A - General Description

Programme Title – Master's Degree in Urban Regeneration

Qualification Awarded – Master's degree, second cycle program (120 ECTS credits)

Admission requirements -

a. With no quantitative restrictions, individuals who have completed the BSc degree (*licenciatura*) in Civil Engineering in the year before;
b. Subject to quantitative restrictions:
    i. Holders of a BSc degree (*licenciatura*) in Civil Engineering awarded by ESTT in previous academic years;
    ii. Holders of a BSc degree (l*icenciatura*) or legal equivalent awarded by another national higher education institution in civil engineering or related areas;
    iii. Holders of a foreign higher degree awarded on completion of a first cycle of studies organised by a foreign country in the framework of the Bologna Process;
    iv. Holders of a foreign higher degree which is deemed to meet the requirements of a *licenciado* degree by the scientific council;
    v. Holders of a *bacharel* degree in civil engineering and whose scientific and professional curriculum is deemed by the scientific council as appropriate to access this study cycle.
    vi. Individuals holding an academic, scientific or professional curriculum which is deemed by the scientific council as appropriate to access this study cycle.

Educational and Professional aims – The study cycle leading to the Master's Degree in Urban Regeneration aims at preparing professionals with expertise in conservation and regeneration of built heritage and urban infrastructures which will promote higher life standards and competition in urban centres. This Master's Degree in Urban Regeneration aims to provide both generic and in-depth skills in study and research as well as in the development of practical applications in the field of architectural and urban regeneration. It was designed to provide advanced training in matters such as diagnosis of pathologies and techniques for evaluation and intervention in built heritage and urban infrastructures.

- Provide specialized professional training allowing an interdisciplinary intervention across the different specialities relating to the safeguard of built heritage and urban infrastructures;
- Meet growing requirements from the labour market of skilled technical staff in an area that is increasingly demanding ;
- Provide the students with opportunity of furthering their studies by proceeding to the second cycle and thus enhance themselves personally and professionally through advanced post-graduate training;
- Facilitate interaction between the academic community of the Polytechnic and external bodies and institutions competent in the urban regeneration area;

Access to further studies - The Master's degree in Urban Regeneration allows access to third-cycle programmes.

Course structure diagram with credits (60 per year) - Two-year course (four semesters, 30 ECTS credits each):

Course Title	Year	Semester	ECTS
Built Heritage Properties	1	1	5
Conservation and Regeneration of Buildings I	1	1	5
Pathology of Materials	1	1	5

Applied Geotechnics	1	1	5
Technical Installations I	1	1	5
Structural Assessment Methods	1	1	5
Conservation and Regeneration of Buildings II	1	2	5
Technical Installations II	1	2	5
Intervention Procedures on Building Structures	1	2	5
Urban Regeneration and Renewal	1	2	5
Regeneration of Urban Pavements	1	2	5
Sustainability and Environmental Impact Assessment	1	2	5
Worksite Management and Coordination	2	1	5
Regeneration of Basic Sewerage Systems	2	1	5
Energy Efficiency in Buildings	2	1	5
Project or Placement	2	Annual	45

Final exam, if applicable – Final work consists of an original project or an industrial placement with final report subject to public presentation and discussion.

Assessment regulations – Assessment rules are described in the regulations for the study cycle leading to the Master's degree in Urban Regeneration.

ECTS Departmental Coordinator – Prof. Ana Paula Gerardo Machado (anamachado@ipt.pt)

ipt Instituto Politécnico de Tomar

	B – Description of individual course units
Course Title	Built Heritage Properties
Course Code	30061
Type of Course	Semi-annual
Level of Course	Not Applicable
Year	First
Semester/Trimester	First semester
Number of credits	5,0
Name of Lecturer	Jorge Mascarenhas and Inês Serrano
Course goals (preferably expressed in terms of learning outcomes/ competences)	Students will study the evolution and description of architectural styles and construction techniques within popular and polite architecture and learn how to make interventions whilst observing cultural values.
Prerequisites	NA
Course contents	- Synopsis of architectural styles - Brief history of Architecture - Evolution of construction techniques in polite Architecture - Architecture and construction techniques in Portuguese popular architecture. - Evolution of the design and construction of special works such as bridges, roads, aqueducts, etc.
Recommended Reading	-ARQUITECTURA POPULAR PORTUGUESA, Associação dos Arquitectos Portugueses, Lisboa 1988 -HISTORY OF ARCHITECTURE, Sir Banister Fletcher´s, ed. Butterworths, londres 1979 -SÍNTESE DOS ESTILOS ARQUITECTÓNICOS, Arnald Puig Grau, Ed. Plátano, Lisboa 1990 -ARQUITECTURA PORTUGUESA, José Manuel Fernandes, Ed. Imprensa Nacional – Casa da Moeda, Lisboa 1999
Teaching Methods	Teaching sessions will be supported by illustrations and on-site visits.
Assessment Methods	Continuous assessment including short assignments.
Language of Instruction	Portuguese

