Table S2.6.4.en The template for preparation of course info lists

Course title: ***Design and nature***

Course code	Course status	Semester	Number of ECTS credits	Class load
	Optional	I	10	2+2+0

Study programmes for which it is organised:
Doctoral studies in sustainable development, MARDS

Admission requirement: None

Goals of course: The goal of this course is that PhD students: understanding the connection between architecture and nature, as well as different concepts in architectural design in relation to natural phenomena, ecology and principles of sustainability.

Course content:

Preparatory week	Consultation with supervisor, courses selection.
I week	Introduction. Connections between nature and design/architecture. Nature as a designer.
II week	Nature and design through the history and theory of design and architecture.
III week	Natural and cultural heritage. Sustainability in vernacular architecture and possibilities of its contemporary transposition.
IV week	Mimicry in architecture – nature as a building material.
V week	Principals of organic architecture and organic forms in design.
VI week	Design and architecture follows nature-use of fractal geometry in architecture and design.
VII week	Biomimetic and biomorphic approaches as modern philosophy of design/architecture. The principle of resilience in architecture.
VIII week	Role of contemporary facade and envelope technology in sustainable architecture.
IX week	Principle of "self-regulation" – homeostatic architecture. Parametric architecture. Smart architecture.
X week	Holistic principles in design and architecture. Environmental bio-integration.
XI week	Recyclable and zero-waste architecture and design. Eco-design.
XII week	Project task. (individual work)
XIII week	Project task. (individual work)
XIV week	Project task. (consultation and review)
XV week	Project task. (discussion and defence)

Teaching methods: Teaching methods: teaching (lectures and exercises), in combination with supervised work; consultations; project based teaching/learning; practical work; obtained knowledge and skills presentation

Student's workload

Per week	**Per semester**
10 credits x 40/30 = **13.33 hours** Structure: **2** hours of lectures **2** hours of exercises **9.33** hours of individual work	**Lectures and final exam**: (13.33 hours) x 16 = **213.33 hours** **Necessary preparation** before the start of the semester (administration, enrolment, verification): (13.33 hours) x 2 = **26.66 hours** **Total workload for the course**: **10 x 30 = 300 hours** **Additional work** for preparing correction of the final exam, including taking the exam: **0 - 60 hours** (remaining time from the first and the second item to the total workload for the course of 300 hours) **Structure of the workload**: 213.33 hours (lectures and final exam) + 26.66 hours (preparation) + 60 hours (additional work)

Obligations of students:

- regular attending lectures and other classes or adequate activity in supervised work
- conscientious and individual elaboration of homework and project tasks, with systematisation of material and adequately applied scientific research methodology

- individual elaboration of written exam, accompanied by oral discussion
- presenting obtained knowledge during the semester and at the final exam

Literature:

- Rudofsky, B. *Architecture Without Architects*, University of New Mexico Press, 1987.
- Anuradha Mathur, Dilip da Cunha. *Design in the Terrain of Water*, Applied Research & Design, 2014.
- Ian L. McHarg. *Design with Nature,* Wiley, 1995.
- David Gissen. *Territory: Architecture beyond Environment.* Academy Press, 2010.
- Blaine Brownell, Marc Swackhamer. *Hypernatural: Architecture's New Relationship with Nature.* Princeton Architectural Press, 2015.
- Michael Pawlyn. *Biomimicry in Architecture*. RIBA Publishing, 2011.
- Carlos Ginatta. *ARCHITECTURE without architecture: Biomimicry design*. VDM Verlag Dr. Müller, 2010.
- Philip Jodidio. *Architecture: Nature*. Prestel Publishing, 2006.
- Paolo Portoghesi. *Nature and Architecture*. Skira, 2000.
- Holden, R. *Progettare L' Ambiente*, Modena: Logos, 2003.

Learning outcomes:

Knowledge and understanding:

On completion of this course the student will be able to:

- make general classification of different relation between architecture and nature,
- analyse possibilities of contemporary transposition of vernacular architecture,
- make general classification of different concepts of architectural design regarding principles of sustainability,
- determine use of appropriate sustainable architectural concepts depending on the context,
- analyse possibility of forming new architectural approaches and concepts inspired by nature and its phenomena,
- analyse possibility of use of different type of façade and envelope technology,
- develop and study new possibilities in the field of sustainable architecture.

Transferable / Key skills and other attributes:

- Communication skills: oral defence, manner of expression at written examination.
- Use of information technology: software for architectural and landscape design.
- Analysis skills: application of appropriate analysis procedures in creating architectural concepts.
- Problem solving: analyses of possibilities for developing new concepts.

Methods of knowledge assessment and marking:

Knowledge assessment is continuous during the semester, through pre-exam checks, and in the final exam. In total, student may collect max 100 points.
The following is assessed:

- seminar paper and other semester activities (homework etc.) 50%,
- final exam 50%.

The final exam consists of written and oral part. Written part may be realised through project task. Grades (A, B, C, D, E, F) are adjoined to collected number of points, in line with the Law of Higher Education and study rules at the University of Montenegro.

Name and surname of professor who prepared course info-list:

Slavica Stamatović Vučković, PhD Associate Professor

Special notes for the course:

Any other note: