urban flood risk, infrastructure siting, and land use evaluation. Students will also develop individual GIS projects addressing sustainability, environmental planning, and climate adaptation in urban contexts.

Urban Planning Practices – URRP-548

Credits	4
Level	Postgraduate - Master 1
Semester offered	1
Contact Hours	18H

This course introduces urban planning in its political, economic, legal, spatial and social dimensions, culminating in the 21st-century paradigm of resilient and healthy cities. Major planning theories are reviewed from a historical and international perspective, showing how each model responded to the needs of its time, with emphasis on the evolution of regulatory planning towards broader parameters such as walkability, Nature Based Solutions and the SDGs. The course provides core planning tools applicable in the UAE or abroad. Final outputs include an abstract and a paper for a local conference on AI and contemporary urban production, and the application of planning concepts to an existing UAE site.

Studio: Sustainable Urban Landscape– URRP-549

Credits	3
Level	Postgraduate - Master 1
Semester offered	1
Contact Hours	12H

This course offers a hands-on workshop focused on designing and improving sustainable urban landscapes under the specific environmental conditions of Abu Dhabi and the United Arab Emirates. The studio highlights the fundamental role of landscape design in arid cities, grounded in landscape ecology analysis. Students learn to observe and analyze living elements in open urban spaces, evaluating vegetation, water systems, and ecological processes through applied case studies. Using analytical tools and ecological indicators, the course supports the development of design recommendations, including green–blue networks, urban heat mitigation, and vegetation strategies. The workshop links spatial analysis to design decisions, strengthening ecological performance, resilience, and environmental sustainability in arid urban contexts

Master 1, Semester 2

Urban Planning, Climate Adaptation, and Social Inclusion– URRP-550

Credits	8
Level	Postgraduate - Master 1
Semester offered	2
Contact Hours	36H

This course provides an in-depth examination of urban planning tools and strategies addressing climate change adaptation and social inclusion at both metropolitan and local scales. It is structured in two complementary parts. The first part focuses on the articulation between planning scales, from master plans to local instruments, presenting Emirati and international (notably French) tools (such as SCOT – “Schéma de Cohérence Territoriale”, a kind of Master Plan). This part also addresses other aspects of post-carbon planning, such as mobility planning aimed at reducing the carbon footprint of private vehicles, and flood

management strategies. Case studies will highlight successful projects adapting to floods, droughts and other climate change-induced events, their impact on urban resilience and community engagement. After an explanation of the theoretical foundations of different forms of citizen participation, the second part addresses participatory planning aligned with SDG 16, through group-based proposals for a site in Abu Dhabi, assessed via written innovative specifications and oral presentation.

EcoDesign and Reversibility– URRP-551

Credits	4
Level	Postgraduate - Master 1
Semester offered	2
Contact Hours	18H

Eco-design, when applied to urban planning and construction, represents a fundamental approach that integrates sustainability principles from the earliest stages of project development, aiming to minimize non-renewable resource use and reduce environmental impacts throughout the life cycle of buildings and infrastructures. It involves the selection of sustainable materials, energy efficiency strategies, and the application of bioclimatic principles, drawing on expertise from architecture, engineering, and urban planning. In the context of climate change, resource depletion, and ecosystem degradation, eco-design has become an essential competency for urban professionals. This course provides an in-depth exploration of the theoretical foundations and practical applications of eco-design, with a focus on the United Arab Emirates, emphasizing concrete tools and methods. The course aligns with SDGs 9, 11, 12, and 13 and is structured in three parts: introduction to eco-design and reversibility concepts; analysis of eco-designed projects; and group presentations of case-study findings.

Health, Mobility, and Built Environment– URRP-552

Credits	5
Level	Postgraduate - Master 1
Semester offered	2
Contact Hours	23H

In the context of climate change and health-promoting urban planning, the relationship between health, mobility, and the built environment must be considered in city development, particularly mobility, which contributes significantly to greenhouse gas emissions, accounting for 23% of global energy-related CO_2 emissions in 2019 (IPCC). Urban planners today face the critical challenge of rethinking transportation systems to drastically reduce these emissions. Simultaneously, as cities become increasingly digital, transportation networks must adapt to ensure efficiency, sustainability, and safety.
This course aims to encourage future urban planners to integrate health dimensions into planning tools and projects through health-promoting urbanism. The first part presents findings from epidemiology, geography, and health studies, including the Health Impact Assessment (HIA) process illustrated through case studies. The second part focuses on transport planning, examining regulatory frameworks, policy tools, and Intelligent Transport Systems (ITS) through applied exercises to design low-emission and resilient mobility systems.

Urban Metabolism – URRP-553

Credits	3
Level	Postgraduate - Master 1
Semester offered	2
Contact Hours	14H

This course introduces tools for evaluating the flows of matter and energy involved in the operating cycle of urban areas. The city is studied as a 'system in balance' requiring energy resources, products and energy while generates different kind of wastes. Three different methodologies involve the bottom-up approach by collecting/estimating individual flows and the top-down approach by using nation-wide input–output data. The combination of both approaches is also introduced. Using practical case studies covering the Paris basin area and the city-state of Singapore, we will analyze the needs, production and transformations of materials (rocks, water, waste, nuisances) and energy in the city.