ipt Instituto Politécnico de Tomar

	B – Description of individual course units
Course Title	Conservation and Regeneration of Buildings I
Course Code	30062
Type of Course	Semi-annual
Level of Course	Not Applicable
Year	First
Semester/Trimester	First semester
Number of credits	5,0
Name of Lecturer	Maria de Lurdes Belgas da Costa
Course goals (preferably expressed in terms of learning outcomes/ competences)	• Building defects and related physical phenomena; • Methods and techniques for evaluating and diagnosing building defects; • Acquisition of basic and scientific knowledge in construction and regeneration materials; • Skill acquisition in regulations, legislation, funding programs and design of regeneration projects. • Awareness raising to multidisciplinary aspects related with building regeneration and pathology.
Prerequisites	Basics of construction materials and processes
Course contents	• Introduction • General mechanisms for the deterioration of building materials and components • Building defects survey and diagnosis • Recent buildings defects • Common defects in old buildings • Defects of non-structural elements, lining and finishing • Demolition techniques • Legal framing of regeneration • Case study analysis
Recommended Reading	- Mascarenhas, Jorge, *Sistemas de Construção* (Vários), *IV, VI, VII, VIII, IX e XI,* Livros Horizonte, Lisboa.
Teaching Methods	• Presentation of key concepts using audiovisual resources. • Provision of technical articles on topics in progress for analysis and discussion. • Presentation of projects and case studies allowing students' critical involvement. • Usage of available laboratory equipment for defect survey and non-destructive tests. • Supervised research assignments. • On-site visits and technical sessions.
Assessment Methods	Theoretical-practical written test (45%) with minimum grade of 9,5. Practical work (45%) – follow-up report of a regeneration work. Thematic reports (15%) to be drawn up during practical sessions.
Language of Instruction	Portuguese

ipt Instituto Politécnico de Tomar

	B – Description of individual course units
Course Title	Building Materials Defects
Course Code	30063
Type of Course	Semi-annual
Level of Course	Not Applicable
Year	First
Semester/Trimester	First semester
Number of credits	5,0
Name of Lecturer	João Freitas Coroado
Course goals (preferably expressed in terms of learning outcomes/ competences)	This module focuses on the factors and conditions affecting material deterioration, the alteration mechanisms of the most important materials used in civil construction and identification and classification of key factors related with material deterioration. On completion of the module students will be able to identify most common "defects" for construction materials, the key factors and mechanisms underlying them. They will also know how to act strategically so as to prevent or minimise the occurrence of defects in construction materials.
Prerequisites	NA
Course contents	Introduction to change and changeability of construction materials. Change and changeability of inorganic non-metallic materials. Mechanisms and agents of deterioration of inorganic non-metallic materials. Specific forms of deterioration, characterisation and diagnosis of inorganic non-metallic materials Specific forms of deterioration, characterisation and diagnosis of metallic materials Specific forms of deterioration, characterisation and diagnosis of organic materials Characterisation and diagnosis of other materials used in civil construction Diagnosis and registration supporting techniques Cleaning, consolidation and protection methods
Recommended Reading	Amoroso, G.G., Fassina,V., "Stone decay and conservation", Elsevier, Mat. Sci. Monogr., (1983). Aires-Barros, L., "Alteração e Alterabilidade das rochas". Instituto Nacional de investigação Científica, Centro de Petrologia e Geoquímica da Universidade de Lisboa, Lisboa, (1991).
Teaching Methods	Themes to be dealt with in classes selected according to the abovementioned course contents. Reputed experts with a wide professional experience from the university or business world will also be invited to collaborate.
Assessment Methods	Assessment.
Language of Instruction	Portuguese

