
MASTER OF SCIENCE, TECHNOLOGY AND HEALTH

2023-2024

YEAR 1

CITY AND URBAN ENVIRONMENTS

ARCHITECTURE, AMBIANCES, URBANITY

PROGRAMME SUPERVISOR(S):

Laurent PERRET



YEAR 1 - Autumn Semester

CORE COURSES

| Course code | Title | ECTS Credits |
|-------------|---|--------------|
| ALEMO | Algorithmics for Engineering Modeling | 4 |
| BUSEN | Business Environment | 4 |
| CONF | Conferences | - |
| EBUILD | Energetics and Building heat transfers | 5 |
| FLUM1 | Fluid Mechanics 1 | 5 |
| IGIS | Introduction to Geographic Information Sciences | 5 |
| INTRES | Introduction to Research | 5 |

LANGUAGE COURSES

| Course code | Title | ECTS Credits |
|-------------|------------------------------------|--------------|
| CCE1 | Cultural and Communication English | 2 |
| ESP1 | Spanish Language | 2 |
| FLE1 | French Language | 2 |

YEAR 1 - Spring Semester

CORE COURSES

| Course code | Title | ECTS Credits |
|-------------|--|--------------|
| CFD | Introduction to Computational Fluid Dynamics | 5 |
| HICITY | History of the City | 5 |
| HYDRO | Hydrology and transfers in soils | 5 |
| SOCITY | Social Sciences for the City | 4 |
| URMAP | Urban Management and Planning | 4 |
| URREV | Urban Realities Review | 5 |

LANGUAGE COURSES

| Course code | Title | ECTS Credits |
|-------------|------------------------------------|--------------|
| CCE2 | Cultural and Communication English | 2 |
| ESP2 | Spanish Language | 2 |
| FLE2 | French Language | 2 |

Algorithmics for Engineering Modeling [ALEMO]

LEAD PROFESSOR(S): Domenico BORZACCHIELLO / Jose-Vicente AGUADO

Objectives

At the end of the course the students will be able to:

- Identify and properly apply numerical methods to different engineering problems
- Understand algorithmic aspects and handle practical implementation issues
- Program and optimize algorithms in Python
- Use standard libraries for scientific computing
- Produce reports and notebooks using Jupyter

Course contents

The course proposes a gentle introduction to numerical methods in scientific computing and their respective algorithms through practical problems that are often encountered in engineering applications. It will cover five fundamental topics : interpolation and differentiation, numerical quadrature, time-stepping integration techniques for ordinary differential equations, iterative solvers and nonlinear solvers.

Each topic will be presented through a practical application, that will serve as a basis to review implementation aspects as well as theoretical principles of the numerical methods involved. Several exercises in Matlab/Octave are proposed.

Course material

- Slides and Course Notes
- Deepnote Labs
- An Introduction to Programming and Numerical Methods

Assessment

Individual assessment: EVI 1 (coefficient 1)

| LANGUAGE OF INSTRUCTION | ECTS CREDITS | LECTURES | TUTORIALS | LAB | PROJECT | EXAM |
|-------------------------|--------------|----------|-----------|--------|---------|-------|
| English | 4 | 10 hrs | 0 hrs | 20 hrs | 0 hrs | 2 hrs |

Master Programme - City and Urban Environments - Architecture, Ambiances, Urbanity

YEAR 1 - Autumn Semester

Business Environment [BUSEN]

LEAD PROFESSOR(S): David TROYA

Objectives

- Understand the general concepts of business English and marketing principles
- Understand the principles of given business models (for example: the collaborative economy)
- Build a professional project and explore international opportunities
- Develop strategies for inter-cultural practice
- Organize, lead and participate in discussions, interviews and meetings
- Strengthen self-confidence and level of conviction
- Develop active listening and understanding to reformulate, explain and argue
- Acquire notions of corporate culture and values
- Develop well-being at work and a sense of responsibility
- Enhance team work

Course contents

Business Environment: exercises to explore in practice the areas of business and marketing

Field-related or inter-cultural project:

- Field-based radio project: prepare, conduct and promote interviews for ECN's radio programme: L'Heure Centralienne (<http://www.euradionantes.eu/emission/l-heure-centralienne>), with the contribution of professors, doctorate students, industrial partners, industry players at fairs, etc.
- Inter-cultural project.
 - Escape Game: Design, create and implement an escape game (including props and materials) with cultural, scientific and mathematical references and a narrative that runs through the game.

