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REPORT ON LLL COURSES FOR PROFESSIONALS IN EU WATER SECTOR

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University of Nis

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Contents

List of abbreviations

AUTh	Aristotle University of Thessaloniki
BOKU	University of Natural Resources and Life Sciences, Vienna
CBHE	Capacity Building in Higher Education
EACEA	Education, Audiovisual and Culture Executive Agency
HEI	Higher Education Institution
LLL	Life Long Learning
NMBU	Norwegian University of Life Sciences, Norway
PWMC VV	Public Water Management Company ''Vode Vojvodine''
SWARM	Strengthening of master curricula in water resources management for the Western Balkans HEIs and stakeholders
UACEG	University of Architecture, Civil Engineering and Geodesy, Bulgaria
UNI	University of Nis, Serbia
UL	University of Lisbon, Portugal
UoM	University of Montenegro
UNIRIFCE	University of Rijeka, Croatia
UNMO	Dzemal Bijedic University of Mostar
UNS	University of Novi Sad
UNSA	University of Sarajevo
UPKM	University of Pristina in Kosovska Mitrovica
TCASU	Technical College of Applied Sciences Urosevac with temporary seat in Leposavic
WRM	Water Resources Management

1 Introduction

Report on Life Long Learning (LLL) courses for professionals in water sector in EU Partners HEIs is part of work package (WP) 3 "Development of trainings for professionals in water sector" and activity 3.1 "Introduction with LLL courses for professionals in water sector in EU" of the Erasmus+ Capacity Building in the Field of Higher Education project „Strengthening of master curricula in water resources management for the Western Balkans HEIs and stakeholders" (SWARM).

This Report has been prepared by the EU Partners HEIs:

1.1 Aristotle University of Thessaloniki (AUTh)

Aristotle University of Thessaloniki (AUTh) is the largest University in Greece covering all disciplines. It is widely recognized as a vibrant center of learning which draws its inspiration from a long tradition of academic achievement. This can be supported, among other factors, by the fact that so much in science, as in the arts and divinity, medicine and technology, it prides itself in its international role. The University has been actively participating in the Erasmus Program since 1987, accounting approximately one fourth of the total Erasmus mobility in Greece in the frame of Student for Studies Mobilities as well as Staff for Teaching Mobilities.

The Department of International Relations and the Department of European Educational Programmes are responsible for enhancing, organizing and maintaining good relations between the Aristotle University and the international academic community, as well as for promoting the university abroad, with the aim to reinforce cooperation and communication in the field of teaching and research.

The above goals are met by participating in International Organizations, Unions and University Networks, coordinating and implementing Bilateral Agreements between the AUTh and universities all over the world, as well as by implementing the European Policy of the Aristotle University of Thessaloniki through the Erasmus+ program and various other European Educational Programs (Erasmus Mundus, Erasmus+ International etc.).

The UNESCO Chair on Education for Human Rights, Democracy and Peace, the UNESCO Chair and International Network of Water-Environment Centers for the Balkans, the UNESCO C2c Center for Integrated and Interdisciplinary Water Resources Management and the "Iason" Programme play an integral role in continually advancing the prestige of the Aristotle University of Thessaloniki.

The main purpose of the Aristotle University through operating the Lifelong Learning Courses, which were initiated in the spring of 2012, is to cater for the increased needs of the Greek society for training, learning and specialization, especially in our times. Aristotle University has both the scientific manpower and the proper infrastructure required to offer high quality education services to a wide range of people in the country. Through the Lifelong Learning Courses, AUTH contributes effectively to decreasing social isolation in education, modernizing the educational system in Greece and upgrading the quality of education, be it formal or informal. Furthermore, by organizing such educational programs, it aims to expand internationally and become a competitive force in the marketplace of education.

1.2 University of Natural Resources and Life Sciences, Vienna (BOKU)

Founded in 1872, the University of Natural Resources and Life Sciences, Vienna, known too by its acronym BOKU, comprises 15 departments and four service centres in Vienna, as well as a number of experimental centres around Vienna. The university is attended by approx. 12,500 students, provides study courses at the bachelor, master and doctoral levels, has approx. 1080 staff (full-time equivalent) who are engaged in teaching and research, a broad range of external lecturers, and some 560 persons working in services and administration.

One of the 15 departments is called "Water-Atmosphere-Environment" (WAU) that comprises 9 institutes which are focusing on water resource management related issues and are listed below:

- Institute of Sanitary Engineering and Water Pollution Control (SIG)
- Institute of Hydrobiology and Aquatic Ecosystem Management (IHG)
- Institute of Waste Management (ABF-BOKU)
- Institute of Meteorology (BOKU-Met)
- Institute of Hydraulics and Rural Water Management (IHLW)
- Institute of Hydrology and Watermanagement (HyWa)
- Institute of Safety and Risk Sciences
- Institute of Hydraulic Engineering and River Research (IWA)
- Workshop of water related institutes

Austrian Water Associations

BOKU is member and/or partner of the two main Austrian Water Associations listed below:

- Austrian Water and Waste Management Association (ÖWAV)
- Austrian Gas and Water Association (ÖVGW)

The Water Associations provide neutral and independent platforms for experts in the field of water, waste and gas management. Members are public administrations, municipal services, private sectors and universities. The principle tasks of the associations include the development of high quality standards (e.g. technical regulations, practical guides, etc.) prepared by working groups within the association's professional departments, the development and organization of education and training offerings related to practical needs as well as providing information to members and the public and the advisory service for environmental legislation.