ipt Instituto Politécnico de Tomar

	B – Description of individual course units
Course Title	Applied Geotechnics
Course Code	30064
Type of Course	Semi-annual
Level of Course	Not Applicable
Year	First
Semester/Trimester	First semester
Number of credits	5,0
Name of Lecturer	Ana Paula Gerardo Machado e Fernando Manuel Lino Antunes
Course goals (preferably expressed in terms of learning outcomes/ competences)	The aim of this course is to provide the students with knowledge that allows them to: • identify risk situations; • request services and data; • analyse results and make decisions as to the project, execution and control of re-qualification works at geotechnical level.
Prerequisites	NA
Course contents	1-General concepts 2- Standardisation and Regulation 3. Survey Methods 4- Project supported by lab and field testing 5 - Applied Geotechnics 6 – Slope weighting 7 – Retaining walls 8. Remediation Methods 9- Regeneration and reinforcement of foundations 10 - Monitoring
Recommended Reading	Bowles, Joseph E. – "Foundation Analisys and Design", McGraw-Hill (1988) Coelho, Silvério – "Tecnologia de Fundações", EPGE, 1996
Teaching Methods	Expositive lectures with the support of audiovisual resources. Theoretical-practical sessions are interactive and will include design and sizing of geotechnical works, research and case studies. Teaching will be ensured by the course lecturers and also reputed professors and experts will be invited to collaborate.
Assessment Methods	Continuous Assessment: Written test including a theoretical and a practical component + a practical assignment. Final grading: assignment (30%) and written test (70%). In order to pass the course students must meet the following requirements: have a minimum final mark of 9.5 and a minimum of 40% of total mark in every assessment part (theoretical and practical) of the written test.
Language of Instruction	Portuguese

	B – Description of individual course units
Course Title	Technical Installations I
Course Code	30065
Type of Course	Semi-annual
Level of Course	Not Applicable
Year	First
Semester/Trimester	First semester
Number of credits	5,0
Name of Lecturer	Mário Gomes, Paulo Coelho, Flávio Chaves; Mário Velindro
Course goals (preferably expressed in terms of learning outcomes/ competences)	The aim of this course is to develop skills to analyse, describe and design different mechanical and electrotechnical infrastructures in articulation with other building regeneration related specialties.
Prerequisites	NA
Course contents	Electrical Installations: applicable legislation and standards; building design; materials, machinery and equipments, safety; indoor lighting; practical sizing and execution procedures. Telecommunication infrastructures, standards and design, materials, devices and equipments, sizing and execution. Domotics: Main properties of domotics, X10 and EIB systems; selection criteria; domotics and safety; using domotics in buildings. Climate Control and Ventilation: Ventilation and air distribution, air conditioning and refrigeration components. Indoor Applications. Centralized systems for power production. Mechanical mobility systems: legislation and principles for installation and operation of lifts, cargo lifts, handicapped transport, rolling stairs. Analysis of other systems: Fire detection and safety systems, suction systems.
Recommended Reading	[1] *RegrasTécnicas das Instalações Eléctricas de Baixa Tensão*, Diário da Republica, I Série, 11 de Setembro de 2006. [2] Josué Lima Morai, José Marinho Gomes Pereira, *Guia Técnico das Instalações Eléctricas,* Certiel, 2006.
Teaching Methods	Content presentation, exercise solving and practical coursework in class.
Assessment Methods	Coursework/written test.
Language of Instruction	Portuguese

ipt Instituto Politécnico de Tomar

	B – Description of individual course units
Course Title	Structural Assessment Methods
Course Code	30066
Type of Course	Semi-annual
Level of Course	Not Applicable
Year	First
Semester/Trimester	First semester
Number of credits	5,0
Name of Lecturer	Cristina Margarida Rodrigues Costa
Course goals (preferably expressed in terms of learning outcomes/ competences)	The aim of this curricular unit is to provide the students with skills that will allow them to: *i)* analyse and understand damage and deterioration of existing reinforced concrete, steel, wood and masonry structures; *ii)* identify the appropriate methods to describe and characterise the actual status of constructions; *iii)* evaluate the safety conditions of constructions making use of structural simulation models.
Prerequisites	NA
Course contents	1. Damage and deterioration of masonry, reinforced concrete, steel and wood structures. 2. Structural Assessment Methods 2.1 Visual inspections 2.2 Non-destructive and laboratory tests 2.3 Instrumentation, monitoring and inspection of structures. 2.4 Mechanical characterisation of materials and structures. 3. Evaluation of structural safety conditions making use of structural simulation models.
Recommended Reading	Costa, Aníbal; A intervenção no património. Práticas de conservação e reabilitação, 2002 Costa, Aníbal; A intervenção no património. Práticas de conservação e reabilitação, 2005
Teaching Methods	Lectures and tutorials involving presentation and analysis of theoretical concepts built on presentation and discussion of case studies. The studenst are invited to carry out coursework involving the dimensioning of reinforcement solutions that are most appropriate to specific cases of structural defects. Technical lectures and on-site visits about the course topics are also planned.
Assessment Methods	Assessment will be based on a written closed-book theoretical-practical assessment task (70%) (mid-term test and/or exam) with minimum grade of 9,5 and teamwork (30%).
Language of Instruction	Portuguese