Course material

Written and televised press, information and digital tools, general documents business environment and company strategies. Internet conferences (Ted Talks, etc.), our own educational materials on Hippocampus (Moodle).

Assessment

Individual assessment: EVI 1 (coefficient 1.0)

| LANGUAGE OF INSTRUCTION | ECTS CREDITS | LECTURES | TUTORIALS | LAB | PROJECT | EXAM |
|-------------------------|--------------|----------|-----------|-------|---------|-------|
| English | 4 | 14 hrs | 16 hrs | 0 hrs | 0 hrs | 2 hrs |

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YEAR 1 - Autumn Semester

Conferences [CONF]

LEAD PROFESSOR(S): Laurent PERRET

Objectives

This course provides the students with a series of conferences on topics related to the Master content.

Course contents

Conferences' topics will depend on the invited speakers.

Course material

Assessment

Individual assessment: EVI 1 (coefficient 1.0)

| LANGUAGE OF INSTRUCTION | ECTS CREDITS | LECTURES | TUTORIALS | LAB | PROJECT | EXAM |
|-------------------------|--------------|----------|-----------|-------|---------|-------|
| English | - | 6 hrs | 0 hrs | 0 hrs | 0 hrs | 0 hrs |

Energetics and Building heat transfers [EBUILD]

LEAD PROFESSOR(S): Laurent PERRET

Objectives

At the end of the course (30 hours + personal work) the students will be able to:

- apply basics in heat transfer and thermodynamics
- identify and calculate comfort parameters (sensible and latent)
- identify and consider outdoor weather conditions
- do an energy balance
- pre-design an air conditioning system
- propose solutions for energy efficient actions in buildings
- acquire their first experience in using an energy and building simulation tool.

Course contents

This course aims to present the different parameters that affect the energy efficiency of buildings, the necessary integrated approach between envelope performance, occupancy and energy systems. An introduction to energy and building simulation tools is also provided.

Course material

- Lecture notes
- Heat and mass transfer books (e.g. Incropera et al.)
- Pleiades+COMFIE modelling tool

Assessment

Individual assessment: EVI 1 (coefficient 1.0)

| LANGUAGE OF INSTRUCTION | ECTS CREDITS | LECTURES | TUTORIALS | LAB | PROJECT | EXAM |
|-------------------------|--------------|----------|-----------|-------|---------|-------|
| English | 5 | 14 hrs | 8 hrs | 8 hrs | 0 hrs | 2 hrs |

Fluid Mechanics 1 [FLUM1]

LEAD PROFESSOR(S): Guillaume DUCROZET

Objectives

At the end of the course (30 hours + personal work) the students will be able to:

- Describe the main physical properties of a fluid.
- Identify the specificity of fluid mechanics in the continuum mechanics framework (i.e. compared to solid mechanics).
- Identify the non-dimensional numbers at play in any fluid mechanics problem and deduce how to perform experiments with appropriate similarity.
- Understand the notion of stresses and its representation through stress tensor.
- Describe the physical meaning of each term in the Navier-Stokes' equations
- Identify the different flow regimes.
- Evaluate the generalized force applied on any object in still water.
- Understand when the perfect fluid assumption is valid.

Course contents

This course aims to present the foundations and general principles of fluid mechanics. The lectures cover the following topics:

- Physics of fluids
- Dimensional analysis
- Stress tensors and fluids
- Navier Stokes' equations
- Flow regimes: introduction to turbulence
- Fluid statics
- Bernoulli's equation for a perfect fluid

In addition to those lectures, tutorials and lab sessions will allow the students to apply the theoretical knowledge to practical configurations.

Course material

- F. White, Fluid mechanics, McGraw-Hill, New York.
- B.R. Munson et al., Fundamentals of fluid mechanics, John Wiley, New York.

Assessment

Individual assessment: EVI 1 (coefficient 1.0)

| LANGUAGE OF INSTRUCTION | ECTS CREDITS | LECTURES | TUTORIALS | LAB | PROJECT | EXAM |
|-------------------------|--------------|----------|-----------|-------|---------|-------|
| English | 5 | 14 hrs | 12 hrs | 4 hrs | 0 hrs | 2 hrs |

Introduction to Geographic Information Sciences [IGIS]

LEAD PROFESSOR(S): Laurent PERRET

Objectives

At the end of the course (30 hours + personal work) the students will be able to:

- Understand the concepts inherent in geographic information systems,
- Exchange with geomaticians (experts in GIS), using the same vocabulary,
- Develop spatial reasoning (how spatial objects interact with each other? What are the relationships between them? ...),
- Manipulate GIS software (e.g Qgis and OrbisGIS),
- Create maps, following graphic semiology rules,
- Understand the concept of Spatial Data Infrastructure (SDI).

Course contents

This course aims to present the field of Geographic Information Sciences (GIS) from theoretical and practical points of view. The theoretical part will mainly be focused on the presentation of the main concepts related to GIS (definition, vocabulary, data type), Spatial analysis, cartography and Spatial Data Infrastructure. The practical part will focus on the use of two free and open-source GIS software tools (Qgis and OrbisGIS) and with the discovery and use of the Spatial SQL language, which will be used to manipulate and process geographic information.

Course material

- The GIS Primer, BUCKLEY D.J. (<http://www.innovativegis.com/basis/primer/primer.html>)
- Geospatial Analysis: A Comprehensive Guide to Principles, Techniques, and Software Tools Smith, Goodchild, Longley 2007 (<http://www.spatialanalysisonline.com/>)
- Principles of Geographic Information Systems, Burrough and McDonnell (<https://www.amazon.co.uk/Principles-Geographic-Information-Systems-2nd/dp/0198233655>)

Assessment

Individual assessment: EVI 1 (coefficient 1.0)

| LANGUAGE OF INSTRUCTION | ECTS CREDITS | LECTURES | TUTORIALS | LAB | PROJECT | EXAM |
|-------------------------|--------------|----------|-----------|-------|---------|-------|
| English | 5 | 14 hrs | 16 hrs | 0 hrs | 0 hrs | 2 hrs |

Introduction to Research [INTRES]

LEAD PROFESSOR(S): Boris CONAN

Objectives

At the end of the course (30 hours + personal work) the students will be able to:

- master the different steps of scientific dissemination
- conduct thorough bibliographic research using appropriate tools
- write a bibliographic review
- present his/her work in a congress-like situation
- elaborate a critical review of a peer's work, literature article, and his/her own work

Course contents

This course aims to present the common rules of scientific publication and to provide an overview of the scientific press. As part of the course, a mini-symposium is organised where students will experience conducting literature review using bibliographic research and scientific writing tools introduced in the course. In this exercise, students have to present a bibliographic study on a subject of their choice by writing a bibliographic article and by presenting it in a mini-symposia organized by students.

Course material

Assessment

Individual assessment: EVI 1 (coefficient 1.0)

| LANGUAGE OF INSTRUCTION | ECTS CREDITS | LECTURES | TUTORIALS | LAB | PROJECT | EXAM |
|-------------------------|--------------|----------|-----------|-------|---------|-------|
| English | 5 | 8 hrs | 8 hrs | 0 hrs | 16 hrs | 0 hrs |

Cultural and Communication English [CCE1]

LEAD PROFESSOR(S): David TROYA

Objectives

This course aims at improving your critical thinking and persuasion skills in English. Using documentaries, we will explore, discuss and debate a range of cultural, political, social, and environmental issues relevant to current world events.

Speaking and understanding English as a second or third language is a great achievement, but does it mean you are an effective communicator? The next step involves, among other things, critical thinking and persuasive skills, both of crucial importance in the modern professional environment. We will address these issues by analyzing documentaries that will lead to formal debates.

Several competencies will be developed through class exercises. Oral presentations will be an opportunity put your verbal as well as your non-verbal communication skills into practice. During debate, you will be able to sharpen your analytical skills, provide constructive feedback, defend an argument, and prove a point.

Course objectives

- Improving your communication skills
- Becoming an active listener
- Enhancing your non-verbal communication skills
- Developing critical thinking toward media
- Boosting leadership skills through moderating
- Organizing evidence and arguments

Course contents

Each session will be dedicated to a particular cultural, political, social or environmental topic of relevance in the wider anglophone world. Each topic will include multimedia material in the form of a short documentary or documentary excerpt. During class, students will lead a primer presentation, a moderated discussion and a formal debate.

Primer Presentation:

In pairs, you will hold a short talk to prime us on the topic of that week's documentary: you will introduce us to the topic by setting it in a wider context and establishing what's at stake.

Moderated Discussion :

In pairs, you will moderate a discussion related to the themes explored by the documentary. Moderators will come prepared with open-ended questions pertaining to the strengths and weakness of the documentary. They will distinguish between content and form and encourage critical, constructive opinions.

Formal Debate:

What's the difference between an opinion and an argument? You will soon find out. After the moderated discussion, we will brainstorm potential topics for debate, and follow the British Parliamentary model to sharpen your research, critical thinking,

and persuasive skills.

During the debate, each speaker will be assigned an audience member who evaluates their individual performance and provides a short debrief. A panel of two judges will determine which side wins.

Course material

Written and televised press, information and digital tools, general documents, business environment and company strategies. Internet conferences (Ted Talks, etc.), our own educational materials on Hippocampus (Moodle).

Assessment

Individual assessment: EVI 1 (coefficient 1.0)

| LANGUAGE OF INSTRUCTION | ECTS CREDITS | LECTURES | TUTORIALS | LAB | PROJECT | EXAM |
|-------------------------|--------------|----------|-----------|-------|---------|-------|
| English | 2 | 0 hrs | 32 hrs | 0 hrs | 0 hrs | 0 hrs |

Spanish Language [ESP1]

LEAD PROFESSOR(S): Marta HERRERA

Objectives

For beginners:

Practice and reinforcement of the five skills (oral and written expression and comprehension as well as interaction)

Acquisition of vocabulary and linguistic structures

Be able to talk about yourself and those around you

Be able to express oneself during daily activities

Know how to give your opinion

For advanced students:

Practice and reinforcement of the five skills (oral and written expression and comprehension as well as interaction)

Acquisition of specialised vocabulary

Be able to understand the essential content of concrete or abstract subjects including a technical discussion

Be able to communicate spontaneously and fluently

Be able to express oneself in a clear and detailed manner, to express an opinion on a topical subject

Course contents

For beginners:

Personal environment (introduce yourself, express yourself, your tastes, your character, your hobbies, etc.), your surroundings (friends, family, location, climate), your interests (sports, leisure)

Present tense (regular and irregular)

Language patterns to express habit, obligation, "gustar" and its equivalents,

Possessive adjectives

Differences between "es", "está", "hay"

Use of "por" and "para"

Adverbs and frequency patterns

Numeral adjectives

For advanced students:

Knowledge of the Hispanic world (economic, technical, cultural and social environment)

Present tense (regular and irregular)

Imperative

Past tenses

Direct / indirect style

Future tense

Conditional tense

Present and past subjunctive moods

Course material

Preparation manuals, our own tailor-made documents, written and internet press, general civilization documents, digital tools

Assessment

Individual assessment: EVI 1 (coefficient 1)

| LANGUAGE OF INSTRUCTION | ECTS CREDITS | LECTURES | TUTORIALS | LAB | PROJECT | EXAM |
|-------------------------|--------------|----------|-----------|-------|---------|-------|
| Spanish | 2 | 0 hrs | 32 hrs | 0 hrs | 0 hrs | 0 hrs |

Master Programme - City and Urban Environments - Architecture, Ambiances, Urbanity

YEAR 1 - Autumn Semester

French Language [FLE1]

LEAD PROFESSOR(S): *Silvia ERTL*

Objectives

The objective is to familiarize the learner with the French language and French culture through an entertaining task-based communicative language teaching, focused on speaking combined with:

- Phonetics
- Self-correcting exercises on our learning platform
- Learning Lab activities
- Project work
- Tutoring

Course objectives include the acquisition and reinforcement of vocabulary, syntax, and pronunciation by both traditional means and through the use of digital resources.

Students will learn general French, develop language skills of oral and written comprehension and expression.

After completing this course (32 hours + personal work), the students will be able to communicate in spoken and written French, in a simple, but clear manner, on familiar topics in the context of study, hobbies etc. Another important goal of this course is to introduce the student to French culture. At the end of the course (2 semesters), complete beginners can achieve an A1 level and some aspects of the A2 of The Common European Framework of Reference for Languages. More advanced students may aim for B1/B2 levels.

