



Master en Architecture

Semester 1

	Vorlesung (UE)	Übung (UE)	ECTS
Moodle information session for MARCH sem1			0
Moodle information session for MARCH sem1	2		0
Design with Integrated Disciplines I			8
MARCH Design with Integrated Disciplines I		110	8
MARCH Reclaim the city. A practice of the imagination (Optional)		62	0
MARCH Rhino workshop	18		0
MARCH Laser cutter & 3D printer Workshop	16		0
MARCH GIS Workshop	16		0
Architecture I			5
MARCH Research Methods in Architecture	18		3
MARCH Seminar on Representation	24		3
European Urbanisation I			4
18-12 Cities, Masterplanning and Urban Governance	30		4
Globalisation			8
MARCH Globalisation and Planetary Urbanisation	21		3
08-51 - Geographical Information Systems: Analysis and Mapping	44		5
Elective courses			4
04-73 Global Environmental Change in the Anthropocene (Optional)	24		4
01-11 - Urban and Spatial Planning Theory and Concepts	24		4
International Development, Sustainability and Policy Coherence (Optional)	30		4



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Semester 2

	Vorlesung (UE)	Übung (UE)	ECTS
Design with Integrated Disciplines II			12
MARCH-DS-S2 RHINO Workshop	8		0
Design with Integrated Disciplines II		180	12
MARCH_LASER_CUTTER_WORSHOP	3		0
Architecture II			9
History of Urbanism	30		5
Smart and circular cities	24		4
European Urbanisation II			9
Urban and Landscape Design within Europe	30		5
Transport Systems Analysis (Optional)	45		4
17-52 WebGIS and Geoprocessing (track B) (Optional)	34		4

Semester 3

	Vorlesung (UE)	Übung (UE)	ECTS
Design Studio Semester III			12
MARCH Reclaim the city. A practice of the imagination (Optional)		62	0
MARCH Design Studio semester III: Architecture with discontent		160	12
Design with Integrated Disciplines III INDIVIDUAL WORK (Optional)	1		0
Architecture III			11
MARCH Seminar "Communicating Architecture"	18		3
Steel & Composite Structures 1 – High Rise Buildings	45		5



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	Vorlesung (UE)	Übung (UE)	ECTS
MARCH Visual and Cultural Studies	18		3
European Urbanisation III			3
MARCH Comparative analysis: laws, regulations, norms	18		3
Seminars III			4
MARCH Seminar on Project Management	30		4

Semester 4

	Vorlesung (UE)	Übung (UE)	ECTS
Design Studio - Master Thesis			30
MARCH-DS-S4 Design Studio - Final Master Thesis Part 1		90	10
MARCH-DS-S4 Design Studio - Final Master Thesis Part 2		90	20

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Semester 1

Moodle information session for MARCH sem1

Modul:	Moodle information session for MARCH sem1 (Semester 1)
ECTS:	0
Beschreibung:	This information session will take place on the webex platform and will introduce semester 1 students of the master in architecture to the UL teaching platform Moodle. It will take place on 17 September at 09.45h (tbc). more details to follow soon.
Sprache:	Anglais
Pflichtkurs:	Oui
Professor:	PARNIAN Shahed

MARCH Design with Integrated Disciplines I

Modul:	Design with Integrated Disciplines I (Semester 1)
ECTS:	8
Course learning outcomes:	<ul style="list-style-type: none">• Explore the agency in territorial design in addressing the social and ecological challenges of the Greater Luxembourg Region as it transitions towards the mid- 21stcentury.• Explore, chart and develop an understanding of urbanization in Luxembourg and its Greater Region.• Develop a vision for the sustainable future of Luxembourg in 2050 that will be able to accommodate population growth while sustaining primary production and reducing CO 2emissions and the per capita ecological footprint.• Explore the relationship between spaces of primary production, inhabitation, and work.• Work at the intersection of geography and design and engage with geospatial data, tools and methods of geographical analysis such as Geographic Information Systems, geo-simulations, cartographic techniques and visualisations and combine them with design tools.• Develop analytical modes of geo-design, combining typological analysis, and cartographic explorations through synthetic drawings.
Beschreibung:	<p>DESIGN WITH INTEGRATED DISCIPLINES I:</p> <p>PROJECT WORK WITH FOCUS ON RESEARCH ON EUROPEAN AND GLOBAL SCALE</p> <p>LUXEMBOURG IN TRANSITION</p> <p>The studio aims to contribute to the ecosystem of studies around the "Luxembourg in Transition" call for tenders, which calls for regional development, urban planning and architectural visions for the functional space of Luxembourg, with the aim to address the ecological challenges</p>

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of the 21st century and respond to the changing climatic conditions. The studio blends the boundaries between architecture, planning, geography and territorial development and touches upon issues of social, economic and ecological organisation. It aims to develop a platform for analysis and exploration of a series of scenarios of spatial development, responding to the intensive population and economic growth patterns of the Luxembourg region, and its largely unsustainable – both socially and ecologically – spatial development condition. It aims to bring together investigations on land use modelling, with explorations of alternative urban design typologies, linking geospatial analysis with the projective dimension of design. The goal is to explore spatial configurations for the year 2050 that will be able to accommodate population growth, while reducing the per capita ecological footprint of inhabitants and commuters and sustaining high levels of primary production.

Sprache:	Anglais
Pflichtkurs:	Oui
Evaluation:	50% participation in the studio, 50% midterm and final project presentation.
Professor:	KATSIKIS Nikolaos, HERTWECK Florian

MARCH Reclaim the city. A practice of the imagination

Modul:	Design with Integrated Disciplines I (Semester 1)
ECTS:	0
Course learning outcomes:	Session descriptions: Date & Time Location Sat 12/09 9.45-19.15 (full day) Dérive and gesture drawings Belval Campus We will explore the campus with the sensible body using the method of dérive(Debord, 1957), an experimental stroll through the campus and through its varied ambiances. We will document this intuitive, poetic and synesthetic experience with visual and written notes. We will practice gesture drawings: spontaneous, atmospheric and suggestive representations of urban space and architectural figures. Required reading: Richard Sennett, "The competent urbanite" (ch. 7) (excerpt), in Building and Dwelling: Ethics for the City, London: Penguin Books, 2018, p. 171-189 [online] Suggested reading: Guy Debord, "Theory of the Dérive", Les Lèvres Nues #9 (November 1956), reprinted in Internationale Situationniste #2 (December 1958) [ENG: online ; FR: online] Sun 13/09 14.00-19.15 (half day) Guided walk and sensory (counter-) mapping Centre and periphery of Esch-sur-Alzette Students will be taken on a guided walk through Esch's centre and periphery and their sedimented histories. Drawing on the figure of the flâneur(Benjamin, 1999), we will explore the relationship between embodied experience, individual/collective memory and narratives on the

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city. Students will be introduced to sensory counter-mapping and produce a cartography of their sensible experience.

Required reading:

Walter Benjamin, "The arcades of Paris. Paris Arcades II", in The Arcades Project, Cambridge & London: Belknap Press of Harvard University Press, 1999 [1890-1940], p. 873-884 [online]

Suggested readings / examples of applied critical/counter-mapping:

Perfect City Working Group, "What do you avoid, where do you belong", Urban Omnibus: a publication of the architectural league of New York, 2017 [online]

Iconoclasistas (Paolo O. Ares & Julia Riser), Manual of Collective Mapping: Critical Cartographic Resources for Territorial Processes of Collective Action, 2016 [online]

Tue 15/09

9.45-19.15

(full day)

Character studies and soundscapes

Centre of Esch-sur-Alzette

This session is dedicated to urban drawings from scale and silhouette to detail, ornament, materiality and texture, accompanied and contrasted with sound recordings. We will explore resonances and dissonances of perception and attention within the group and within ourselves. Our discussions will examine felt/"unseen" space vs. geometrical/panoptic space (De Certeau, 1988) and explore concepts of "character", "reputation", "spirit" of urban space(s) and environment(s).