ipt Instituto Politécnico de Tomar

	B – Description of individual course units
Course Title	Conservation and Regeneration of Buildings II
Course Code	30067
Type of Course	Semi-annual
Level of Course	Not Applicable
Year	First
Semester/Trimester	First semester
Number of credits	5,0
Name of Lecturer	Maria de Lurdes Belgas da Costa
Course goals (preferably expressed in terms of learning outcomes/ competences)	• Acquisition of technical skills in techniques for maintenance, regeneration and reinforcement of buildings; • Drawing up of regeneration projects. • Sound technological preparation for the integration in multidisciplinary teams designed to intervene in built heritage.
Prerequisites	Having passed the course Conservation and Regeneration of Buildings I
Course contents	• Techniques for the conservation and regeneration of : Foundations; Outer walls; Wall and floor facing Inner walls; Pavements; Ceilings; Sloping covers; Flat covers; Bays: inner and outer; skylights; Other elements • Renewal of kitchens and sanitary installations • Thermal and acoustic regeneration • Case study analysis
Recommended Reading	- Aguiar, José; Cabrita, A. M. Reis; Appleton, João (1998), Guião de Apoio à Reabilitação de Edifícios Habitacionais, LNEC, Lisboa - Mascarenhas, Jorge, *Sistemas de Construção* (Vários), *IV, VI, VII, VIII, IX e XI,* Livros Horizonte, Lisboa.
Teaching Methods	• Presentation of concepts and major aspects associated with the relevant topics complemented with datashow and illustrative case studies. • Provision of technical articles on topics in progress for analysis and discussion. • Presentation of projects and case studies allowing students' critical involvement. • Oriented research work designed to draw up briefings on materials and regeneration techniques. • On-site visits to private and public regeneration works.
Assessment Methods	• Theoretical-practical written test (45%) with minimum grade of 9,5. • Two individual thematic reports (15%) to be drawn up during practical sessions. • Practical work (40%) – follow-up report of a regeneration work.
Language of Instruction	Portuguese

	B – Description of individual course units
Course Title	Technical Installations II
Course Code	30068
Type of Course	Semi-annual
Level of Course	Not Applicable
Year	First
Semester/Trimester	Second
Number of credits	5,0
Name of Lecturer	Mário Gomes and António Cavalheiro
Course goals (preferably expressed in terms of learning outcomes/ competences)	Acquisition of skills to interpret and design projects of electrical power and microgeneration networks as well as the drawing up of gas networks projects. Development of analysis and reading skills and its integrated coordination with the various specialities involved in urban regeneration.
Prerequisites	NA
Course contents	Power distribution networks Outdoor lighting Microgeneration Gas Installations
Recommended Reading	Regulamento de Segurança de Redes de Distribuição de Energia Eléctrica em Baixa Tensão, Decreto Regulamentar n.º90/84, de 26 de Dezembro. *Guia Técnico Solidal*, Solidal Condutores Eléctricos, S.A, 2005. L.M. Vilela Pinto, *Guia Técnico MG-Calc*, edição Merlin-Gerin. Decreto-Lei n.º 363/2007, de 2 de Novembro, Ministério da Economia e da Inovação, Manual Técnico de Gás
Teaching Methods	Theoretical-practical sessions – exercises and problem-solving. Discussion on course topics with the students.
Assessment Methods	Coursework (40%) and written test (60%).
Language of Instruction	Portuguese