Course contents

Full range of practical communication language exercises: reading comprehension, listening comprehension, written expression, oral expression.

Learners will be able to use the foreign language in a simple way for the following purposes:

1. Giving and obtaining factual information:

- personal information (e.g. name, address, place of origin, date of birth, education, occupation)
- non-personal information (e.g. about places and how to get there, time of day, various facilities and services, rules and regulations, opening hours, where and what to eat, etc.)

2. Establishing and maintaining social and professional contacts, particularly:

- meeting people and making acquaintances
- extending invitations and reacting to being invited
- proposing/arranging a course of action
- exchanging information, views, feelings, wishes, concerning matters of common interest, particularly those relating to personal life and circumstances, living conditions and environment, educational/occupational activities and interests, leisure activities and social life

3. Carrying out certain transactions:

- making arrangements (planning, tickets, reservations, etc.) for travel, accommodation, appointments, leisure activities
- making purchases
- ordering food and drink

Course material

Preparation manuals, our own tailor-made documents, written and televised press, internet, general civilization documents, digital tools, our own educational materials on Hippocampus (Moodle).

Assessment

Individual assessment: EVI 1 (coefficient 1.0)

| LANGUAGE OF INSTRUCTION | ECTS CREDITS | LECTURES | TUTORIALS | LAB | PROJECT | EXAM |
|-------------------------|--------------|----------|-----------|-------|---------|-------|
| English | 2 | 0 hrs | 48 hrs | 0 hrs | 0 hrs | 0 hrs |

Introduction to Computational Fluid Dynamics [CFD]

LEAD PROFESSOR(S): Isabelle CALMET

Objectives

At the end of the course the students will be able to:

- Understand the basic concepts of Computational Fluid Dynamics
- Solve 1D partial derivative equations using finite difference or finite volume methods
- Have a critical view of various schemes in terms of stability and errors
- Design and perform simulations for incompressible laminar flow in simple configurations
- Analyse results according to the mesh, boundary conditions and schemes

Course contents

This course is an introduction to Computational Fluid Dynamics, a discipline that students will be led to use in their career as engineers or researchers in the fields of hydrology or atmospheric sciences. The objective is to provide basic knowledge about CFD by addressing the following points :

- mathematical model used in finite difference and finite volume approaches
- finite difference method and schemes to approximate spatial derivatives
- finite volume method and approximation of surface and volume integrals
- methods to solve unsteady problems
- application to the Navier-Stokes equations

Lab sessions will be organized throughout the course in order to improve the appropriation of lecture contents. In addition, the students will have a first experience of numerical simulation by coding the methods and schemes studied in the course for simple flows.

Course material

Ferziger and Péric, 2002, Computational Methods for Fluid Dynamics, Springer-Verlag Eds.

Assessment

Individual assessment: EVI 1 (coefficient 1.0)

| LANGUAGE OF INSTRUCTION | ECTS CREDITS | LECTURES | TUTORIALS | LAB | PROJECT | EXAM |
|-------------------------|--------------|----------|-----------|-------|---------|-------|
| English | 5 | 12 hrs | 12 hrs | 0 hrs | 6 hrs | 2 hrs |

History of the City [HICITY]

LEAD PROFESSOR(S): Laurent PERRET

Objectives

At the end of the course (30 hours + personal work) the students will be able to understand a current urban state as a legacy of history and part of a complex process.

Course contents

This course aims to present:

- An overview of the history of western cities and urban events from antiquity to modern times
- An approach to building new cities in the classical era
- A study of urban transformations, tools and results: royal squares in the 17th century, improvements and general plans in the 18th century, road alignment plans and networks in the 19th century, town planning and equipment in the 20th century etc.

The course will highlight significant opposing or complementary pairs: such as private / public, healthy / unhealthy, housing / amenities, lower city / upper city, control / planning, renovation / heritage.