Digital Engineering for Urban Design– URRP-554

Credits	4
Level	Postgraduate - Master 1
Semester offered	2
Contact Hours	18H

The course aims to provide students with an in-depth understanding of modern cities and urban design tools, while exploring the historical principles that have shaped urban planning and contemporary approaches to addressing current problems. It explains how digital technologies produce structural changes in urban environments, processes, and practices. The practical component, based on case studies, questions the nature of these transformations and their impacts on the organization of cities, on modes of urban representation, and on the role of imagery in decision-making, including projects that may ultimately fail.Students are guided toward a critical, responsible, and ecologically conscious use of digital tools for urban project representation, supporting a better understanding of real urban issues and dialogue with residents. Weekly research and design exercises, combined with hands-on training in software such as Photoshop, Illustrator, InDesign, and SketchUp, strengthen students' conceptual, spatial, and visual communication skills in urban design.

Urban Engineering – URRP-555

Credits	3
Level	Postgraduate - Master 1
Semester offered	2
Contact Hours	14H

The course will begin by exploring the origins of an ambitious 19th-century utopia: the mastery of territorial and urban development. This vision aimed to structure and organize cities rationally, controlling their expansion and optimizing land use. However, today, this ambition encounters new challenges and constraints, such as increasing uncertainties brought about by economic shifts, climate change, the rethinking of global geographies, and the profound impact of emerging technologies, particularly artificial intelligence and collective intelligence.
In response to these evolving dynamics, project management practices in urban development are also transforming. Modern project management must integrate a blend of strategies, tactics, and pragmatism to effectively address contemporary needs. Urban engineering is undergoing significant changes, adapting to

these new realities. The course will delve into these transformations, examining the new structures of urban projects and he tools used for their management. Students will gain practical insights into methods for coordination, risk management, and operational implementation in today's ever-changing urban landscape.

Studio: Reversible and Sustainable Building– URRP-556

Credits	3
Level	Postgraduate - Master 1
Semester offered	2
Contact Hours	12H

This Studio is particularly connected to the courses *Ecodesign and Reversibility* and *Urban Planning and Climate Adaptation*. It examines buildings as strategic levers for ecological and energy transitions, with a specific focus on building reversibility enabled by digital and smart technologies. The workshop explores the Paris 2024 Olympic Games Athletes' Village, which set an ambitious objective to halve event-related emissions and offset more CO□ than it produced. To achieve this, 95% of the sites were pre-existing or temporary, limiting new construction and avoiding post-event vacancy. Located in Saint-Denis, the Athletes' Village was designed for long-term conversion into housing, offices, or schools. Central to this approach was the integration of smart building management systems—sensors, digital monitoring, and energy management software—embedded from the design phase to measure carbon emissions, optimize energy use, and support rapid spatial reconfiguration. Students analyze the outcomes of this project using official planning documents from the Greater Paris Metropolis and apply the methodology to simulate a comparable reversible-building project for a major event in Abu Dhabi, including site selection, program definition, and technological design principles.

Master 2, Semester 3

Urban Energy System and Energetic Efficiency– URRP-600

Credits	7
Level	Postgraduate - Master 2
Semester offered	3
Contact Hours	32H

his course offers an in-depth exploration of energy-efficient urban systems, focusing on the integration of Smart Grid technologies within cities. As cities around the world face increasing energy demands and environmental challenges, the course equips students with the knowledge and tools necessary to design and implement sustainable Urban Energy Systems (UES). The course addresses energy efficiency, renewable energy integration, and demand management at building, neighborhood, and city scales. Students explore the role of advanced digital technologies, including the Artificial Intelligence of Things (AiOT), in optimizing energy use and reducing peak demand. Through applied case studies, such as the innovative Clichy-Batignolles neighborhood, students analyze Community Energy Management Systems (CEMS). The final project applies these methods to a selected area in Abu Dhabi, where students model and evaluate optimized UES scenarios to reduce energy consumption, carbon emissions, and infrastructure investment.

Building an Ecocity: Innovation Clusters and Districts – URRP-601

Credits	7
Level	Postgraduate - Master 2
Semester offered	3
Contact Hours	32H

Since the inception of Masdar City in the United Arab Emirates in 2008, the number of eco-cities worldwide has increased significantly. Although their spatial forms range from small towns to large metropolitan developments, eco-cities share core objectives: ensuring socio-ecological balance in response to accelerating climate challenges. As a cross-cutting model, the eco-city contributes to several United Nations Sustainable Development Goals (SDGs 3, 7, 9, 11, and 13). Eco-city development integrates ecological health, social equity, and economic viability, often supported by innovation clusters structured around universities, research centers, and industry, following triple or quadruple helix models.
This course examines eco-cities and innovation districts from theoretical and practical perspectives. Students apply a structured analytical framework to an international case study, assessing governance, policies, stakeholders, and environmental, energy, and digital strategies. The final product consists of a group-based analytical report and presentation, including a critical evaluation of strengths, limitations, and future evolution paths.