ipt Instituto Politécnico de Tomar

	B – Description of individual course units
Course Title	Intervention Procedures on Building Structures
Course Code	30069
Type of Course	Semi-annual
Level of Course	Not Applicable
Year	First
Semester/Trimester	Second
Number of credits	5,0
Name of Lecturer	Cristina Margarida Rodrigues Costa
Course goals (preferably expressed in terms of learning outcomes/ competences)	The aim of this curricular unit is to provide the students with skills that will allow them to: *i)* analyse and understand intervention techniques for regeneration, reinforcement and consolidation of reinforced concrete, steel, wood and masonry structures; ii) identify the regeneration, reinforcement and consolidation solutions that are most appropriate to specific structural defects based on structural evaluations made with basis on the skills acquired in the course Structural Assessment Methods; iii) calculate reinforcements for concrete structures.
Prerequisites	NA
Course contents	1. Elementary notions of built heritage interventions 2. Intervention procedures on building structures 3. Dimensioning of reinforcements for concrete structures
Recommended Reading	Costa, Aníbal; A intervenção no património. Práticas de conservação e reabilitação, 2002 Costa, Aníbal; A intervenção no património. Práticas de conservação e reabilitação, 2005
Teaching Methods	Lectures and tutorials involving presentation and analysis of theoretical concepts built on presentation and discussion of case studies. The studenst are invited to carry out coursework involving the dimensioning of reinforcement solutions that are most appropriate to specific cases of structural defects. Technical lectures and on-site visits about the course topics are also planned.
Assessment Methods	Assessment will be based on a written closed-book theoretical-practical assessment task (70%) (mid-term test and/or exam) with minimum grade of 9,5 and group work (30%).
Language of Instruction	Portuguese

ipt Instituto Politécnico de Tomar

	B – Description of individual course units
Course Title	Urban Regeneration and Renewal
Course Code	300610
Type of Course	Semi-annual
Level of Course	Not Applicable
Year	First
Semester/Trimester	Second
Number of credits	5,0
Name of Lecturer	Jorge Mascarenhas
Course goals (preferably expressed in terms of learning outcomes/ competences)	An overview of the development of urbanism and the different study and survey strategies as well as the different intervention solutions into urban space.
Prerequisites	NA
Course contents	I – The history of cities II- Urban space planning – the city and the urbanization processes from city core to suburbs. The Portuguese urbanism. III- Built heritage – concepts and applicable legislation: international charts and conentions (Florence Chart, Dresden Declaration, Rome Declaration, etc.). IV- Intervention methods and criteria within the regeneration and renewal of urban centres. V – Equalisation
Recommended Reading	ABRANTES, Victor et al –Reabilitação de edifícios – Estudo de Comportamento e Análise Técnico-económica das soluções utilizadas nas obras de construção e reabilitação, Porto: IGAPHE, 1999 BOURDIN, Alain Le Patrimoine Reinventé, Paris : PUF, 1984 CABRITA, A. M: Reis – Guia de Apoio à Reabilitação de Edifícios Habitacionais, Lisboa, CML, !993
Teaching Methods	Lectures supported by illustrations. Case study analysis. Coursework on an existing urban centre.
Assessment Methods	Continuous assessment. Preparation and defense of two written assignments.
Language of Instruction	Portuguese

ipt Instituto Politécnico de Tomar

	B – Description of individual course units
Course Title	Regeneration of Urban Pavements
Course Code	300611
Type of Course	Semi-annual
Level of Course	Not Applicable
Year	First
Semester/Trimester	Second
Number of credits	5,0
Name of Lecturer	Ana Paula Gerardo Machado and Fernando Manuel Lino Antunes
Course goals (preferably expressed in terms of learning outcomes/ competences)	An overview of materials, equipments, building processes and quality control related with the construction and maintenance of urban pavements. Skills acquired will enable students to analyse and intervene in key activities connected with the regeneration of pavements.
Prerequisites	NA
Course contents	1- Classification and characterisation of the different pavement types 2 – Classification and characterisation of materials 3 – Standardization 4 – Defects 5 – Maintenance procedures 6 – Regeneration procedures 7– Equipaments 8– Building processes 9 – Signalling 10– Quality control
Recommended Reading	Santos, Luís Picado e al. (2008) – "Pavimentos Rodoviários"; Pereira, Paulo e MIiranda, Valverde (1999) – "Gestão da Conservação dos Pavimentos Rodoviários"; Pereira, Orlando Almeida (1971) – "Pavimentos Rodoviários", Publ. LNEC CE 139. Apontamentos e artigos científicos da especialidade.
Teaching Methods	Expositive and interactive method. Presentation and analysis of case studies. Teaching will be ensured by the course lecturers and also reputed professors and experts will be invited to collaborate.
Assessment Methods	Continuous Assessment: Written test including a theoretical and a practical component + a practical assignment. Final grading: assignment (30%) and written test (70%). In order to pass the course students must meet the following requirements: have a minimum final mark of 9.5 and a minimum of 40% of total mark in every assessment part (theoretical and practical) of the written test.
Language of Instruction	Portuguese