Course material

- Siegfried GIEDION, Espace, temps, architecture [“Space, Time and Architecture - Harvard, Cambridge Univ. Press”] (trad. Françoise-Marie Rosset), 1941, Denoël, coll. “Médiations” (réimpr. 1978, 2004)
- Edmund BACON, D’Athènes à Brasilia, une histoire de l’urbanisme, Paris, La Bibliothèque des Arts, 1967
- Jean DETHIER et Alain GUIHEUX (dir.), La ville, art et architecture en Europe 1870-1993, Paris, éditions du Centre Georges Pompidou, 1994
- Charles DELFANTE, Grande histoire de la ville, Paris, A. Colin, 1999
- Leonardo BENEVOLO, Histoire de la ville, Marseille, Parenthèses, 2000

Assessment

Individual assessment: EVI 1 (coefficient 1.0)

| LANGUAGE OF INSTRUCTION | ECTS CREDITS | LECTURES | TUTORIALS | LAB | PROJECT | EXAM |
|-------------------------|--------------|----------|-----------|-------|---------|-------|
| English | 5 | 20 hrs | 10 hrs | 0 hrs | 0 hrs | 2 hrs |

Hydrology and transfers in soils [HYDRO]

LEAD PROFESSOR(S): Laurent PERRET

Objectives

At the end of the course (30 hours + personal work) the students will be able to:

- List the different components of the water cycle
- Calculate a hydrological budget
- Analyze catchment response to rainfall, linked to soil type, catchment morphology, climatic conditions
- Demonstrate a good understanding of the laws governing water flow in soils and groundwater flow
- Apply simple quantitative analysis techniques to solve subsurface water transfer problems
- Know a few basic mass transport processes

Course contents

This course aims to present the water cycle with its different components, their formations and their driving conditions. The delineation of catchment will be explained and the concept of water budget at the catchment scale will be detailed. Some modelling concepts will be presented.

Moreover, this course covers the fundamentals of subsurface flow and transport. Class topics to be addressed: natural porous media, flow in saturated porous media, groundwater flow, variably saturated flow in soils, non-reactive solute transport in porous media and reactive transport in soils.

Course material

- Bear, J., 1972: Dynamics of Fluids in Porous Media, Elsevier, New York
- Bird, R. B., W. E. Stewart and E. N. Lightfoot, 1960: Transport Phenomena, John Wiley & Sons, New York
- Pr. A. Musy web course: <http://www.echo2.epfl.ch/e-drologie>

Assessment

Individual assessment: EVI 1 (coefficient 1.0)

| LANGUAGE OF INSTRUCTION | ECTS CREDITS | LECTURES | TUTORIALS | LAB | PROJECT | EXAM |
|-------------------------|--------------|----------|-----------|-------|---------|-------|
| English | 5 | 16 hrs | 14 hrs | 0 hrs | 0 hrs | 2 hrs |

Social Sciences for the City [SOCITY]

LEAD PROFESSOR(S): Laurent PERRET

Objectives

At the end of the course (32 hours + personal work) the students will be able to:

- Understand how social sciences work
- Use some simple tools stemming from social sciences
- Have a reflexive and critical vision of the tools used in urban techniques
- Have an interdisciplinary vision of the urban planning and design fields

Course contents

This course is an introduction to the general concepts of human and social sciences. It also introduces analytical tools in order to provide an interdisciplinary, reflexive and critical overview of urban projects. The aim is to familiarize future engineers with the general methods used in social sciences to analyse social phenomena in the city and urban techniques. We will provide tools and frameworks in order to understand urban phenomena, city production and the human, organizational and political context of future professionals.

- Principles and methods in human and social sciences
- Tools dealing with social topics applied to urban projects and sociology of techniques applied to the city
- Urban planning and design: professions, organisations, decision and policies

Students will practice using tools on subjects they are interested in: observation, social inquiries, tool deconstruction, organisation analysis, political analysis etc.

Course material

Assessment

Individual assessment: EVI 1 (coefficient 1.0)

| LANGUAGE OF INSTRUCTION | ECTS CREDITS | LECTURES | TUTORIALS | LAB | PROJECT | EXAM |
|-------------------------|--------------|----------|-----------|-------|---------|-------|
| English | 4 | 16 hrs | 14 hrs | 0 hrs | 0 hrs | 2 hrs |

Master Programme - City and Urban Environments - Architecture, Ambiances, Urbanity

YEAR 1 - Spring Semester

Urban Management and Planning [URMAP]

LEAD PROFESSOR(S): Laurent PERRET

Objectives

At the end of the course (30 hours + personal work) the students will have acquired knowledge on:

- French public policies and local authorities
- urban services
- urban planning and public development
- waste management
- mobility
- climate and energy
- water management
- urban risks management

Course contents

The aim is to propose - after a general introduction and a presentation of the local context by theme - an illustration of the coordinated implementation of Nantes Métropole's public policies in a specific area: the Pré-Gauchet / Malakoff district.

