# General information:

**Curriculum:** Architect MSc 1, Architect OTM

**Course name: LECTURES ON ECODESIGN**

**Course code:** EPM048ANEM

**Semester:** 1

**Credit value:** 3

**Lecture number/week:** 2/2

**Evaluation:** exam (v/e)

## Pre-course: -

**Course Host : Dr. Bálint BARANYAI Ph.D., assistant professor**

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**Lecturers: Dr. Bálint BARANYAI Ph.D., assistant professor**

Office: 7624, Pécs, Ifjúság u. 20. Szentágothai Research Centre A-114, Hungary E-mail: balint.baranyai@mik.pte.hu

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## Syllabus

Theoretical and experimental philosophy, way of seeing, basic knowledge in design methodology through the analisys of case studies

## The aim of the course

The aim of the course to introduce the approach of the autochton (ancient, traditional) and historical architecture in accordance with the natural environment, to realize its energy- and eco-conscious view of seeing and the trivial availability of adaptation of those. By demonstrating positive and negative ecological solutions reminding the students for the designer’s responsibility – via the energy consumption of buildings – which is a rightful but maybe unconscious expectation of the present and forecoming society.

## Content of the course

Detailed demonstration and analisys of autochton, historical and recent buildings, case studies from architectural, energetical, climatical and ecological design and feasibility aspects. In addition to present basic knowledge about climatic zones, such as building climatics, building energetics, building aerodynamics and comfort, additionally delivering the possible methods of building physics calculations.

For further reference see **Neptun Meet Street**

## Exams and evaluation

The attendance on the lectures is compulsory according to the Education and Exam Rules of the University of Pécs.

The semester terminates on the 15th academic week.

The course can be accomplished with successful written exam in the exam period. Maximum achievable points: 100 points

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| 85 p – 100 p | 100% | A (5, jeles, excellent,sehr gut) |
| 70 p – 84 p | 84% | B (4, jó, good, gut) |
| 55 p – 69 p | 69% | C (3, közepes, avarage, befriedigend) |
| 40 p – 54 p | 54% | D (2, elégséges, satisfactory, genügend) |
| 0 p – 39 p | 39% | F (1, elégtelen, fail, ungenügend) |

## Compulsory bibliography

Lecture notes recommended, lecture presentations will be uploaded

* NEPTUN: Lectures on Ecodesign\_Course notes\_ENG (broadsheet)

## Recommended bibliography

* Gerhard Hausladen, M. de Saldahna, P. Liedl, C. Sager, Climadesign, Lösungen für Gebäude, die mit weniger Technik mehr können, Callwey publishing, München, 2005
* Thomas Herzog, Solar Energy in Architecture and Urban Planning, Prestel publishing, München, London, New York, 1996
* Sophia und Stephan Behling, Sol Power, Die Evolution der solaren Architektur, Prestel Publishing,

München, New York és Sophia und Stephan Behling, 1996

* Zöld András, Energiatudatos építészet, Műszaki publishing, Bp., 1999
* Dr. Széll Mária, Transzparens Épületszerkezetek, Szerényi és Gazsó Bt., 2001
* Hegger, Fuchs, Stark, Zeumer: Energie Atlas, Edition Detail, 2008
* Herzog, Krippner, Lang, Fassadenatlas, Birkhäuser, Edition Detail, Basel, Boston, Berlin, München, 2004
* Gerhard Hausladen, M. de Saldahna, P. Liedl, Climaskin Konzepte für Gebäudehüllen, die mit weniger Energie mehr leisten
* DETAIL
* XIA inteligente architektur
* Robert Kronenburg, Flexible Architecture that Responds to Change
* Thomas Herzog, Architektur + technologie
* sir Norman Foster, Sol Power
* Detlef Glücklich, Ökologisches Bauen
* Michael John Gorman, Buckminster Fuller, Designing for Mobility
* Roberto Gonzalo, Karl J. Habermann, Energieeffiziente Architektur
* Michael Bauer, Peter Mösle, Michael Schwarz, Green Building
* Christian Schittich, Gebäudehüllen
* Otto Kapfinger, Hermann Kaufmann wood works
* Herzog Natterer, Schweitzer, Volz, Winter, Holzbau Atlas
* Schittich, Staib, Balkow, Schuler, Sobek, Glasbau Atlas
* Christian Schittich, Ba uen im Bestand
* Philip Jodidio, GREEN Architecture now!
* Simo Roberts, Gebäude integrierte photovoltaik
* Kristin Feireiss, Lukas Feireiss, Architecture of Change
* Gert Kähler, Matthias Schuler, Gerhard Hausladen, Helmut F.O. Müller, Eberherd Oesterle, Guy Battle, Die klima-aktive Fassade
* Herzog, Krippner, Lnag, Fassaden Atlas
* Hegger, Fuchs, Stark, Zeumer, Energie Atlas
* Oesterle, Lieb, Lutz, Heusler, Doppelschalige Fassaden
* Klaus Daniels, Advanced Building Systems
* Al Gore: Wir Haben die Wahl
* Paolo Portoghesi: Nature and Architecture
* Holger König, Niklaus Kohler…:Lebenszyklusanalyse in der Gebäudeplanung
* Ken Yeang: Ecodesign
* Chris van Uffelen: Ecological Architecture