Infrastructures and Urban Innovation– URRP-602

Credits	5
Level	Postgraduate - Master 2
Semester offered	3
Contact Hours	23H

This course addresses climate change within an urban and territorial context, focusing on its impacts on urban planning and on the full life cycle of infrastructures shaping cities and regions. It examines adaptive strategies for cities, territories, infrastructures, and their uses, providing students with theoretical, technical, and operational knowledge related to functional resilience engineering. The course covers key challenges in infrastructure design and management, with a particular focus on Europe, North Africa, and the Middle East, illustrating vulnerabilities and resilience capacities of transport networks. It introduces innovative technical solutions, integrated engineering approaches, and economic models adapted to climate constraints, alongside urban planning tools such as risk prevention plans. The course adopts a comprehensive approach that addresses both project management (ownership) and project execution (contracting authority), enabling students to understand climate adaptation across planning, governance, and infrastructure delivery.

Land Use Planning for Low Carbon City– URRP-603

Credits	3
Level	Postgraduate - Master 2
Semester offered	3
Contact Hours	14H

Urban planning and city development are being profoundly reshaped by major economic, social, and environmental disruptions, including the COVID-19 pandemic (2020–2021), successive real-estate crises in the USA and Europe since 2008, the global energy crisis since 2021, rapid digitalization, and the urgency of ecological transition aligned with the Paris Agreement on greenhouse-gas reduction. These ruptures call

for a redefinition of planning practices, questioning how to decarbonize urban development, rethink ways of living and working, and design public action amid political, economic, technical, regulatory, and environmental constraints. This course is essential to planner training, focusing on project structuring and financing. Students learn to identify urban projects, engage stakeholders, and build financial frameworks, followed by practical tools for budgeting, resource planning, and management. The course equips students with pragmatic approaches to low-carbon urban development in complex and unstable contexts.

Studio: Building an Eco-Technological City– URRP-604

Credits	3
Level	Postgraduate - Master 2
Semester offered	3
Contact Hours	12H

According to United Nations estimates, the global population is projected to increase by nearly 30% by 2050 (UN, 2017), with the share of urban residents rising from 55% to 70% (World Bank), implying a substantial expansion of urbanized land. Although cities occupy approximately 7% of the Earth's surface, they are responsible for nearly 70% of global carbon emissions (C40 Cities, 2012; Liu et al., 2014; United Nations, 2016), positioning urban form and governance at the core of contemporary climate challenges. This Studio responds by integrating learning outcomes from prior courses into a structured, ecosystem-based planning framework. Using Masdar City as an analytical benchmark and a designated site in Abu Dhabi, students operate in two phases: defining vision, governance mechanisms, and performance indicators for an Eco-City master plan, and translating these objectives into spatial urban systems. The course emphasizes evidence-based planning to optimize environmental, economic, social, and cultural sustainability.

Research Methodology– URRP-605

Credits	5
Level	Postgraduate - Master 2
Semester offered	3
Contact Hours	23H

This introductory course on urban research explores the specificities of research in urban planning, distinguishing studies from scientific research and introducing key themes that structure urban research, such as research questions, methods, and debates within the social sciences and humanities, while also presenting pathways toward PhD studies. In this initial phase, students are introduced to research methodology and select a topic from specialized readings, which they transform into a research object through conceptual mapping (mind mapping). The second phase focuses on the evolution of research questions, examining how they emerge, evolve, and generate academic debate, guiding students in formulating and critically reflecting on their own research questions. In the third phase, students organize research seminars with researchers in specific fields, engaging with diverse methodologies and approaches, and advance an individual research project that culminates in a written paper with academic references.

Master 2, Semester 4

Master Thesis– URRP-606

Credits	30
Level	Postgraduate - Master 1
Semester offered	2
Contact Hours	5h/student

The students must write and defend a Master's thesis, which may be based on an internship, professional experience (in the case of salaried students) or participation in a research team. The internship should be minimum 3 months, within several companies, agencies, public service departments, that has an activity relevant to the programme. Students may choose to apply directly for an internship if there is one that interests them. However, the department and The Career Centre at SUAD are on hand to handle any required paperwork and agreements between SUAD and the internship party. The Master's thesis is the final project of the programme. Students are advised on the choice of subject, preliminary research and proposal. They can choose from a list of topics given by the professors teaching in the programme (first year and second year), or select a topic that represents an interest and is accepted by the Master's thesis supervisor. The supervisor monitors students' progress in their research and writing skills. The manuscript will be uploaded to Blackboard via Turnitin assignment (to detect plagiarism) and will be evaluated by a jury to which the student will have to defend his/her work.