1.3 Norwegian University of Life Sciences, Norway (NMBU)

Norwegian University of Life Sciences (NMBU) is a Norwegian state university with about 5200 students and about 1500 staff members. The university was founded in 1859 as the third higher education institution in Norway, as the Higher Agricultural College of Norway. It received university status 1 January 2005, and in 2014, it became the university we know today when it was merged with the Norwegian School of Veterinary Science. The focus areas are Environment, Sustainable development, Climate challenges, Renewable energy sources, and so on. The university consists of seven faculties, offering 64 study programs in both Norwegian and English.

NMBU has a long standing tradition of working alongside the public and private sector, and most of the courses for professionals are offered outside of NMBU. Courses are offered through several agencies, and Norsk Vann (Norwegian Water, https://www.norskvann.no/), is one of them and they offer courses all over the country. Norsk Vann is a national association representing Norway`s water industry. It acts on behalf of the members, which are mainly municipalities and companies owned by the municipalities. Norwegian Water in total represents 370 municipalities, with 95 % of the population. Norwegian Water also has affiliated members like consultants, producers, suppliers and educational and research institutions. The purpose of Norsk Vann BA is to organise collaboration between Norwegian water and wastewater treatment plants in technical, economic and administrative issues and to safeguard the joint interest of the works.

An important focus area for the industry is training, and Norsk Vann has now created a structure for continuing and further education in the sector. The courses are systematized in four main target

groups. These are operating personnel at waterworks, operating personnel at wastewater treatment plants, operating personnel on the distribution system and operating managers/case managers in the municipalities. For each of the target groups, separate trainings plans are created as the basis for the course development. There are offers on both the basic course and the specialization course. The courses will be conducted according to modern pedagogical principles with a great deal of practical exercises. The courses are held around the country in collaboration with local educational institutions.

Most courses runs over the course of a few days or a few weeks in total, with specific meeting days and work to complete from home during and after the meeting days. The focus is on practical learning, often using simulators, so that each course participant can practice what they were taught in the courses.

1.4 University of Architecture, Civil Engineering and Geodesy, Bulgaria (UACEG)

The University of Architecture, Civil Engineering and Geodesy (UACEG) was founded in 1942 in Sofia, Bulgaria, as part of Higher Technical School, which was transformed to State Polytechnics in 1945 and then separated as Higher Institute of Civil Engineering in 1953. The name was changed to Higher Institute of Architecture and Civil Engineering in 1963 and the current name is set in 1990. UACEG is located in Sofia and it comprises of 5 faculties – Faculty of Architecture, Faculty of Structural Engineering, Faculty of Hydraulic Engineering, Faculty of Transportation Engineering and Faculty of Geodesy. The university enrols between 600 and 1,000 students per year in the period 2000-2018. The average number of students enrolled in all levels and courses for the same period is around 3,500 per year. The traditional study programs are “integrated master” with duration of 5 years, but also some bachelor degree (4 years duration) and short master programs (2 years duration) are offered. The academic staff of UACEG in 2018 is 318 persons, including 44 full professors, 105 associate professors, and 169 assistant professors. Non-academic staff of UACEG is approx. 220 persons.

The Faculty of Hydraulic Engineering was established on 02.11.1947 with a decision of Bulgarian Parliament. The number of academic, non-academic staff, departments and laboratories varied through years. In 2019 Faculty of Hydraulic Engineering (FCE) comprises of 5 departments:

- Department of Water Supply, Sewerage, Water and Wastewater Treatment;
- Department of Hydraulic, Irrigation and Drainage Engineering;
- Department of Hydraulics and Hydrology;

- Department of Technical Mechanics;
- Department of Physics.

The first three departments are directly involved in study programs related to Water sector and its branches, incl. water resources management. The academic staff of these 3 departments consists of 34 persons, out of which 5 full professors. The Faculty of Hydraulic Engineering is a unique educational institution in Bulgaria – there is no such a unit in other Bulgarian HEIs, which deals with water engineering and water resources management.

Bulgarian Water Organisations

There are two main NGOs in Bulgaria related to water:

- Scientific - Technical Union of Water Affairs (STUWA) - www.stuwa.org/index_en.html
- Bulgarian Water Association (BWA) - https://bwa-bg.com/

STUWA is a public body, incorporating scientists and professionals from the whole country, dealing with research, design, construction and operation of water projects in Bulgaria. Members of the Union are also more than 50 companies, enterprises, research institutes and other organisations, operating in the field of water management.

The BWA members are legal and natural persons – experts, who have interests related to water and sanitation, including the quality and treatment of drinking, industrial, agricultural and waste water; management, conservation and utilization of water resources. BWA has created a Vocational Training Center, which offers LLL courses for professionals.

Both organisations claim that they cover all areas of water engineering, incl. water resources management. Actually, the first one – STUWA, which is created in 1966, covers all areas, but water supply and sanitation is not well presented. In contrast, BWA (created in 2005), deals mainly with problems of water supply, sanitation (sewerage), water and wastewater treatment, while other fields like hydraulic structures, irrigation and drainage are lightly engaged. Both organisations have activities in the field of water resources. Faculty of Hydraulic Engineering of UACEG is not a member of any of these organisations, but staff of the faculty have membership in one of them at least.

1.5 University of Lisbon, Portugal (UL)

Universidade de Lisboa (UL) is the largest and most prestigious university in Portugal. Heir to a university tradition that spans over seven centuries, UL acquired its current status in July 2013, following the merger of the former Universidade Técnica de Lisboa and Universidade de Lisboa.

UL brings together various areas of knowledge and has a privileged position for facilitating the contemporary evolution of science, technology, arts and humanities. The quality of teaching, research, innovation and culture of UL is attracting an ever-increasing amount of talent from around the world. UL is committed to strengthening its capacity to act and to exercise influence in international strategic areas, especially through the development of further partnerships with Brazil, China and the Community of Portuguese-speaking countries.

Instituto Superior Técnico (IST) is the engineering school of UL and the largest and most reputed school of engineering, science and technology in Portugal, with long tradition in teaching, and excellence in research, innovation and training activities. Since its creation in 1911, IST's mission is to contribute for the development of the science, economy and society by promoting a higher degree of education in the areas of Science, Engineering and Technology at the undergraduate and graduate levels and by delivering highly qualified professionals in the public and private sector, strengthening the National and European R&D effort.

IST's mission reflects the three activities that define the concept of a modern university: Education, Research & Development and links with the modern society. With two conveniently located campuses, (Alameda in Lisbon and Taguspark in Oeiras), IST consists of eight departments that are responsible for teaching Undergraduate and Postgraduate Programmes. Today IST has about 8500 undergraduate students and over 1500 graduate students in different areas of studies. IST includes over 700 Professors with Ph.D. in different areas of specialization.

IST is involved in some of the most prestigious RD&I and technology transfer institutions in Portugal, with remarkable impact internationally at many scientific and technological domains. The scientific activities are developed in research institutes, some of them of excellence, in which working groups develop research in specific subjects within its scientific area.

Lifelong learning courses on Civil Engineering Architecture and Georesources are offered through the Association for Training and Development of Civil Engineering and Architecture (FUNDEC), an association between the Department of Civil Engineering, Architecture and Georesources of IST and a

number of Portugal's top building and construction firms. This initiative was unprecedented in terms of university-corporate partnerships in the building industry.

One of FUNDEC's goals has been to institutionalize continuous training courses with a view to improving and upskilling the people and the firms involved in the extensive field of civil engineering. FUNDEC also sets out to help firms through the supply of science and technology services, according to their needs, so as to foster advances in Portuguese Civil Engineering and Architecture within the European Union and the internationalized market place.

The success, credibility, quality of teaching and relevance of FUNDEC to the building industry are borne out by the number of trainees (over 13000 up to 2012) and training actions (over 600 up to 2012). The choice of training in FUNDEC is a crucial step in developing knowledge and skills that should pave the way for new professional challenges in the future.

1.6 University of Rijeka, Croatia (UNIRIFCE)

The University of Rijeka counts around 1.500 employees (1.000 teachers and 500 non-teaching staff) and 16.700 students, and consists of 11 faculties and 4 university departments, university library and student centre.

The Faculty of Civil Engineering (UNIRIFCE) as part of the University of Rijeka has around 75 employees, of which the Chair of Hydraulic Engineering counts 11 experts employed. The Faculty was established in 1976. UNIRIFCE new building (from 2011) is situated within the University Campus with up-to-date equipped classrooms, laboratories and offices for students and Faculty staff.

The Hydraulic laboratory has recently been fully equipped with the financial support from EU founds within the project: Research Infrastructure Development at the University Campus of Rijeka (European fund for regional development).

Faculty experts have a wide experience in water management and hydraulic engineering research and teaching, and have participated in numerous international and national projects in this area of expertise, but also in projects that are related to the improvement of curricula and the quality of study in order to prepare better students for the work market or for continuing their education on doctoral studies and scientific work.

At UNIRIFCE all three levels of studies (BSc, MSc and PhD), both university and vocational, are offered and around 650 students are currently enrolled. On master university study level (MSc)

students are offered the possibility to enrol and develop their knowledge and competences in the branch of Hydrotechnical engineering and Urban engineering, both branches include water management and hydraulic structures design courses. On master level for vocational study students are offered the specialistic programme Building in Coastal Region and Infrastructural Engineering. All Faculty study programmes have been reformed in 2005 according to Bologna declaration principles (introduction of: 3 cycles of study, diploma supplement, ECTS, learning outcomes, QA, etc.).

UNIRIFCE offers also Lifelong learning (LLL) programmes. The first LLL programme was accredited in 2012. Currently 2 LLL programmes are accredited, and 1 is in development phase.

Prior to accredited LLL programmes the Faculty offered training programmes for civil engineers without University accreditation.

2 LLL courses for professionals in water sector in EU Partners HEIs

2.1 Aristotle University of Thessaloniki (AUTh)

Introduction

The Structure of Lifelong Learning of AUTh operates in accordance with Law 3879/2010, as applicable, and the present Internal Regulation. AUTH offers and certifies the training of all forms other than the formal education system (informal learning, initial and continuing vocational training, specialization, postgraduate training).

The Lifelong Learning Courses offered by AUTH operate within a framework that guarantees a high level of education compatible with the role of a public university, as well as the effectiveness, the legitimacy and the validity of the educational services rendered. This framework also ensures the attestation of the certificates, the qualifications and the credits offered upon the completion of the courses.

The majority of the courses offered are interdisciplinary and they are taught by Faculty Members from different departments of the university, or even, at times, from other universities or research institutes, or by independent instructors. The courses, which, for now, are offered mostly in Greek, are addressed mainly to university graduates aiming to become learned on popular fields of study they haven't had the chance to acquaint themselves with during their studies. However, there are also programs aimed at future businesspeople or whoever is interested regardless of their educational background. Our foreign courses are addressed to people of all academic levels.

- The courses are fully integrated into the ECTS system, the calculation of which is clearly stated and detailed for each a course in the program folder
- IT and Communication Technologies can be used for distance learning with a corresponding calculation of ECTS units
- All training topics are regulated by the Labor Regulation this creates each educational activity.

A list of LLL courses offered by AUTh for professionals in Water Resources Management (WRM)

Course title:

Training Seminars-Advanced Chromatography Methods for Drinking Water Analysis 4 Cycles 2014-2017

Number of trainees: in total 45

The purpose of this applied training seminar is the combined and integrated approach of the theoretical education and practical training of graduates of university or technical schools, oriented to the practical application of analytical and modern methods of handling, specializing in chromatography and mass spectrometry.

By completing the Learning Program, participants are able to:

- to choose and apply the most appropriate water sample pretreatment strategy for the analysis of organic pollutants
- analyze, interpret and evaluate results for the concentration of various organic compounds
- to possess basic knowledge of chromatographic analysis that is one of the most important analytical techniques
- to handle new technology and to know the handling of specialized software programs

The program has duration of 40 hours and includes the following modules:

A. Seminars on gas chromatography coupled to mass chromatograph (GC-MS), the duration of which was 12 hours and included practical training by the determination of trihalomethanes and organic compounds.

B. Fluid Chromatography (UPLC) Seminars, the duration of which was 12 hours and included practical training with the determination of pharmaceutical compounds and polycyclic aromatic hydrocarbons.

C. Seminars on LC-MSMS, the duration of which was 16 hours and included practice with pesticide determination.

D. ICP Principles.

For evaluation, short Curriculum Vitae in Greek and all relevant diplomas and Curriculums are needed. The selection of the participants takes place in a priority order.

The Program is addressed to:

a) Qualified Chemists or graduates of Environmental or Laboratory Analysis Schools

b) scientific and technical staff of laboratories, graduates of pharmaceutical or medical schools and related sciences

c) all those who wish or deem it necessary for their professional and scientific development to acquire knowledge of environmental analyzes and in particular chromatographic analysis.

Learning techniques: Classroom lectures with academic and guest presenters, laboratory work. During the seminars, all trainees receive written notes about the subject to be taught each time. Participants in the Program are awarded:

a) Certificate of participation and

b) Training / Training Certificate

Course title:

Training Seminars on Physico-chemical Analysis and Drinking Water Management 3 Circles 2015-2016

Number of trainees in total 29

The education and training program focuses on the application of drinking water analysis techniques and the identification of heavy metals and pollutants of modern interest.

This applied training course is divided into two main thematic units. The first thematic section includes the study of the determination of basic physico-chemical parameters of drinking water as defined in Joint Ministerial Decision Y2 / 2600/2001, using classical techniques of analysis.

In the second thematic section, heavy metal analysis applications are taught by atomic absorption spectroscopy. Trainees acquire knowledge on the determination of heavy metals using atomic absorption, namely:

- heated graphite oven flame
- FIAS technique and hydride method (Arsenic - mercury determination).

In the context of the determination of heavy metals in aqueous and solid samples, training was carried out on sample treatment using the microwave extraction method (MEA).

This Learning Program is a deepening of technologies and methods of analysis combined with the practical application of theoretical knowledge. In addition, trainees are specialized in the use of a set of analytical instruments that will be necessary for a scientific and professional career in an analytical laboratory.

After the completion of the course one can

- identify various physico-chemical parameters which are necessary for controlling drinking water in accordance with Joint Ministerial Decision Y2 / 2600/2001,
- analyze, interpret and evaluate results for the concentration of various inorganic pollutants in drinking water,

- identify heavy metals,
- possess basic knowledge of the analysis of various pollutants that can enter the water.

Target groups: The seminars are aimed at all those who wish to acquire knowledge of environmental analyzes and in particular knowledge of atomic absorption and determination of heavy metals for their professional and scientific development.

For evaluation, short Curriculum Vitae in Greek and all relevant diplomas and Curriculums are needed. The selection of the participants was taken place in a priority order.

Learning techniques: Classroom lectures with academic presenters, laboratory work

During the seminars, all trainees receive written notes about the subject to be taught each time. The Program is addressed to:

a) Qualified Chemists or graduates of Environmental or Laboratory Analysis Schools

b) Scientific and technical staff of laboratories, graduates of pharmaceutical or medical schools and related sciences

c) all those who wish to acquire knowledge of environmental analyzes, namely atomic absorption for their professional and scientific development.

2.2 University of Natural Resources and Life Sciences, Vienna (BOKU)

The BOKU´s LLL courses for professionals in water resources management are in general joint offers by BOKU and ÖWAV/ÖVGW respectively, due to the membership of the University in the Water Associations.

The seminar “Sediments in rivers and reservoirs – importance, monitoring and management” (“Sedimente in Flüssen und Stauräumen – Bedeutung, Monitoring und Management”) under the direction of Prof. Habersack (BOKU) was held on the 22nd of March 2018 in Vienna. The target groups of this seminar were hydropower companies, civil engineers, political representatives, experts from public administrations and authorities, universities and NGOs, whereby around 150 participants took part at the seminar. Figure 1 depicts the folder of this seminar including the schedule of oral presentations given by representatives of public administrations, universities and private companies. After the seminar the given presentations were summarized in a conference volume and sent out to all participants.

ALLGEMEINE HINWEISE

Anmeldung:
Bitte melden Sie sich bis **spätestens 13. März 2018** an, danach sind Anmeldungen auf Anfrage möglich. Anmeldungen werden nur schriftlich entgegengenommen und sind verbindlich! Mitglieder des ÖWAV werden bevorzugt gereiht. Im Fall einer Stornierung geben Sie diese bitte schriftlich bekannt. Bei **Stornierungen** nach dem **13. März 2018** werden 50 % des Seminarbeitrags einbehalten. Bei Absage am Veranstaltungstag selbst bzw. bei Nichterscheinen ohne Abmeldung muss der volle Seminarbeitrag in Rechnung gestellt werden. Die Nennung einer Ersatzperson ist möglich. Der Veranstalter behält sich vor, das Seminar aus wichtigen Gründen zu verschieben sowie Programmänderungen vorzunehmen.

Seminarbeitrag
(inkl. Vortragsunterlagen und Pausenerfrischungen. Zahlen Sie bitte erst nach Erhalt der Rechnung ein):

ÖWAV-Mitglieder:	**€ 230,–** (+ 20 % USt.)
Nichtmitglieder:	**€ 400,–** (+ 20 % USt.)
Tarif für Studierende (bis max. 27 Jahre, Inskriptionsbestätigung)	**€ 25,–** (+ 20 % USt.)

Veranstalter: Gesellschaft für Wasser- und Abfallwirtschaft GmbH (eine Tochtergesellschaft des Österreichischen Wasser- und Abfallwirtschaftsverbandes), 1010 Wien, Marc-Aurel-Straße 5, Tel. +43-1-535 57 20, Fax +43-1-532 07 47
Organisatorische Hinweise: Martin Waschak, Tel. +43-1-535 57 20-75, E-Mail: waschak@oewav.at

ANMELDUNG

per Fax 01-532 07 47 oder per E-Mail: waschak@oewav.at
Ich melde mich verbindlich zu folgender Veranstaltung an:
Sedimente in Flüssen und Stauräumen – Bedeutung, Monitoring und Management
22. März 2018, D3 Convention Center | 1030 Wien, Alfred-Dallinger Platz 1

Vor- und Zuname (mit Titel): .....
Dienststelle, Firma, Organisation: .....
Adresse: .....
(bzw. Firmenstempel)
Telefon/Fax: .....
Rechnungsadresse (falls abweichend): .....
.....
E-Mail: .....

Zutreffendes bitte ankreuzen!

- o ÖWAV-Mitglied
- o Studierende/r (Inskriptionsbestätigung)
- o DWA- bzw. VSA-Mitglied (Mitglieder der DWA aus Deutschland und des VSA aus der Schweiz erhalten Mitgliederkonditionen)

Die Überweisung nehme ich nach Erhalt der Rechnung vor (Kennwort „22597").

Mit der Anmeldung akzeptieren wir die Allgemeinen Geschäftsbedingungen der GWAV und bestätigen deren Kenntnis. Die Allgemeinen Geschäftsbedingungen der GWAV können unter http://www.oewav.at/service/agb eingesehen werden.

Ich stimme zu, dass die in meiner Anmeldung enthaltenen personenbezogenen Daten vom ÖWAV und der GWAV zu Informationszwecken für Seminare, Kurse, Regelwerke und sonstige Veranstaltungen sowie für die Versendung der Newsletter verarbeitet werden dürfen. Die Daten werden den Vorgaben des DSG 2000 bzw. der Datenschutzgrundverordnung entsprechend verarbeitet. Eine Übermittlung an Dritte wird nicht vorgenommen.

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Sedimente in Flüssen und Stauräumen

Bedeutung, Monitoring und Management

Donnerstag, 22. März 2018
D3 Convention Center
1030 Wien | Alfred-Dallinger-Platz 1