## Education methodology

Interactive lectures via displayed presentations

# Detailed program of the semester

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| **1st week** | Friday 11:15-14:45 |
| cycle „1” | Lecture |
| Methodology | - |
| 9th September | Introduction, briefing |

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| **2nd week** | Friday 11:15-14:45 |
| cycle „1” | Lecture |
| Methodology | presentation |
| 16th September | Sustainable, energy efficient and ecological architecture\_climatic zones |

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| **3rd week** | Friday 11:15-14:45 |
| cycle „1” | Lecture |
| Methodology | presentation |
| 23th September | The history of the sustainable, energy efficient and ecological architecture\_01 |

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| **4th week** | Friday 11:15-14:45 |
| cycle „1” | Lecture |
| Methodology | presentation |
| 30th September | The history of the sustainable, energy efficient and ecological architecture\_02 |

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| **5th week** | Friday 11:15-14:45 |
| cycle „1” | Lecture |
| Methodology | presentation |
| 7th October | Sustainable, energy efficient and ecological case studies – residental buildings |

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| **6th week** | Friday 11:15-14:45 |
| cycle „1” | Lecture |
| Methodology | presentation |
| 14th October | Sustainable, energy efficient and ecological case studies – – office buildings |

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| **7th week** | Friday 11:15-14:45 |
| cycle „1” | Lecture |
| Methodology | presentation |
| 21nd October | Sustainable, energy efficient and ecological case studies – halls, climate halls, the future of cities |

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| **8th week** |  |
|  | AUTUMN HOLIDAY |
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| **9th week** | Friday 11:15-14:45 |
| cycle „2” | Lecture |
| Methodology | Students’ presentation\_01 |
| 11th November |  |

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| **10th week** | Friday 11:15-14:45 |
| cycle „2” | Lecture |
| Methodology | Students’ presentation\_02 |
| 18th November |  |

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| **11th week** | Friday 11:15-14:45 |
| cycle „2” | Lecture |
| Methodology | Students’ presentation\_03 |
| 25th November |  |

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| **12th week** | Friday 11:15-14:45 |
| cycle „2” | Lecture |
| Methodology | Students’ presentation\_04 |
| 2th December |  |

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| **13th week** | Friday 11:15-14:45 |
| cycle „2” | Lecture |
| Methodology | Students’ presentation\_05 |
| 9th December |  |

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| **14th week** | Friday 11:15-14:45 |
| cycle „2” | Lecture |
| Methodology | Summary |
| 16th December |  |

Choosable topics for student’s presentations and essays:

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| 1 | The reasons of climate change |
| 2 | Ecological frootprint |
| 3 | Architecture of disaster regions |
| 4 | The connection between glass-architecture and ecology |
| 5 | Glazed sunspaces |
| 6 | The role of thermal mass in buildings |
| 7 | Shading methods and techniques in buildings  |
| 8 | Architecture of undeveloped regions |
| 9 | Thermal insulations in buildings |
| 10 | Passive houses |
| 11 | Timber architecture |
| 12 | Bio building materials |
| 13 | Adobe architecture |
| 14 | Straw architecture |
| 15 | The utilization of solar energy in architecture |
| 16 | The use of renewable energy in architecture |
| 17 | Buildings designed on the basis of ecological aspects |
| 18 | Smart buildings |
| 19 | Smart cities |
| 20 | The utilization of geothermal energy in architecture |
| 21 | The utilization of wind energy in architecture |
| 22 | Buildings of the sustainable future |
| 23 | Green roofs |
| 24 | The utilization of construction waste |

Note:

The recommended structure of the presentations:

- brief introduction and general overview otf the topic

- historical background

- present state

- future outlook

- summary and personal comments

- personal topic also can be choosen

- max 5 presentations per lecture

We keep the right of the changes (date/place/time) which will be announced in every case in advance. All the questions regarding the course can be addressed to Dr Bálint Baranyai.

Dr. Bálint Baranyai

course host

Pécs, 30. 08. 2022.