Required reading:

Michel De Certeau, "Walking the city", The Practice of Everyday Life, Berkeley & Los Angeles: University of California Press, 1988 [1984], p. 91-110 [online]

Wed 16/09 14.00-19.15

(half day)

Elevational studies and drawings

Centre of Esch-sur-Alzette

This session is dedicated to elevational (façade) studies and drawings. Students will produce and collect graphic representations of selected buildings in the city centre. Drawings will be free-handed but should endeavour to consistently reflect proportions, measure, scale and architectural details.

No required readings

Fri 18/09 14.00-19.15

(half day)

"Philological" reconstruction workshop

Studio, Belval Campus

Reworking, revising and completing the elevational drawings, we will introduce appropriate changes and corrections (for example adding floors or reconfiguring street level façade keeping with the logic of composition and character).

Required reading:

ROSSI Aldo, "Introduction : Urban Artifacts and a Theory of the City", in The Architecture of the City, Cambridge and London: MIT Press, 1984 [online]

Sat 19/09 9.45-19.15

(full day)

Architectural capriccio workshop

Studio, Belval Campus

The reconstructed buildings will be inserted in a città analoga (Arduino Cantafora, 1971) set in the landscape of Belval, and we will (re)imagine the campus as a student town enriched with

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traditional buildings of the city centre. We will compose a "piece of a city" (Aldo Rossi, 1982) through collage and typological experimentation.

Required reading:

STEIL Lucien, "Preface" & "Il Capriccio: Definition of the Capriccio (Caprice) in the French Larousse Dictionary", in *The Architectural Capriccio: Memory, Fantasy and Invention*, London: Ashgate & Routledge, 2014 [online]

Tue 22/09 9.45-17.15

(full day)

Final exhibition and student presentations

Studio, Belval Campus

Literature (full list):

BENJAMIN Walter, "The arcades of Paris. Paris Arcades II", in *The Arcades Project*, Cambridge & London: Belknap Press of Harvard University Press, 1999 [1890-1940], p. 873-884 [online]

DE CERTEAU Michel, "Walking the city", *The Practice of Everyday Life*, Berkeley & Los Angeles: University of California Press, 1988 [1984], p. 91-110 [online]

DEBORD Guy, "Theory of the Dérive", *Les Lèvres Nues #9* (November 1956), reprinted in *Internationale Situationniste #2* (December 1958) [ENG: online ; FR: online]

ICONOCLASISTAS (Paolo O. Ares & Julia Riser), *Manual of Collective Mapping: Critical Cartographic Resources for Territorial Processes of Collective Action*, 2016 [online]

HARVEY David, "The right to the city" (ch. 1), in *Rebels Cities: From the Right to the City to the Urban Revolution*, London & New York: Verso, 2012, p. 6-25 [online]

HERZFELD Michael, "The pedestal and the tethering post" (ch. 1), in *The Body Impolitic: Artisans and Artifice in the Global Hierarchy of Value*, 2003 [online]

LEFEBVRE Henri, "The right to the city" (ch. 14), in *Writings on Cities*, Oxford: Blackwell, 1996 [1968], p. 147-159 [online]

LEFEBVRE Henri, "Plan of the present work" (ch. 1), in *The Production of Space*, Oxford: Blackwell, 1991 [1974] [online]

MERLEAU-PONTY Maurice, "Preface" & "The 'sensation' as unit of perception", *Phenomenology of Perception*, London & New York: Routledge Classics, 2002 [1945], p. vii-xxiv & 3-14 [online]

PERFECT CITY WORKING GROUP, "What do you avoid, where do you belong", *Urban Omnibus: a publication of the architectural league of New York*, 2017 [online]

ROSSI Aldo, *The Architecture of the City*, Cambridge & London: MIT Press, 1982 [online]

SADLER Simon, "Introduction" & "The naked city" (ch. 1), *The Situationist City*, MIT Press, 1999, p. 1-11 & 15-32 [online]

SCOTT James C., "The high-modernist city: An experiment and a critique" (ch. 4) (excerpts), in *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*, 1998, p. 182-206 & 229-244 [online]

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SENNETT Richard, "The competent urbanite" (ch. 7) (excerpt), in Building and Dwelling: Ethics for the City, London: Penguin Books, 2018, p. 171-189 [online]

STEIL Lucien, "Preface" & "Il Capriccio: Definition of the Capriccio (Caprice) in the French Larousse Dictionary", in The Architectural Capriccio: Memory, Fantasy and Invention, London: Ashgate & Routledge, 2014 [online]

Beschreibung:

The aim of this immersive multi-day workshop is for students to experiment with graphic methods and techniques from different disciplinary backgrounds (architecture, geography, anthropology, philosophy) in order to decentre, nuance and enrich their attention to, and experience of, the city. Based on the premise of a distinction between "real", "represented", and "lived" space (Henri Lefevre, 1974), this workshop invites students to (re)appropriate and (re)claim urban space through a diligent and engaged praxis of the imagination. Students will be equipped with creative means to (re)experience, (re)think and (re)imagine the city, as well as with professional skills, in the form of collaborative, participative and consultative tools, to engage with current/future colleagues, clients and inhabitants. Sessions will be divided between collective/collaborative and individual work, including time allotted for reading and discussion.

Course Structure:

Date Times Location Activity Required reading Sat 12/09 9.45-19.15
(full day) Belval Campus
(outdoors)
Meeting point: Main entrance of the building MSH
Dérive and gesture drawings
Sennett, 2018 Sun 13/09
14.00-19.15
(half day) Centre and periphery of Esch-sur-Alzette (outdoors)
Guided walk and sensory (counter-) mapping
Benjamin, 1999
Tue 15/09
9.45-19.15
(full day)
Centre of Esch-sur-Alzette
(outdoors)
Character studies and soundscapes De Certeau, 1988 Wed 16/09 14.00-19.15
(half day)
Centre of Esch-sur-Alzette
(outdoors)
Elevational studies and drawings
Fri 18/09 14.00-19.15
(half day)
Studio, Belval Campus
(mostly indoors)
"Philological" reconstruction workshop Rossi, 1984 Sat 19/09 9.45-19.15
(full day)
Studio, Belval Campus
(mostly indoors)
Architectural capriccio workshop
Steil, 2014 Tue 22/09 9.45-17.15

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(full day)
Studio, Belval Campus
(mostly indoors)
Final exhibition
and student presentations

Material and equipment:

All drawings and design will be produced by hand . The course instructors will provide charcoal, brushes, rulers, glue, scissors, A4 sketchbooks, pocket-size notebooks, and different qualities and sizes of paper. Students should come equipped with their own sets of pens, pencils, color pencils.

Computers are not required, and students are discouraged to bring them to outdoor sessions for practical reasons . Students may bring smartphones and/or light cameras for occasional photographic documentation. One collective exercise implies sound recordings and requires at least one fully charged smartphone (we will use in-built app) or sound recorder per group of 4-5 students (more details in session descriptions below).

Considerable time will be spent outdoors , to experiment, observe, map, draw and collect field observations. **Students are encouraged to travel light and wear comfortable shoes**, such as sneakers, adapted for extended walks, including on mud roads. A rain jacket, umbrella and warm layers may be necessary certain days, depending on weather conditions.

Recapitulative checklist:

- # Set of pens, pencils, color pencils
- # Comfortable shoes
- # Rain jacket/umbrella
- # Warm layers
- # Sound recording device (may be a smartphone) (1 per group of 3-5 students)
- # Photographic device (may be a smartphone) (1 per group of 3-5 students)

Sprache: Anglais
Pflichtkurs: Non
Evaluation: Assignement:

This course is built upon the conviction that creative experimentation, open discussion and compassionate listening of others results in deep insights and powerful learning. Students are expected to read critically ahead of course sessions, as per syllabus, and be prepared to engage in dialogue about their experiences and readings. Students will work on different sketches, drawings, plans, maps and recordings individually and in groups (3 to 5 students) and exhibit and present their work process as well as their final products (as traces of this process) at the end of the course (22/09). Instructors reserve the right to adapt sessions or readings to enhance



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learning and are available to discuss with students about queries, curiosities or difficulties they may have.

Rating: 50 % participation in the seminar, 50 % final presentation

Professor: STEIL Laura, STEIL Lucien

MARCH Rhino workshop

Modul: Design with Integrated Disciplines I (Semester 1)

ECTS: 0

Objektiv: The course offers an introduction to the Rhino 3D, with emphasis on workflows for three-dimensional (3D) modelling using Rhino commands. The course will cover basic 2d drawing, tracing and drafting techniques and their application to creating 3d form and surfacing. Additionally, the course will offer an introduction to Rhino grasshopper and parametric design.

Beschreibung: Course content:

- Introduction to the interface and navigation of Rhino 3D
- Drawing, creating and editing geometry using curves, arcs and using 2D Rhino commands
- Methods of generating 3D geometry and editing tools
- Rhino grasshopper and parametric design

Sprache: Anglais

Pflichtkurs: Oui

Professor: DAUWE Simon

MARCH Laser cutter & 3D printer Workshop

Modul: Design with Integrated Disciplines I (Semester 1)

ECTS: 0

Beschreibung: This workshop is an introduction to the safe operation of the laser cutter and 3D printer. The students will learn:

- the basic working principles behind both machines
- the workflow from importing a design from an CAD software to the final piece.
- the hazards, general lab rules and first aid procedures.

Sprache: Anglais

Pflichtkurs: Oui

Professor: STEMPER André

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MARCH GIS Workshop

Modul:	Design with Integrated Disciplines I (Semester 1)
ECTS:	0
Objektiv:	Course content: <ul style="list-style-type: none">• Introduction to ArcGIS. Basic concepts• Operation with the table of Attributes.• Editing layers• GIS common files and datasets• Spatial data sources, projections and Coordinate Systems• Designing and exporting maps• Vector tools• Spatial selection and selection according to Attributes• Extract and proximity tools• Aggregating data to customized grids and meshes• Raster tools• Representing topography. Digital Elevation Models and surface analysis• Density maps• Interpolation maps
Beschreibung:	The course offers an introduction to Geographic Information systems using the ESRI Arcmap software package. The course is specifically designed for Architecture students and aims to introduce them to basic concepts, methodologies and tools in geospatial analysis in order to better inform spatial decision making in their design studio course.
Sprache:	Anglais
Pflichtkurs:	Oui
Professor:	ROMANILLOS ARROYO Gustavo

MARCH Research Methods in Architecture

Modul:	Architecture I (Semester 1)
ECTS:	3
Beschreibung:	<p>Students will be introduced to various qualitative research methods in architecture and urbanism and the course will provide research tools and techniques for students on the Master level. These techniques include, for example, historical, archival, ethnographical, experimental, survey, mapping, statistical, and qualitative analysis methods.</p> <p>In a workshop format, students will choose the subject of their paper, develop an argument and comment upon work of fellow students.</p>

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Students will learn

- how to compose a bibliography;
- how to deal with a disciplinary and interdisciplinary corpus of sources and references, according to their research subject;
- how to develop a research question and how to construct a critical reflexion and a theoretical work responding to this question.
- how to integrate design components and graphic analysis in their research;
- how to represent and edit architectural research.

The course has several components: lectures, discussions, and a written research report. Class sessions will consist of an introduction to a variety of research techniques, lectures, discussions, and conversations about the written research report.

The course takes place on Thursday morning, once every two weeks on the following dates: 8 October, 22 October, 5 November, 19 November, 3 December, 17 December.

Sprache: Anglais

Pflichtkurs: Oui

Evaluation: 50 % participation in the seminar, 50 % paper.

Position paper based upon research that is performed in the framework of the design studio: essay of 2000 words maximum, written according to scientific standards (i.c. including footnotes and references). Submission deadline of the paper: January 2021. Exact date to be determined.

Professor: PELEMAN David, THILLEUL Karine

MARCH Seminar on Representation

Modul: Architecture I (Semester 1)

ECTS: 3

Beschreibung: Students will be introduced to the notion of representation in architecture. This seminar aims at offering a basic knowledge on the origins of architecture and landscape representation and how it developed into the realm of social and urban fiction. Students will get the opportunity to analyse different protagonists in architecture and art history by observing the relationship between design approach, choice of media and representational techniques. The course will emphasize the notion of collective fiction including architecture as a structural component within a commonly shared narrative. Students should either improve or test ways of creating their own tale or documentary in a small group based on a real territory of their choice, located in Luxembourg.

Course structure:

02/10 Representation as a way to include architecture into urban and social fictions (landscape painting a.o.)

Introduction to the seminar; lecture by video-conference; deliverables



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09/10 Workshop with Leonor Antunes (visual artist) > 12:30 – 15:00

Opening conference > 17:00

Place: MUDAM

https://en.wikipedia.org/wiki/Leonor_Antunes

09/10 Studying the work of protagonists such as Constant, Thomas Schütte, John Hejduk, Rem Koolhaas, Flores & Prats...

Session 1: Presentations by students in groups of 2 (max. 3) – ½ hour lecture by video-conference and ½ hours discussion.

16/10 Studying the work of protagonists such as Constant, Thomas Schütte, John Hejduk, Rem Koolhaas, Flores & Prats...

Session 2: Presentations by students in groups of 2 (max. 3) – ½ hour lecture by video-conference and ½ hours discussion

23/10 Bas Princen, photographer, artist

https://de.wikipedia.org/wiki/Bas_Princen

followed by working session (project presentation 1), video-conference

30/10 xxx, MVRDV

<https://www.mvrdv.nl/>

followed by working session (project presentation 2), video-conference

06/11 Paul Lesch, Filmhistorian, directeur CNA :

https://wwwfr.uni.lu/recherche/flshase/identites_politiques_societes_espaces_ipse/stamvrdivff/paul_lesch

PLACE : CNA Dudelange 1B, rue du Centenaire (espace cinema)

13/11 Final presentations in groups

PLACE : uni.lu in Belval

Sprache: Anglais

Pflichtkurs: Oui

Evaluation: **Assignment:**

Students will prepare in groups collective fictions on a particular urban situation, by means of a chosen medium (can be anything such as drawing, text, picture, model, short video clip...) and present their approach at the end of the course.

Rating: 50 % participation in the seminar, 50 % final presentation



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Remark:

Literature:

X-Ray architecture

Beatriz Colomina

Lars Muller publishers, April 2019

Visioning technologies

The architecture of sight

Edited by Graham Cairns

Routledge, 2017

La phénoménologie de la perception - The phenomenology of perception

Maurice Merleau-Ponty

Gallimard, mai 1976

Architecture and science fiction film:

Philip K. Dick and the spectacle of home

David T. Fortin

Routledge, May 2011

"The Explosion of Space: architecture and the filmic imaginary"

in : Film Architecture : Set designs from Metropolis to Bladerunner

Dietrich Neumann

Prestel, August 2000

Journal Article

The End of the Classical: The End of the Beginning, the End of the End

Peter Eisenman

Perspecta Vol. 21, pp. 154-173

The MIT Press , 1984

The Presentation of Self in Everyday life

Erving Goffman

Doubleday, 1959

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The programme is subject to change, which will be notified on moodle in due time.

Professor: SCHMIT Carole

18-12 Cities, Masterplanning and Urban Governance

Modul: European Urbanisation I (Semester 1)

ECTS: 4

Course learning outcomes: On completion of the course, a student should be able to

- orientate in the general discussion of the rationale, justification and trajectories of urban planning,
- make an informed judgement on the gap between contents and procedures of planning on the one hand and its effective outcomes on the other hand,
- identify the various elements of i) physical planning and ii) the political process, i.e. activities addressed as forms of governance.

Beschreibung: The aim of this course is to make students familiar with central concepts and approaches of urban planning, policy and governance, with a particular emphasis placed on the origins, rationale and elements of physical planning. Physical planning is key to the urban process, by determining land use, providing infrastructure and circulation, and by situating facilities in a way that it might support an efficient overall development of places. For this purpose, particular planning instruments have been developed and applied in much of the industrialized world, such as general land-use plans, particular building plans or more comprehensive, strategic framework plans. Also, informal instruments and procedures such as participative planning became quite popular recently.

However, the rationale of planning to steer development (and the related belief in planning to be able to do so) has been challenged by a variety of events, both originating from changes within the planning system and, even more so, of the outside world. A fragmented socio-economic development, processes of individualization, and most notably globalization have been putting a rising pressure on urban and regional places to adapt. Particularly market forces in planning and development and also the increased competitive dynamics among spatial units such as nations, regions and cities turned out to determine planning ambitions. As a consequence, these processes have been shaping the agenda of regulating processes, plans and institutions quite significantly.

Against this background, the course explores urban planning theories, practices and discourses in certain detail. The first part of the course is devoted to giving an overview of the more recent historical development of planning. The respective time span starts by and large at the peak of industrialization (late 19th and early 20th century), leading to recovery planning after World War II and then emphasizing the competing ideal-types of planning since the 1950s/60s: modernist vs. traditional planning, compact vs. dispersed development. Today's master planning of urban expansion, large-scale infrastructure projects or eco-city communities will give most recent insight into the world of planning, yet will also be critically interrogated.



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On this basis, in the second part of the course participants will have the opportunity to work on selected plans – being these designed for developing a building, a 'project', an urban district, selected parts of infrastructure or concerning the future of entire territories. The aim of this exercise is to reconstruct the plans' contents, justification and implementation, leading to a critical assessment of the plans' outcomes and thus of urban planning at all. The course finally discusses more recent approaches to re-assert steering processes in the context of 'governance', that is, the multi-level and cross-sectoral interaction of various public and private agents set in place to achieve political goals.

- A short history of urban and regional planning
- Comprehensive planning and the challenge to integration
- From urban dynamics to evaluating plans, programmes and practices
- Essentials of planning, policy and urban governance
- Case study work on selected plans

Sprache:	Anglais
Pflichtkurs:	Oui
Evaluation:	25 % guided reading and course presentation; 75 % paper report
Remark:	Selected references

Allmendinger, P., Houghton, G. (2009): Commentary:Critical reflections on spatial planning. *Environment and PlanningA* 41, 2544-2549

Faludi, A. (1970): The planning environment and the meaning of "planning". *Regional Studies*4(1), 1-9

Salet, W. (2014): The Authenticity of Spatial Planning Knowledge. *European Planning Studies*22 (2), 293–305

Scott, A. J. (2013): Emerging cities of the third wave. *City*15 (3-4), 289-321 (with images and captions by Elvin Wyly)

Professor: RAFFERTY Michael, SIGLER Thomas

MARCH Globalisation and Planetary Urbanisation

Modul:	Globalisation (Semester 1)
ECTS:	3
Course learning outcomes:	Introduce students to the major contours of geographical organization of the world economy and world urbanization Introduce students to major theoretical frameworks in globalization research



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Introduce students to major theoretical approaches to studying world urbanization

Critically interrogate the agency of design disciplines within these contexts

Beschreibung:

The course examines the major processes that characterize the production of space in the contemporary globalized world. Introducing an understanding of urbanization as a condition of geographical organization, the course examines the restructuring of the world economy in relation to the growth and development of urban environments around the world. It introduces students to major literatures both on globalization (global commodity chains, global production network, transportation geography, economic geography), and in globalized urbanization (global cities, network cities, planetary urbanization). It interrogates how the structure of cities around the world reflects an increasingly integrated spatial and social division of labor. Major questions include: the shifting geographical structure of major economic sectors, flexible organization of production systems, logistics and transport systems and how they relate to the restructuring of urban agglomeration patterns (industrial, post-industrial), post-metropolitan urban formation (edge cities, polycentric metropolis), the dynamics of urban regions and network cities. The course also addresses issues of inequality and uneven development, both within and between regions. Furthermore, it examines the related challenges and investigates the agency of architecture and urban design within this context.

The course is structured as a theoretical introduction to seminal literatures on globalization and world urbanization. It is organized around four interrelated parts: Introduction to urbanization, globalization and the production of space at various scales.

The structure and geography of the world economy - world trade and organization of production systems

The structure and geography of urbanization – agglomeration patterns and their interrelations.

The challenges and agency of designers within the contemporary condition of globalized urbanization.

Modalitäten:

Course Structure:

The course is structured as a theoretical introduction to seminal literatures on globalisation and world urbanisation. It is organised in four parts:

Urbanisation and the production of space at various scales – from the city to the planetary

The structure and geography of the world economy - world trade and organisation of production systems

The structure and geography of urbanisation – agglomeration patterns and their interrelations.

The challenges and agency of designers within the contemporary condition of globalised urbanisation.

Sprache:

Anglais

Pflichtkurs:

Oui

Evaluation:

40% participation in the seminar, 30% midterm project, 30% final paper

Remark:

Assignments: There are two assignments for the course: Assignment 01 is the midterm project (30%), which is due on Week 06. Details on the assignment will be handed out during Week 03. Assignment 02 is the final project (30%), which will be handed in the form of a report, including both a visual, and a textual component of no more than 3000 words. Details on the final assignment will be handed out during Week 06.



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Professor: KATSIKIS Nikolaos

08-51 - Geographical Information Systems: Analysis and Mapping

Modul: Globalisation (Semester 1)

ECTS: 5

Course learning outcomes: On completion of the course a student should be able to

- explain and apply the basic principles and functions of a GIS
- describe and apply the methods for acquisition, storage and manipulation of spatial data,
- describe and apply standard GIS spatial analysis techniques
- design and apply basic GIS models and relate them to geography and spatial planning objectives
- use the ESRI ArcGIS software suite for vector-based data management, GIS overlay analyses and the aforementioned methods

Beschreibung: The course aims at providing definitions and conceptual background in Geographical Information Systems (GIS) and Science (GISc) and relating them to geography and spatial planning. Students will be introduced to the basic structure, principles, functions and modelling with GIS. The students will develop GIS practical skills using ESRI ArcGIS software and relate them to GIS theory and concepts, along the following mixed theory/practice modules:

- Introduction to GIS and ArcGIS
- Mapping basics and symbology
- Querying and joining data
- Spatial and attribute selection
- Projections
- Data collection (GPS) and digitization
- Creating and editing data
- Geoprocessing vector data
- ModelBuilder and multi-criteria evaluation and analysis

Sprache: Anglais

Pflichtkurs: Oui

Evaluation: 40 % laboratory exam, 30 % GIS and spatial analysis project, 30 % weekly assignments

Remark: Chrisman N. (2003). Exploring Geographical Information Systems - 2nd edition international - 320p, Wiley & sons.
Maguire D.J., Batty M., Goodchild M.F. (2005). GIS, Spatial Analysis, And Modeling - 496p. ESRI Press
de Smith M.J., Goodchild M.F., Longley P.A. (2007). Geospatial Analysis: A Comprehensive Guide to Principles, Techniques and Software Tools - 414p. Troubador Publishing.
Longley P.A., Goodchild, M.F., Maguire D.J., Rhind, D.W. (2005). Geographic Information Systems and Science , 2nd Edition - 536p. Wiley & Sons
Ormsby T, Napoleon E, Burke R, Groessl C, and Bowden L 2008. Getting to Know ArcGIS Desktop: Basics of ArcView, ArcEditor, and ArcInfo



Master en Architecture

Professor: JONES Catherine, SCHIEL Kerry

04-73 Global Environmental Change in the Anthropocene

Modul: Elective courses (Semester 1)

ECTS: 4

Sprache: Anglais

Pflichtkurs: Non

Professor: STANKIEWICZ Jacek

01-11 - Urban and Spatial Planning Theory and Concepts

Modul: Elective courses (Semester 1)

ECTS: 4

Course learning outcomes: On completion of the module a student should be able to

- differentiate between core notions of conceptual vocabulary used in geography
- illustrate their conceptual understanding through concrete examples and thoroughly apply the vocabulary
- distinguish between the academic/analytical and the political/normative understanding of the terms.

Beschreibung: The major aim of the module is to provide the students with an in-depth understanding of key terms and concepts used in geography and spatial development. Through the reading of core texts on the notions of space, place, scale, region, and networks, the students will develop a solid conceptual background for further work in the MAGEO programme.

Sprache: Anglais

Pflichtkurs: Oui

Evaluation: 25 % guided reading, 50 % paper report, 25 % class participation

Remark: Remark: Reading list will be announced in the first session

Professor: SCHULZ Christian



Master en Architecture

International Development, Sustainability and Policy Coherence

Modul: Elective courses (Semester 1)

ECTS: 4

Objektiv:

- To introduce students to predominant theories of development
- To introduce students to development strategies in the context of globalization through discussions with development actors
- To provide an understanding of the social and environmental impacts of development strategies

Beschreibung: The field of international development is generally analyzed in terms of policy effectiveness or moral issues related to the imbalance of wealth in the global arena. Such approaches have often limited development debates to material questions focusing on issues such as: the commitment of advanced industrial states to development through public investment; the efficiency with which funds are distributed in development strategies; the moral/political objectives that often are associated with development aid, microfinancing, etc.

This course aims to build on this approach to international development by examining cooperation within the context of social cohesion. The premise on which this course is based contends that development is not simply an economic issue because it relates to various relationships between different actors in global affairs, such as: international organizations, states, civil society, individual citizens and economic organizations and companies. Thus, the course asks: "What impact do European actors (including Luxembourg) have on international relationships within the framework of international development?" The course proposes a series of debates, each one focusing on a specific topic related to social cohesion and international cooperation. Following a general introduction by the course instructors, the course will be centered on discussions with practitioners and experts in the field of international development.

Sprache: Anglais, Français

Pflichtkurs: Non

Evaluation: Students must complete a 10 to 15 page research paper at the end of the course.

Remark: Bibliographie

Amartya Sen. Development as Freedom. Anchor, 2000.

Jeffrey Sachs. The End of Poverty. Penguin, 2006.

J. Timmons Roberts and Amy Bellone Hite. The Globalization and Development Reader: Perspectives on Development and Global Change. Wiley Blackwell 2007.

(optional) Harlan Koff. Social Cohesion in Europe and the Americas. PIE-Peter Lang, 2009.

Professor: HÄBEL Sandra

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Semester 2

MARCH-DS-S2 RHINO Workshop

Modul:	Design with Integrated Disciplines II (Semester 2)
ECTS:	0
Sprache:	Anglais
Pflichtkurs:	Oui
Professor:	DAUWE Simon

Design with Integrated Disciplines II

Modul:	Design with Integrated Disciplines II (Semester 2)
ECTS:	12
Beschreibung:	<p>STUDIO THEME</p> <p>After studying during the first semester the Alzette valley, via an analytical approach, the second semester's design studio on urban design creates a transition between the large scale and the building scale. It has been highlighted that most of the first semester studio work has been dealing with the idea of linking, or „necklacing“. In order to extract best ideas, students are invited to bring their first semester projects for the kick-off session in order to discuss what issues and eventually sites could be further investigated.</p> <p>Urban design is about:</p> <ul style="list-style-type: none">- Recording the contextual elements at a scale which addresses urban issues- Identifying the specific spatial qualities- Designing streets, squares, outside spaces of any kind as much as architectural typologies- Choosing perimeters of intervention <p>This exercise is demanding because it requires a constant switch between different scales, which challenges the principle of a linear approach.</p> <p>Students have to work in groups and may choose one of two pre-selected sites in the South of Luxembourg. The sites have a series of common features.</p> <p>The sites are chosen in respect to their spatial components and because they represent a sort of unfinished link between two urban conurbations. The site in Differdange links Differdange to Niederkorn, and the site in Dudelange links Dudelange to Bettembourg. Besides they share a heterogeneous landscape composed by:</p> <ul style="list-style-type: none">- Small housing units (worker houses, single family houses)- Medium size programmes along a main road (apartment houses, petrol stations,...)- Big size public programme (hospital, national laboratory)- Heavy infrastructure, such as train or highway, which creates a disrapture- Rural landscape (farmland) or natural landscape (zone natura 2000)



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- Unfinished developments with empty lots or fields.

The development of both sites depends on different scenarios in terms of densification among others.

Various models of urbanisation are possible and should be experimented, illustrating the potential

characters of future developments.

COLLECTIVE GROUP WORK

Students are supposed to work in groups of +/-4. Each studio session during the first half-time will deal

with a particular subject. Each group has to keep a project journal (a sort of collective sketchbook),

which traces the progress week by week and defines objectives from one session to the other.

CONNECTED COURSES

This studio design course will be connected to the Rhino (28/3) and lasercutter (?/3) workshops as

well as the landscape design course, which will be partly led by Christian Weier. In both cases, students are invited to use their project site to test and use the newly acquainted knowledge.

Sprache: Anglais

Pflichtkurs: Oui

Evaluation: Participation to the studio work (weekly): 30% (including teleconf sessions)

Collective analytical part: 20% (based on final booklet - pdf per site)

Final review : 50% individual presentation based on a slideshow (max. 10min) and personal booklet

Professor: SCHMIT Carole

MARCH_LASER_CUTTER_WORSHOP

Modul: Design with Integrated Disciplines II (Semester 2)

ECTS: 0

Sprache: Anglais

Pflichtkurs: Oui

Professor: STEMPER André

History of Urbanism

Modul: Architecture II (Semester 2)

ECTS: 5

Objektiv: bibliography:



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Banham, Reyner. Theory and Design in the First Machine Age . 2nd ed. Cambridge MA: MIT, 1980. Print. Benevolo, Leonardo. The European city . Oxford: Blackwell, 1995. Print. Choay, Françoise. L'urbanisme : Utopies Et Réalités : Une Anthologie . Paris: Éd. Du Seuil, 2014. Print. Conrads, Ulrich. Programs and Manifestoes on 20th-century Architecture . Cambridge: MIT, 1971. Print. Hall, Peter. Cities of Tomorrow : An Intellectual History of Urban Planning and Design in the Twentieth Century . 3rd ed. Oxford: Blackwell, 2005. Print . Also available : Online Mumford, Eric Paul . Designing the Modern City : Urbanism since 1850 . 2018. Web .

Course learning outcomes:

Students will be introduced in the history of European urbanism in theory and projects. They will learn how to read and interpret European urban structures, morphologies and typologies and to what extent they are conditioned by socio-political transformations.

Beschreibung:

This seminar will show how much the history of European cities is characterised by both: numerous paradigmatic fractures and, at least in the framework of the European historic city, a tremendous continuity. The students will learn two levels of urban history and how these levels coincide: first, on a more transdisciplinary level, the social, economic and political condition of the urban evolution, and second, on a more disciplinary level, how to read and identify urban morphologies and their relationship to architectural typologies. In this context, the seminar will start with some premodern examples (the baroque city until the landscape of Karl Friedrich Schinkel) and will put, in a second part, a focus on three important urban renewal projects, which responded to the rapid growth of the emerging capitalism and industrialisation: Haussmann in Paris, Cerdà in Barcelona, Hobrecht in Berlin.

A third focus will be projected on the upcoming modern movement, first with the reformatory ideal of the Garden city and its territorial translation by Hermann Jansen for Greater Berlin, then with more functionalist doctrines and projects of Le Corbusier, Ludwig Hilberseimer or Ernst May, the CIAM and the Charte d'Athènes . A forth spotlight will be brought on the post-war reconstruction period and the ideal of the automobile city, a fifth on various forms of criticism of the functionalist city: from TEAM X to critical regionalism, from Italian and Austrian radical architecture to Japanese metabolism, from neo-rationalism to postmodernism.

A fifth spotlight will put into relationship major urban theories in the post-growth condition (Rossi's Architettura della città , Venturi's Learning from Las Vegas, Rowe's Collage City, Koolhaas' Delirious New York, Ungers' City in the city, Krier's Cities within the city). The sixth focus will show how the city has during the twentieth century slowly become something what Jean Gottmann meant by "megalopolis", described with such notions as the sprawl, città diffusa or conurbanisation. Finally, we will show different analysis, methods and projects in this post-urban condition (Zwischenstadt, hyperville, Netzstadt, After sprawl, New Urbanism, Métropole douce...) and what we would call Dialogic City.

Modalitäten:

Course structure:

Lectures of 3 x 45 minutes each.

Instructors: Prof. Florian Hertweck & Guest Lecturers

Sprache:

Anglais

Pflichtkurs:

Oui

Evaluation:

5 % ar t i c i p a t i o n i n t h e s e m i n a r , 50% written exam

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Mandatory readings:

Leonardo Benevolo, *The History of the City*, 1980.

Hanno-Walter Kruft, *A history of architectural theory*, 1990.

Eric Mumford, *Design the Modern City. Urbanism since 1850*, 2018.

Professor: HERTWECK Florian

Smart and circular cities

Modul: Architecture II (Semester 2)

ECTS: 4

Objektiv:

- Sustainable Construction: Green Building Design and Delivery. Kibert, Charles J., John Wiley & Sons, Incorporated, 2016.
- Reduce Reuse Recycle. Petzet, Muck; Heilmeyer, Florian. Hatje Cantz. 2012. ISBN: 978-3-7757-3425-7.
- Good Buildings On A Small Planet, Rasmus Rune Nielsen, Publisher Arvinius + Orfeus Publishing, 2018. ISBN 9789187543890

Sprache: Anglais

Pflichtkurs: Oui

Remark:

- Smart cities: théorie et critique d'un idéal auto-réalisateur. Antoine Picon. 2015
- Recyclable by Werner Sobek. Frank Heinlein. 2019
- Manual of recycling: buildings as sources of materials. Annette Hillebrandt, Petra Riegler-Floors, Anja Rosen, Johanna-Katharina Seggewies. 2019
- Cities in the circular economy. Ellen Macarthur Foundation. 2017
- The third industrial revolution: how lateral power is transforming energy, the economy, and the world. Jeremy Rifkin. 2013
- The architecture of the well-tempered environment. Reyner Banham. 1984
- Sustainable Construction : Green Building Design and Delivery. Kibert, Charles J., John Wiley & Sons, Incorporated, 2016.
- Reduce Reuse Recycle. Petzet, Muck; Heilmeyer, Florian. Hatje Cantz. 2012. ISBN: 978-3-7757-3425-7.

Professor: FERREIRA SILVA Marielle

Urban and Landscape Design within Europe

Modul: European Urbanisation II (Semester 2)

ECTS: 5

Beschreibung: THE LANDSCAPE OF THE IN-BETWEEN- LANDSCAPE DESIGN MICRO-STUDIO

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LANDSCAPE IN EUROPE- STUDIO RELATED TO 2ND YEAR STUDIO 'URBANIZING THE IN-BETWEEN' (Christian Weier, Landscape architect)

Landscape architecture in Europe' is a module that is taught to give students a better understanding of the environment they work in and work with. From my point of view as a practising landscape architect collaborating frequently with architects and urban designers, it is most important to give you as master architecture students a different angle and a few tools to think about their core architectural work from the 'outside' and integrate the thinking about landscape into their urban design and architectural approach.

This is a big task for a micro-studio, but there are two factors that will make it possible for t students to get involved easily. Firstly, we will avoid to confront the students with a new site as the studio is related to the architecture studio 'urbanizing the in-between' and students will work on the site they are dealing with for their architecture studio. The student can work on landscape architectural aspects related to their urban design studio project. Secondly, you have been already been exposed to landscape architectural thinking in the teaching sessions on landscape architecture lead by Olivier Gaudin in April.

Program

In the first session, I will make a short introduction to the studio. This will be followed by a presentation of your site analysis and concept development that you have been working on as groups and a short introduction of each of your projects. In a second set of individual sessions, I would like you to introduce me to your current urban design project.

Sprache:	Anglais
Pflichtkurs:	Oui
Evaluation:	Participation 20% Project development 35% Final review : 45%

To evaluate the project, and eventually grade it, different factors will be taken into consideration:
A Presence and participation in online teaching sessions 20%

B Development of ideas and process of project development in the form of sketches, writing, collages 35%

Deliverables: A project booklet explaining the genesis of the project A3 or A4

C Final project (to be presented on presentation board) 45%

Deliverables: A project presentation on 1 A2 or 2 A3 in digital format (bigger depending on scale) and presentation in teleconference

Any chosen form of presentation is acceptable – free hand, digital 2D or 3D drawings, model-making.

Professor:	WEIER Christian
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Transport Systems Analysis

Modul:	European Urbanisation II (Semester 2)
ECTS:	4
Objektiv:	This course provides the fundamentals of traffic and transport systems theory: it aims at understanding and managing the relationship between demand for mobility and the various



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transportation systems and explains how these lead to economic and societal problems such as congestion, pollution, etc.

The goal is to provide a broad view of transportation systems analysis covering both private and public transport systems, and to complement this overview with a discussion of aspects like congestion analysis and management, intelligent transportation systems, traffic data collection methods, and new sustainable options (travel sharing, multi-modality, e-cars, etc.).

Course learning outcomes:

1. Provide the student the student with a basic knowledge of transportation systems and to get in touch with the most relevant issues addressed by transportation systems theory.
2. Introduce the student to theoretical and practical tools to analyse traffic and transport systems, to solve traffic management and infrastructure planning and design problems.

Beschreibung:

1. Introduction to transport systems analysis and transport planning and management;
2. Supply systems and traffic flow theory: Urban and motorway systems, definition of capacity, Macroscopic models (fundamental diagram approach);
3. Demand and Travel behaviour: Basics of random utility theory, decision making processes, choice set generation; 4-stage modelling, OD estimation from traffic data
4. Traffic assignment and equilibrium: Traffic assignment processes; equilibrium principles;
5. Planning and scheduling of Public Transport: Timetabling, railway capacity, safety systems, real-time rescheduling and management; PT planning and design, sustainable mobility, multimodal networks
6. Infrastructure planning and design: Basics of transport economics, pricing problems, road maintenance strategies, design and planning of new infrastructures

Theme:

1. The complexity of modelling transportation networks is elaborated in detail, from the analysis of the demand to the arising of congestion problems and how to mitigate them.
2. Different management solutions are described in the second part of the course to learn how to reduce transportation costs, and seek sustainable mobility targets.

Modalitäten:

Lecture

Sprache:

Anglais

Pflichtkurs:

Non

Evaluation:

Written Examination

Remark:

Course handouts, course notes.

Cascetta E. Transport Systems Analysis. Springer (complementary reading)

Ortuzar J. and Willumsen P. Transport Modelling. Wiley (complementary reading)



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Professor: VITI Francesco

17-52 WebGIS and Geoprocessing (track B)

Modul: European Urbanisation II (Semester 2)

ECTS: 4

Course learning outcomes: On completion of the course students should be able to :

Part 1:

- Create, manage and display raster data
- Demonstrate the use a variety of raster analysis tools from the Spatial Analyst toolbox
- Be familiar with the use of functions for Image Analysis
- Work with Raster calculator to undertake map algebra.

Part 2:

- Understand the fundamental principles of WebGIS
- Describe different web GIS formats and tools
- Map data and research outcomes within ArcGIS and Google maps and vice-versa
- Understand the principles of web-mapping and its associated technologies
- Create an interactive map without coding (using FOSS)
- Understand and write code for visualizing a simple web map application

Beschreibung: The course provides an introduction to the topic of web GIS and GIS processing. It is divided into two parts. In the first part of the module students will gain both an understanding of and hands-on practice with advanced geoprocessing and GIS modelling functions using both raster and vector data. We will use ESRI ArcGIS Spatial Analysis functions for analysis and modelling. In the second part of the course, we will introduce students to the fundamental principles of WebGIS. Students will gain practical experience using different web publishing technologies to visualise and display geographic data and modelling outcomes online.

Sprache: Anglais

Pflichtkurs: Non

Evaluation: 50 % participation in weekly GIS practicals

50 % project report including mapping output to a blog

Professor: SCHIEL Kerry, MÉDARD DE CHARDON Cyrille

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Semester 3

MARCH Design Studio semester III: Architecture with discontent

Modul: Design Studio Semester III (Semester 3)

ECTS: 12

Objektiv: Course topic and structure:

'Reproducing the landscape through affordable collective housing'

- Defining and analysing the framework of the project on collective housing
- Developing a design project at architectural scale integrating adjacent disciplines, with critical positioning of the project in the contemporary architecture production
- Elaborating the design on various scales, reaching from 1/500 to 1/10
- Representing and presenting the final project

Course learning outcomes:

- Students will learn how to develop a design project from the scale of a neighbourhood to the scale of the architectural object.
- The final design project will expose a process of a critical analysis of the socio-spatial condition in which it has been developed, and show conceptual, graphic and technical virtuosity.

(presence in the studio is mandatory on each Wednesday, all day)

Beschreibung:

The context of the design studio of the winter semester 2020-2021 is formed by the IBA project for Alzette-Belval that is being prepared by the University of Luxembourg and the GECT Alzette-Belval.

Students will work on the project 'Quartier Alzette' between Esch-sur-Alzette and Schifflange, which is currently being developed by AGORA. On this site one can find the remnants of a former steel factory which has existed there for nearly 140 years. After the factory finally closed down in 2016, a program was set up for demolition of the steel mills, depollution of the terrain and renewal of the large site as an urban area that connects Schifflange with Esch. The site should be able to attract about 10.000 inhabitants by 2040. The development programme aims to use between 50 and 60% of the wasteland for housing and between 20 and 25% for public buildings, including four secondary schools and a high school.

In 2019 a competition was organized for the redevelopment of the site. The team led by the Danish office COBE won the first prize and their masterplan will serve as a blueprint for the future development and as the context for this design studio.

In negotiation with the tutors of the studio, students will pick one of the blocks from the masterplan along the riverbanks of the Alzette – on the South and West side of the masterplan. These blocks



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must be developed into an architecture project for collective housing, with a significant density, in the context of the IBA Alzette-Belval.

Three issues are of great relevance in the conception and development of the architecture project for these building blocks: (1) Collective housing, (2) Sustainability, (3) Construction

In addressing the above-mentioned topics, each project must take into account the particular sensibilities and qualities that emerge from the masterplan and the surrounding context. Student must not only work on the volume of the building but also on (1) the public or collective space surrounding the building and (2) on the relation between the building and the river Alzette. Therefore, the perimeter of each project must also include a part of the river Alzette. The design of the section of the river in relation to the building is part of the architecture project and thereby the goal is to increase the ecological value of the Alzette.

The structural aspect will be developed with students from the Master in structural engineering supervised by Prof. Christoph Odenbreit. Together with his students they will work on sustainable buildings in steel, wood or a composite of both. Thereby the ecological dimensions have to go beyond the iconic green washing.

Sprache:	Anglais
Pflichtkurs:	Oui
Evaluation:	50% participation in the studio, 50% final project presentation.
Remark:	Schedule: Wednesday 23/9: Informal start with briefing and site visit Wednesday(s) 30/9 – 7/10 – 14/10 – 21/10 – 28/10 – 4/11: Thematic workshops – Studio work – Assembling the project – Preparing mid-term review Wednesday 11/11: Mid-term review Wednesday(s) 18/11 – 25/11 – 2/12 – 9/12 – 16/12: Re-shuffle – Fine-tuning the project – Graphic design of the presentation January 2021: Final jury (exact date: tbd)
Professor:	PELEMAN David, ZIMMER Céline

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Design with Integrated Disciplines III INDIVIDUAL WORK

Modul:	Design Studio Semester III (Semester 3)
ECTS:	0
Sprache:	Anglais
Pflichtkurs:	Non
Professor:	HERTWECK Florian

MARCH Seminar "Communicating Architecture"

Modul: Architecture III (Semester 3)

ECTS: 3

Course learning outcomes: Students will be introduced to a critical examination of the methods, practices, and strategies, of architectural communication and discourse, as shaped through photography, writing, publishing, exhibitions, biennials - and ultimately architecture itself. They will learn how to read, interpret, and construe these contextualization - and conclude with a statement of practice of their own.

Beschreibung: How are spatial relationships discussed and made visible? How do we look at, and communicate our surroundings? How do we look at, and communicate architecture? This seminar will investigate the strategies that can be employed through writing, photography, and the use of publications, and publishing strategies, as well as other media, as an alternative spatial practice - and discourse.

We will start with the first books of architecture, explore the historic relationship between photography and architecture, look at examples of publishing in art and architecture - and the role, use, strategies, and possibilities of contemporary media - employed by architects and artists alike.

Discussing the larger context of architectural perception and communication, we will discuss the editorial principles and parameters at work - and reconsider the perception and communication of architecture - and ultimately your own practice, through the communication strategies employed.

Special attention and brief introductions will be given to the work of, and strategies used by Vitruvius, Alberti, Ludwig Mies van der Rohe, Le Corbusier, Aldo Rossi, Ettore Sottsass, Lewis Baltz, Herzog & de Meuron, Rem Koolhaas OMA/AMO, Ed Ruscha, Venturi Scott Brown, Jack Self, Valerio Olgiati, Something Fantastic, 6A, Gordon Matta-Clark, Yona Friedman, Atelier Bow-Wow, Alison and Peter Smithson, Abraham Cruzvillegas, Iván Martínéz, Accatone, Brandlhuber +, the work of Beatriz Colomina, and the approach and role of the CCA in Montreal.

Modalitäten: Course structure: 6 x lectures of 3 TU

Sprache: Anglais



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Pflichtkurs:	Oui
Evaluation:	Rating: 50 % participation in the seminar, 50 % written exam: Manifesto of Practice
Professor:	OVERMEER Erica

Steel & Composite Structures 1 – High Rise Buildings

Modul:	Architecture III (Semester 3)
ECTS:	5
Objektiv:	Civil Structural Engineering

The learning targets concern different types of steel and steel composite structures of multi-storey- and tall buildings. Light flooring construction types and special bracing constructions for high-rise buildings in steel and steel composite structure are determined and analysed.

Special calculation methods, like the determination of the Eigenfrequency of a building and important constructional rules, for example the combination of different bracing elements are known.

Different Methods of optimizing the building construction elements - with the different target parameters like construction time, simplicity of assembly, degree of prefabrication and reduction of steel tonnage is known. Especially the last point is important, which insists in the basis for the later judgement of CO₂-equivalent concerning the sustainable construction with limited resources.

The student is able to work interdisciplinary in a team of structural engineers and architects.

Learning the mutual understanding is important in a sense, that different actors in the building sector have – according to their profession and assignment – different "languages" and also different targets to achieve.

Architectural Engineering

The student in Architectures is able to work in an interdisciplinary group of Architects and Structural Engineers.

He knows about the different challenges of high-rise buildings in comparison with residential buildings and multi-storey buildings.

He can draft a high-rise building with consideration of the most important structural elements in combination with a structural engineer. He knows the different structural elements, which are necessary for the vertical load take down and the building's bracing.

Course learning outcomes:	Civil Structural Engineering
	1. The student is able to work in an interdisciplinary team of Architects and Structural Engineers.



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2. The student is able to propose different ways of constructing and analysing composite slab systems for high-rise buildings in steel and concrete and knows how to prove its load bearing capacity. The student can propose the different methods to brace high-rise buildings and is able to calculate the stability of the bracing system.