Leitung:
Univ.-Prof. DI Dr. Helmut HABERSACK, Universität für Bodenkultur Wien

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Fotos: BMNT

Programm

09:30 – 10:00	Registrierung	
10:00 – 10:20	**Begrüßung und Eröffnung** Prok. DI Peter MATT, illwerke vkw / ÖWAV-Vorstand / Fachgruppenleiter GF Ing. Mag. Michael AMERER, VERBUND Hydro Power GmbH / ÖWAV-Vizepräsident DDr. Dorith BREINDL, BMNT	
Block I	**Bedeutung der Sedimente**	
10:20 – 10:25	**Einführung und Moderation** Dr. Veronika KOLLER-KREIMEL, BMNT	
10:25 – 10:45	**Die Bedeutung der Sedimente für das Hochwasserrisikomanagement, die Wasserkraft, Schifffahrt und Ökologie** Univ.-Prof. DI Dr. Helmut HABERSACK, Universität für Bodenkultur Wien	
10:45 – 11:05	**Sedimentmanagement in alpinen Einzugsgebieten** Priv.-Doz. DI Dr. Florian RUDOLF-MIKLAU, BMNT DI Markus FEDERSPIEL, Amt der Tiroler Landesregierung / ÖWAV-Vorstand	
11:05 – 11:35	**Feststofftransport und Wasserkraftnutzung** DI Gottfried GÖKLER, Vorarlberger Illwerke AG DI Dr. Roland SCHMALFUSS, VERBUND Hydro Power GmbH	
11:35 – 11:55	**Feststoffe: Ökologische Bedeutung und Management** Dr. Mauro CAROLLI, Leibniz- Institut für Gewässerökologie und Binnenfischerei (IGB)	
11:55 – 12:25	Fragen und Diskussion	
12:25 – 13:25	Mittagspause	
Block II	**Sedimentmonitoring**	
13:25 – 13:30	**Einführung und Moderation** MR DI Reinhold GODINA, BMNT	
13:30 – 13:50	**Vom Monitoring nach Leitfaden zu den Prozessen des Schwebstofftransportes im Fließgewässer** DI^{in} Petra LALK, BMNT / DI^{in} Marlene HAIMANN, Universität für Bodenkultur Wien	
13:50 – 14:10	**Von der Schwebstoffprobe zur Jahresfracht – Schwebstoffmonitoring beim Hydrographischen Dienst** Daniel PFURTSCHELLER, Amt der Tiroler Landesregierung, SG Hydrographie und Hydrologie	
14:10 – 14:30	**Geschiebetransportmonitoring und -prozesse** DI Rolf RINDLER, Universität für Bodenkultur Wien	
14:30 – 14:50	Fragen und Diskussion	
14:50 – 15:20	Kaffeepause	
Block III	**Sedimentmanagement**	
15:20 – 15:25	**Einführung und Moderation** DI Dr. Robert REINDL, TIWAG Tiroler Wasserkraft AG	
15:25 – 15:45	**Sedimentmanagement aus Sicht des Nationalen Gewässerbewirtschaftungsplans** DI^{in} Helena MÜHLMANN, BMNT	
15:45 – 16:05	**Maßnahmen zur Verbesserung des Sedimentmanagements im Bereich der Wasserkraft** Ass. Prof. DI Dr. Josef SCHNEIDER, Technische Universität Graz	
16:05 – 16:25	**Sedimentmanagement im Wasserbau und dessen ökomorphologische Bedeutung** Prof. Dr. Robert BOES, ETH Eidgenössische Technische Hochschule Zürich	
16:25 – 16:45	**Das Christian Doppler Labor für Sedimentforschung und -management** Priv.-Doz. DI Dr. Christoph HAUER, Universität für Bodenkultur Wien	
16:45 – 17:15	Schlussdiskussion und Zusammenfassung Univ.-Prof. DI Dr. Helmut HABERSACK, Universität für Bodenkultur Wien	

Inhalt und Schwerpunkt der Veranstaltung:
Sedimente spielen in Flüssen und Stauräumen für Nutzung und Schutz der Fließgewässer eine zentrale Rolle. Einerseits gibt es einen zunehmenden Überschuss an Feststoffen in Stauräumen, was sowohl zu Problemen bei der Wasserkraftnutzung als auch im Hochwasserschutz führen kann. Zusätzlich wird der Klimawandel mit Gletscherschwund und Reduktion des Permafrosts künftig verstärkten Sedimenteintrag bewirken, was in Summe eine große Herausforderung darstellen wird.
Andererseits zeigt sich in den freien Fließstrecken ein Geschiebedefizit, das wiederum zu Stabilitätsproblemen an Sohlen und Ufern unserer Fließgewässer sowie zur Nichterreichung des guten ökologischen Zustands (z.B. fehlendes Laichsubstrat) und Gewährleistung der Ökosystemdienstleistungen führt.
Das gegenständliche Seminar „Sedimente in Flüssen und Stauräumen – Bedeutung, Monitoring und Management" beleuchtet diese Fragestellungen aus den verschiedenen Blickwinkeln der Sektoren. Dabei wird die aktuelle Situation behandelt, die Datengrundlage diskutiert und anhand von Beispielen mögliche praktische Lösungsansätze dargestellt.

Zielgruppe:
Wasserkraftunternehmen, Ingenieurbüros, Sachverständige, VertreterInnen aus Politik und Verwaltung, von Behörden, Hochwasserschutzverbänden und Genossenschaften, Universitäten und Fachhochschulen, NGOs

C3 Convention Center
1030 Wien | Alfred-Dallinger-Platz 1 / Ecke Schlachthausgasse 28
Öffentliche Anreise:
Das C3 liegt direkt an der U3 Schlachthausgasse und ist auch über die Straßenbahnlinie 18 sowie die Buslinien 77A, 80A und 84A unmittelbar erreichbar.
Parkmöglichkeiten (kostenpflichtig):
Öffentliche Garage APCOA Arkadenhof – 2 Gehminuten vom C3 in der Würtzlerstraße 20.
Öffnungszeiten: 0 – 24 Uhr
Tarife: PKW: € 2.50 pro Stunde, Tagesmaximum: € 25.00
Stellplätze: 165, Einfahrtshöhe: 2,10 m

Figure 1: Folder of seminar "Sediments in rivers and reservoirs – importance, monitoring and management" ("Sedimente in Flüssen und Stauräumen – Bedeutung, Monitoring und Management") (ÖWAV, 2018)

The seminar "Sewage management" ("Kanalmanagement") under the direction of Prof. Ertl (BOKU) is planned on the 25th of April 2019 in Vienna. The target groups of this seminar are operators of sewage systems, municipals, sewage companies, civil engineers, construction companies, public administrations and authorities as well as universities. 100 to 200 participants are expected at this seminar. Figure 2 depicts the folder of this seminar including the schedule of oral presentations given by representatives of universities and private companies.