Course material

- Presentation based on slide show
- Brochures (activity report, news documents)
- Field visits
- Illustrations (plans, diagrams etc)

Assessment

Individual assessment: EVI 1 (coefficient 1.0)

| LANGUAGE OF INSTRUCTION | ECTS CREDITS | LECTURES | TUTORIALS | LAB | PROJECT | EXAM |
|-------------------------|--------------|----------|-----------|-------|---------|-------|
| English | 4 | 16 hrs | 0 hrs | 8 hrs | 8 hrs | 0 hrs |

Master Programme - City and Urban Environments - Architecture, Ambiances, Urbanity

YEAR 1 - Spring Semester

Urban Realities Review [URREV]

LEAD PROFESSOR(S): Laurent PERRET

Objectives

At the end of the course (30 hours + personal work) the students will be able to:

- Understand the formation and transformations of a city.
- More specifically, analyze the issues that govern a large city.
- Identify and work on urban environmental issues.

Course contents

What do we know about a city? What are its origins?
 From what size of agglomeration can one speak of city?
 How does it develop?
 How is its space organized and distributed?
 Why do streets and buildings have such shapes?

The course attempts to answer these questions through a case study on one or two cities (probably Bordeaux and Rochefort sur Mer, both south of Nantes). These cities will be the subject of a two-day study visit (in March or April).

An introduction in the form of lectures and tutorials will work on the definition of a city (geography, urban planning, architecture, etc.). Then the trip will be prepared beforehand with the students who will be entrusted with a thematic team presentation on site. On-site visits will be an opportunity to meet those responsible for urban management, architectural heritage and promoters of urban projects.

Course material

- Kevin Lynch, 1999, L'image de la Cité, trad. par Marie-Françoise Vénard et Jean-Louis Vénard de The Image of the City (1960), Paris, Dunod, 221p.
- Camillo Sitte, l'Art de bâtir les villes, Le Seuil
- Philippe Paneray, Analyse Urbaine. Editions Parenthèses

Assessment

Individual assessment: EVI 1 (coefficient 1.0)

| LANGUAGE OF INSTRUCTION | ECTS CREDITS | LECTURES | TUTORIALS | LAB | PROJECT | EXAM |
|-------------------------|--------------|----------|-----------|--------|---------|-------|
| English | 5 | 6 hrs | 8 hrs | 16 hrs | 0 hrs | 2 hrs |

Cultural and Communication English [CCE2]

LEAD PROFESSOR(S): David TROYA

Objectives

Interview techniques and communicational English:

- Understand the general concepts of interactive communication
- Build a media project
- Acquire interview techniques
- Understand the process of sourcing and checking facts and figures
- Understand issues related to plagiarism
- Create a bibliography
- Behavioral skills in an inter-cultural environment:
- Strengthen self-confidence and capacity for interaction
- Develop active listening and reformulation skills
- Develop networking skills

Course contents

Cultural and Communicational English: exercises to explore in practice the areas of culture and communication.

Media project (for example: prepare, conduct and promote interviews for a radio programme: L'Heure Centralienne (<http://www.euradionantes.eu/emission/l-heure-centralienne>), with the contribution of professors, PhD students, industrial partners, industry players at fairs, etc.

Course material

Written and televised press, information and digital tools, general documents business environment and company strategies. Internet conferences (Ted Talks, etc.), our own educational materials on Hippocampus (Moodle).

Assessment

Individual assessment: EVI 1 (coefficient 1.0)

| LANGUAGE OF INSTRUCTION | ECTS CREDITS | LECTURES | TUTORIALS | LAB | PROJECT | EXAM |
|-------------------------|--------------|----------|-----------|-------|---------|-------|
| English | 2 | 0 hrs | 32 hrs | 0 hrs | 0 hrs | 0 hrs |

Spanish Language [ESP2]

LEAD PROFESSOR(S): Marta HERRERA

Objectives

For beginners:

Practice and reinforcement of the five skills (oral and written expression and comprehension as well as interaction)

Acquisition of vocabulary and linguistic structures

Be able to talk about yourself and those around you

Be able to express oneself during daily activities

Know how to give your opinion

For advanced students:

Practice and reinforcement of the five skills (oral and written expression and comprehension as well as interaction)

Acquisition of specialised vocabulary

Be able to understand the essential content of concrete or abstract subjects including a technical discussion

Be able to communicate spontaneously and fluently

Be able to express oneself in a clear and detailed manner, to express an opinion on a topical subject

Course contents

For beginners:

Personal environment (introduce yourself, express yourself, your tastes, your character, your hobbies, etc.), your surroundings (friends, family, location, climate), your interests (sports, leisure)

Present tense (regular and irregular)

Language patterns to express habit, obligation, "gustar" and its equivalents,

Possessive adjectives

Differences between "es", "está", "hay"

Use of "por" and "para"

Adverbs and frequency patterns

Numeral adjectives

For advanced students:

Knowledge of the Hispanic world (economic, technical, cultural and social environment)

Present tense (regular and irregular)

Imperative

Past tenses

Direct / indirect style

Future tense

Conditional tense

Present and past subjunctive moods

Course material

Preparation manuals, our own tailor-made documents, written and internet press, general civilization documents, digital tools

Assessment

Individual assessment: EVI 1 (coefficient 1)

| LANGUAGE OF INSTRUCTION | ECTS CREDITS | LECTURES | TUTORIALS | LAB | PROJECT | EXAM |
|-------------------------|--------------|----------|-----------|-------|---------|-------|
| Spanish | 2 | 0 hrs | 32 hrs | 0 hrs | 0 hrs | 0 hrs |

French Language [FLE2]

LEAD PROFESSOR(S): *Silvia ERTL*

Objectives

The objective is to familiarize the learner with the French language and French culture through an entertaining task-based communicative language teaching, focused on speaking combined with:

- Phonetics
- Self-correcting exercises on our learning platform
- Learning Lab activities
- Project work
- Tutoring

Course objectives include the acquisition and reinforcement of vocabulary, syntax, and pronunciation by both traditional means and through the use of digital resources.

Students will learn general French, develop language skills of oral and written comprehension and expression.

After completing this course (32 hours + personal work), the students will be able to communicate in spoken and written French, in a simple, but clear manner, on familiar topics in the context of study, hobbies etc. Another important goal of this course is to introduce the student to French culture. At the end of the course (2 semesters), complete beginners can achieve an A1 level and some aspects of the A2 of The Common European Framework of Reference for Languages. More advanced students may aim for B1/B2 levels.

Course contents

Full range of practical communication language exercises: reading comprehension, listening comprehension, written expression, oral expression.

Learners will be able to use the foreign language in a simple way for the following purposes:

1. Giving and obtaining factual information:
 - personal information (e.g. name, address, place of origin, date of birth, education, occupation)
 - non-personal information (e.g. about places and how to get there, time of day, various facilities and services, rules and regulations, opening hours, where and what to eat, etc.)
2. Establishing and maintaining social and professional contacts, particularly:
 - meeting people and making acquaintances
 - extending invitations and reacting to being invited
 - proposing/arranging a course of action
 - exchanging information, views, feelings, wishes, concerning matters of common interest, particularly those relating to personal life and circumstances, living conditions and environment, educational/occupational activities and interests, leisure activities and social life
3. Carrying out certain transactions:
 - making arrangements (planning, tickets, reservations, etc.) for travel, accommodation, appointments, leisure activities
 - making purchases
 - ordering food and drink

Course material

Preparation manuals, our own tailor-made documents, written and televised press, internet, general civilization documents, digital tools, our own educational materials on Hippocampus (Moodle).

Assessment

Individual assessment: EVI 1 (coefficient 1.0)

| LANGUAGE OF INSTRUCTION | ECTS CREDITS | LECTURES | TUTORIALS | LAB | PROJECT | EXAM |
|-------------------------|--------------|----------|-----------|-------|---------|-------|
| English | 2 | 0 hrs | 48 hrs | 0 hrs | 0 hrs | 0 hrs |