ipt Instituto Politécnico de Tomar

	B – Description of individual course units
Course Title	Sustainability and Environmental Impact Assessment
Course Code	300612
Type of Course	Semi-annual
Level of Course	Not Applicable
Year	First
Semester/Trimester	Second
Number of credits	5,0
Name of Lecturer	Stefan Rosendahl
Course goals (preferably expressed in terms of learning outcomes/ competences)	1. Identify environmental impacts and propose measures to mitigate these impacts. 2. Students should familiarise themselves with the informations and techniques needed to draw up an environmental impact survey. 3. Get familiar with the technical and legal procedures of an environmental impact evaluation process. 4. Be able to analyse environmental problems and devise solutions for a sustainable urban regeneration. 5. Assess negative and positive impacts on the environment of a construction work. 6. Be able to tackle with new situations.
Prerequisites	NA
Course contents	1. SUSTAINABILITY 1.1. Definition 1.2. Use of resources 1.3. Use of space 1.4. Ecological footprint 1.5. Sustainability Tools: 2. ENVIRONMENTAL IMPACT ASSESSMENT 2.1. Legal framing of EIA 2.2. Basic principles of EIA 2.3. EIA processes and methods 2.4. Planning and EIA 2.5. EIA components and involved authorities:
Recommended Reading	• ANTUNES, L. F. COLAÇO: O Procedimento Administrativo de Avaliação de Impacto Ambiental - Para uma tutela preventiva do ambiente**.** – Almedina, 1998.
Teaching Methods	Lectures – Presentation of information based on textbooks and handouts prepared by the lecturer. Theoretical-practical classes – Interactive analysis and discussion of subject matters. Analysis of applicable legislation through worksheets. Development of practical skills for environmental impact assessment Practical assignment: Drawing up of a final assignment involving the simulation of an environmental impact survey including project presentation, scope definition, the EIA and non-technical summary.
Assessment Methods	• Ongoing assessment (assiduity, class participation) • Mid-term written test (50%) • Group work + oral presentation (50%)
Language of Instruction	Portuguese

ipt Instituto Politécnico de Tomar

	B – Description of individual course units
Course Title	Worksite Management and Coordination
Course Code	300613
Type of Course	Semi-annual
Level of Course	Not Applicable
Year	Second
Semester/Trimester	First semester
Number of credits	5,0
Name of Lecturer	Luís Filipe Rocha de Almeida
Course goals (preferably expressed in terms of learning outcomes/ competences)	The major aims of this course are to: Develop an integrated approach of civil engineering, the action of building, the building process and its various players, with a greater emphasis to the construction phases; Understand the significance of articulating technical activities and management approaches and strategies; Apply ISO 900 standards to the building process and Design, implement and evaluate building quality sytems. The course should develop in the students critical skills and raise awareness of the Portuguese building reality. This will be done with basis on real cases which will provide the students with an understanding of quality construction and a final product that complies with the project specifications.
Prerequisites	NA
Course contents	Introduction to the course Characterisation of the Building Activity The status of the civil engineering professionals Building Process Design and Project Introduction to Management Techniques and Project Coordination Construction Quality
Recommended Reading	• Gestão de Projectos. Apontamentos da disciplina. Hipólito de Sousa, FEUP, 2002 (220 páginas) • Preparing for Project Management – David Williams, ASCE Press, New York, 1996 • A Guide to the Project Management Body of Knowledge – PMBook Guide, USA 1996
Teaching Methods	The course is designed to develop in the students critical skills and awareness of the Portuguese civil construction reality. Subject content will be conveyed through lectures supported by case studies. Preference will be given to cases that may interest the students and promote their participation in class and coursework. Seminars and lectures by experts will be considered in due course.
Assessment Methods	Final grade will be the weighted average of the assignment (65%) and the mid-term test (35%).
Language of Instruction	Portuguese

ipt Instituto Politécnico de Tomar

	B – Description of individual course units
Course Title	Regeneration of Basic Sewerage Systems
Course Code	300614
Type of Course	Semi-annual
Level of Course	Not Applicable
Year	Second
Semester/Trimester	First semester
Number of credits	5,0
Name of Lecturer	António Cavalheiro
Course goals (preferably expressed in terms of learning outcomes/ competences)	Introduction to regeneration techniques of basic sewerage systems. On completion of this module students should be able to select appropriate technologies. An introduction to source control techniques as well as description of the aims, advantages and constraints and selection criteria.
Prerequisites	NA
Course contents	The need and significance of regeneration. The life span of systems Major types of engineering and management tools for regeneration support. System monitoring and operational data analysis Decision and intervention tools Criteria used in the regeneration of networks Rainwater source control
Recommended Reading	Handouts prepared by the lecturer Estratégias para Beneficiação e Reabilitação de Sistemas Públicos de Drenagem de Águas Pluviais - LNEC
Teaching Methods	Theoretical interactive sessions supported by worksheets.
Assessment Methods	Two compulsory assignments + a mid-term test or final exam A minimum of 9,5 (0-20 scale) in each of the separate components is required for a pass.
Language of Instruction	Portuguese

	B – Description of individual course units
Course Title	Energy Efficiency in Buildings
Course Code	300615
Type of Course	Semi-annual
Level of Course	Not Applicable
Year	Second
Semester/Trimester	First semester
Number of credits	5,0
Name of Lecturer	Ana Carla Vicente Vieira
Course goals (preferably expressed in terms of learning outcomes/ competences)	Recognise the legal and regulatory requirements applicable to the energetic certification within the European context; Characterise thermal behaviour of buildings with basis on indoor climate conditions, climatic requirements and the response of components to those requirements; Size and select climate control systems based on energetic efficiency criteria and the RSECE. Be able to prepare and interpret energy audits; Be able to identify potential energy saving schemes; Be able to assess the economical viability of defined schemes.
Prerequisites	NA
Course contents	The European energy market; Passive solar behaviour and bioclimatic design of buildings Fundamental principles of thermodynamics; Ventilation, heat and cold production – composition, design and selection of air-conditioning systems; Regulations on Thermal Behaviour of Buildings (RCCTE) and Regulations on Energetic Systems (RSECE) - RSECE-QAI and RSECE-energy. Calculus of energetic needs of buildings Energetic certification of buildings Energy audits – methodologies and technological solutions; Major opportunities for optimising lighting, air-conditioning and ventilation consumptions (ORC) – Strategies to increase energetic efficiency in buildings and urban environment; Analysis of economical viability of energy efficiency plans and programs Financial programs and incentives to energetic efficiency and integration in endogenous resources utilisation systems. Cost estimate for the exploitation of buildings, global cost of alternative solutions and maintenance cost estimate
Recommended Reading	THUMANN; "ENERGY CONSERVATION IN EXISTING BUILDINGS DESKBOOK"
Teaching Methods	Lectures supported by audiovisual resources: description of problem, analysis methodologies and potencial solutions; Individual or group coursework and studies proposed by the lecturer. On-site visits.
Assessment Methods	Oral presentation and discussion of practical coursework and studies; Written test.
Language of Instruction	Portuguese

	B – Description of individual course units
Course Title	Project or Placement
Course Code	300617
Type of Course	semi-annual (runs in the first and second semesters)
Level of Course	Not Applicable
Year	Second
Semester/Trimester	Annual
Number of credits	45
Name of Lecturer	Lecturer to be appointed at the beginning of the module
Course goals (preferably expressed in terms of learning outcomes/ competences)	Project or Placement are profession-oriented and are tailored individually based on each student's know-how. Project or Placement are designed so as to complement skills acquired during the taught part of the program.
Prerequisites	As defined in the regulations for the study cycle leading to the master's degree in Urban Regeneration.
Course contents	It depends on the topic to be developed.
Recommended Reading	To be indicated on a case-to-case basis.
Teaching Methods	Development of a project supervised by a lecturer or a technician from an entity. When a student opts for a Work Placement he will develop a range of activities within the work context. In both cases he will have to draw up a final report.
Assessment Methods	Project or Training have a specific assessment scheme defined by the regulations governing the Urban Regeneration masters program and the grade improvement scheme does not apply in this case. At the end of the first semester of project or placement students must submit a progress report. This report will be subject to recommendations by the supervisor and, if any, co-supervisors and also by an evaluator appointed by the coordinating committee of the program. Based on these recommendations, the coordinating committee will decide on the continuity of work.
Language of Instruction	Portuguese