ALLGEMEINE HINWEISE

Anmeldung:
Bitte melden Sie sich bis **spätestens 16. April 2019** an, danach sind Anmeldungen auf Anfrage möglich. Anmeldungen werden nur schriftlich entgegengenommen und sind verbindlich! Mitglieder des ÖWAV werden bevorzugt gereiht. Im Fall einer Stornierung geben Sie diese bitte schriftlich bekannt. Bei **Stornierungen** nach dem **16. April 2019** werden 50 % des Seminarbeitrags einbehalten. Bei Absage am Veranstaltungstag selbst bzw. bei Nichterscheinen ohne Abmeldung muss der volle Seminarbeitrag in Rechnung gestellt werden. Die Nennung einer Ersatzperson ist möglich. Der Veranstalter behält sich vor, das Seminar aus wichtigen Gründen zu verschieben sowie Programmänderungen vorzunehmen.

Seminarbeitrag
(inkl. Vortragsunterlagen und Pausenerfrischungen. Zahlen Sie bitte erst nach Erhalt der Rechnung ein):

ÖWAV-Mitglieder:	**€ 230,–** (+ 20 % USt.)
Nichtmitglieder:	**€ 400,–** (+ 20 % USt.)
Tarif für Studierende (bis max. 27 Jahre, Inskriptionsbestätigung)	**€ 50,–** (+ 20 % USt.)

Veranstalter: Gesellschaft für Wasser- und Abfallwirtschaft GmbH (eine Tochtergesellschaft des Österreichischen Wasser- und Abfallwirtschaftsverbandes), 1010 Wien, Marc-Aurel-Straße 5, Tel. +43-1-535 57 20, Fax +43-1-532 07 47
Organisatorische Hinweise: Martin Waschak, Tel. +43-1-535 57 20-75, E-Mail: waschak@oewav.at

ANMELDUNG

per E-Mail: waschak@oewav.at oder **per Fax 01-532 07 47**
Ich melde mich verbindlich zu folgender Veranstaltung an:
Kanalmanagement 2019
25. April 2019, Bundesamtsgebäude | 1030 Wien, Radetzkystraße 2

Vor- und Zuname (mit Titel): .....
Dienststelle, Firma, Organisation: .....
Adresse: .....
(bzw. Firmenstempel)
Telefon/Fax: .....
Rechnungsadresse (falls abweichend): .....
.....
E-Mail: .....

Zutreffendes bitte ankreuzen!

- o Ich nehme am Ausklang bei Wein, Bier und Brezen im Anschluss an das Seminar teil.
- o ÖWAV-Mitglied
- o Studierende/r (Inskriptionsbestätigung)
- o DWA- bzw. VSA-Mitglied (Mitglieder der DWA aus Deutschland und des VSA aus der Schweiz erhalten Mitgliederkonditionen)

Die Überweisung nehme ich nach Erhalt der Rechnung vor (Kennwort „22627").

Mit der Anmeldung akzeptieren wir die Allgemeinen Geschäftsbedingungen der GWAW und bestätigen deren Kenntnis. Die Allgemeinen Geschäftsbedingungen der GWAW können unter https://www.oewav.at/AGB eingesehen werden.

Ich nehme zur Kenntnis, dass die in meiner Anmeldung/Bestellung enthaltenen personenbezogenen Daten vom ÖWAV und der GWAW zu Informationszwecken für Seminare, Kurse, Regelwerke und sonstige Veranstaltungen sowie für die Versendung der Newsletter verarbeitet werden dürfen. Diese Weiterverwendung der Daten erfolgt aufgrund des überwiegenden berechtigten Interesses des ÖWAV und der GWAW, Informationen über Fachveranstaltungen oder sonstige fachliche Informationen an potentiell Interessierte auszusenden, zu denen bereits ein Kontakt im Rahmen ähnlicher fachlicher Tätigkeiten bestand. Die Daten werden entsprechend den Vorgaben des DSG 2000 idgF bzw. der Datenschutzgrundverordnung verarbeitet.