3. The student is able to draft different structural systems for wide span constructions, to name assessment criteria and to judge the respective advantages and disadvantages.

4. The student is able to draft and design a standard bridge with the special required proofs of fatigue for the steel details.

Architecture

1. The student is able to work in an interdisciplinary team of Architects and Structural Engineers.

2. The student is able to develop a rough draft of a high rise building with the knowledge about the necessity of structural systems

Beschreibung: High Rise Buildings in Steel and Concrete Composite Structure

- Introduction
- Exemplification of worldwide well known buildings
- Slab structures in composite steel and concrete structures
- Impacts on high rise systems
- Bracing systems
- Structural analysis
- Circular Economy and Reusable Systems
- Judgement criteria concerning construction time, simplicity of assembly, degree of prefabrication and reduction of resources namely steel tonnage and concrete volume

1. This course is focusing on the first theme: the design of large structures in steel and composites.

2. The subject Sustainability is tackled in the chapter about reusable systems for a circular economy.

Modalitäten: Lecture and Workshops

Sprache: Anglais

Pflichtkurs: Oui

Evaluation: Development of a High Rise Building –

1. Participation in the lectures and workshops



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2. Development and Draft of a HR building within an interdisciplinary team
3. Quality and plausibility of the developed solution
4. Final report with structural analysis, architectural drawings and structural drawings
5. Final presentation

Remark: Script
C. Petersen; "Stahlbau", Vieweg-Verlag
K.-J. Schneider; "Bautabellen für Ingenieure"; Werner Verlag
"Betonkalender", Verlag Ernst und Sohn
"Stahlbau-Kalender", Verlag Ernst und Sohn
S. Bungale; S.E. Taranath; "Wind and Earthquake Resistant Buildings",
W.F. Chen, E.M. Lui; "Handbook of Structural Analysis and Design"; Taylor and Francis, Boca Raton, USA

Professor: ODENBREIT Christoph, KOZMA Andras

MARCH Visual and Cultural Studies

Modul: Architecture III (Semester 3)

ECTS: 3

Objektiv: This course gives an introduction to main topics in contemporary art and provides an insight on the role of modern and contemporary art museums in western societies: it aims at understanding the relationship between the development of art, architecture and representation, while exploring the societal, political and urban aspects implied by the construction of such a museum.

Course learning outcomes: -Provides the student with a knowledge of some aspects of recent art history and its iconography
- Introduce the student to theoretical and practical tools to analyse needs and functionality of art museums.

Beschreibung: 1. Introduction to main issues of modern and contemporary art
2. Iconography and representation of utopia: how to read an artistic / architectural image ?
3. Case studies of contemporary art practices and museums
Organisation: Lectures, discussions and visit of a museum

Sprache: Anglais

Pflichtkurs: Oui

Evaluation: 25 % participation during the course, 75 % home assignment (essay).

Professor: LUNGHI Enrico



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MARCH Comparative analysis: laws, regulations, norms

Modul:	European Urbanisation III (Semester 3)
ECTS:	3
Course learning outcomes:	<p>Students are introduced to the logic and structure of major laws and regulations related to the build environment at the building, urban and regional scale.</p> <p>Students familiarise themselves with local, regional and European regulatory frameworks.</p> <p>Students learn how to integrate regulatory constraints onto their design projects.</p>
Beschreibung:	<p>Regulatory frameworks and regimes constitute a crucial element shaping the building environment at multiple scales: from the national and transnational, through national and European spatial development plans; to urban and regional, through masterplans and urban and regional plans; to the building scale through building codes and regulations. This course aims to introduce students to the logic and structure of major regulatory frameworks, focusing on the broader region of Luxembourg, but also on the European scale. Moreover, it aims to help students integrate regularity conditions into the design process.</p> <p>Course Structure:</p> <p>Overview of major regularly frameworks, actors, regimes and scales, both historical and contemporary and their impact on the build environment.</p> <p>Focus on regional and European regulatory frameworks and local building codes and regulations.</p> <p>Integration of regularity conditions into the design process.</p>
Sprache:	Anglais
Pflichtkurs:	Oui
Evaluation:	50 % participation in the seminar, 50% final project.
Professor:	VON ROESGEN Maximilien Paul Pierre

MARCH Seminar on Project Management

Modul:	Seminars III (Semester 3)
ECTS:	4
Objektiv:	The student has to be aware of the life cycle of a building and the different consecutives phases. A focus is set on the "conception phase" to guaranty a user needs adaptable building as main condition for a sustainable construction. The understanding of an infrastructure as support for



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the core business of an economic, public or private entity and as important part for the social and cultural development of an urban area will help to define the targets of any construction. She / he will learn about the differences between role and function in a project team and get informed about the link between legal requirements (construction laws in D/F/L context) and technical and process orientated constrains. As construction is the consequence of filling in contracts between partners who are linked by mutual performance bonds, the legal basics for contracting and tendering will be mentioned in the D/F/L context.

The student will be able to set up a project structure and get competences to lead a team and manage the tools in a more and more digital supported design process. (by using BIM-methods)

In a more practical part of the lecture and by using examples of university premises at Campus Belval, she/he will be trained to interpret the user needs to set up a space program for a research building.

Course learning outcomes:

The student understands the principles of project management in a object orientated design process (BIM-methods) and can apply this as leader in a construction design team. She/he understands the design and construction process as filling in contracts between partners who are linked by mutual performance bonds.

Beschreibung:

1-Introduction:

"Building activity" as added value chain process: project management task - design task - building task - exploitation task.

Future trends for real estate development. (smart building, low emission, digitalisation..)

Future challenges for the added value chain process.

2-Project management task for building activity:

- Real estate lifecycle
- Phases in a construction process (timeline / technical sequence)
- Participants (role & function)
- Targets – tools – requirements
- Cost- quality- & risk-management for construction projects

3-Design management:

Object orientated Design – BIM in construction process

Basic principles for object-orientated design

- Work-flow and communication in a data base network structure
- Definition of the role of the "users needs"
- Definition of object –qualities
- "Design team" for collaborative working (roles - requirements – communication – lead)



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4. Construction and Exploitation management:

Milestones to transfer the project into "building status" / "exploitation status"

· Bid – contract – supervise- overhand

5.(option) Workshop: Concept definition for research and teaching real estate.

Sprache: Anglais

Pflichtkurs: Oui

Evaluation: 50% participation in the seminar, 50% final written exam (90 min).

Remark: Harris, McCaffer; Modern Construction Management; Wiley 2013

Eyon, John; Construction Manager's BIM handbook; Wiley Blackwell 2016

Sommer, Hans; Projektmanagement im Hochbau; Verlag Springer 2016

Hardin, McCool; BIM and Construction Management: Proven Tools, Methods, and Workflows; Wiley 2015

Diethelm, Gerd; Projektmanagement Band I und II; Verlag Neue Wirtschaftsbriefe 2000

Kochendörfer, Bernd; Bau-Projekt-Management, Verlag Teubner 2004

Viering, Markus G; Managementleistungen im Lebenszyklus von Immobilien; Verlag Teubner 2006

Girmscheid, Gerhard; Projektabwicklung in der Bauwirtschaft; Verlag Springer 2007.

Professor: SCHEUERN Michael



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Semester 4

MARCH-DS-S4 Design Studio - Final Master Thesis Part 1

Modul:	Design Studio - Master Thesis (Semester 4)
ECTS:	10
Sprache:	Anglais
Pflichtkurs:	Oui
Professor:	SWINNEN Peter, SCHMIT Carole, KATSIKIS Nikolaos

MARCH-DS-S4 Design Studio - Final Master Thesis Part 2

Modul:	Design Studio - Master Thesis (Semester 4)
ECTS:	20
Sprache:	Anglais
Pflichtkurs:	Oui
Professor:	SWINNEN Peter, SCHMIT Carole, KATSIKIS Nikolaos