Datum: Unterschrift:

Österreichische Post AG
Info.Mail Entgelt bezahlt

Programm

09:00 – 09:30 Registrierung und Begrüßungskaffee

09:30 – 09:45 Begrüßung
GF DI Manfred ASSMANN, Österreichischer Wasser- und Abfallwirtschaftsverband
Univ.-Prof. DI Dr. Thomas ERTL, Universität für Bodenkultur Wien / ÖWAV-Vorstand
BR h.c. DI Roland HOHENAUER, Büro Dr. Lengyel ZT GmbH / ÖWAV-Präsident

Block 1 Inspektion
Moderation: BR h.c. DI Roland HOHENAUER, Büro Dr. Lengyel ZT GmbH

09:45 – 10:05 Aktuelle Themen des Kanalmanagements
Univ.-Prof. DI Dr. Thomas ERTL, Universität für Bodenkultur Wien

10:05 – 10:30 EN-orientierte Zustandserfasssung von Abwasserpumpstationen und Sonderbauwerken
Wing-Shan Sandra YEUNG, BSc, Lugitsch und Partner Ziviltechniker GmbH
DI Alexander PRESSL, Universität für Bodenkultur Wien

10:30 – 10:50 Handlungsorientierte Zustandsbewertung von APS und Sonderbauwerken
DI Dr. Hanns PLIHAL, Lugitsch und Partner Ziviltechniker GmbH

10:50 – 11:05 Fragen und Diskussion
11:05 – 11:35 Kaffeepause

Block 2 Sanierungsplanung
Moderation: DI Dr. Florian KRETSCHMER, Universität für Bodenkultur Wien

11:35 – 11:55 Alterung im Kanalnetz? – Macht die intervallfixierte TV-Inspektion noch Sinn?
Thomas HÖLLER, BSc, Lugitsch und Partner Ziviltechniker GmbH

11:55 – 12:15 Schutzzielorientierte Sanierungsplanung von Kanalisationen (Handlungsorientiert vs. Schulnotensystem)
Florian LUDWIGER, BSc, Universität für Bodenkultur Wien

12:15 – 12:25 Fragen und Diskussion
12:25 – 13:25 Mittagspause

Block 3 Hydraulik
Moderation: Univ.-Prof. DI Dr. Robert SITZENFREI, Universität Innsbruck

13:25 – 13:45 Ein Leitfaden für die teilautomatisierte Modellerstellung für die hydraulische Zustandsbewertung
DI Felix PÖCHHACKER, BSc, ZT-Büro DI Kurt Pfeiller

13:45 – 14:05 Praktische Erfahrungen bei der Erstellung eines hydrodynamischen Kanalnetzmodels
Bmst. DI Bernhard ECKER, Machowetz & Partner Consulting Ziviltechniker GmbH

14:05 – 14:25 Was sagt die hydraulische Zustandsbewertung nach ÖWAV-Regelblatt 22 aus?
GF DI Thomas TELEGDY, DHI Österreich GmbH

14:25 – 14:40 Fragen und Diskussion
14:40 – 15:10 Kaffeepause

Block 4 Regenwassermanagement
Moderation: Univ.-Prof. Dr.-Ing. Dirk MUSCHALLA, Technische Universität Graz

15:10 – 15:30 Herausforderungen für das Regenwassermanagement von morgen
Assoc. Prof. DI Dr. Manfred KLEIDORFER, Universität Innsbruck

15:30 – 15:50 Siedlungswasserwirtschaftliche Strukturtypen und ihre Potenziale für die dezentrale Bewirtschaftung von Niederschlagswasser
DI Lena SIMPERLER, Universität für Bodenkultur Wien

15:50 – 16:10 Die natürliche Wasserbilanz als Ziel der Niederschlagswasserbewirtschaftung
DDI Johannes LEIMGRUBER, BSc, Technische Universität Graz

16:10 – 16:25 Fragen und Diskussion

16:25 – 16:30 Zusammenfassung und Verabschiedung
Univ.-Prof. DI Dr. Thomas ERTL, Universität für Bodenkultur Wien

anschließend ***Ausklang bei Bier, Wein und Brezen***

Inhalt und Schwerpunkt der Veranstaltung:
Das diesjährige Seminar „Kanalmanagement" widmet sich den Schwerpunkten „Zustandserfassung und Bewertung", „Hydraulische Modellierung" und „Regenwassermanagement". Eine handlungsorientierte Methode für die Zustandsbewertung von Sonderbauwerken und die schutzzielorientierte Kanal-Sanierungsplanung stehen im Mittelpunkt der ersten Vortragsblöcke. Anschließend liegt der Fokus auf praktischen Erfahrungen bei der Modellerstellung und der Zustandsbewertung nach ÖWAV-Regelblatt 22. Abgerundet wird die Veranstaltung mit der Präsentation der Ergebnisse des Forschungsprojekts „FlexAdapt".

Zielgruppe:
BetreiberInnen von Kanalisationsanlagen, Kommunen, Verbände, Kanalfirmen, PlanerInnen und Ingenieurbüros, Verwaltung und Behörden, Baufirmen, Universitäten, Ausrüsterfirmen

Sponsoring & Ausstellung:
Gerne informieren wir Sie über Ausstellungs- und Sponsoringmöglichkeiten. Für nähere Informationen zu Zielgruppen, Ausstellungskapazität und Preisen stehen wir Ihnen gerne zur Verfügung.
Kontakt: Martin Waschak, Tel.: +43-1-5355720 DW 75, E-Mail: waschak@oewav.at

Bundesamtsgebäude
Festsaal (EG)
1030, Radetzkystraße 2

Parkmöglichkeiten (kostenpflichtig):
Radetzky-Garage
1030, Hintere Zollamtstraße 2
(Zugang über die Garage ins Gebäude)
Georg-Coch-Platz-Garage
1010, Georg-Coch-Platz

Öffentliche Anreise: Das Bundesamtsgebäude ist mit der Straßenbahnlinie 1 (Station Hintere Zollamtsstraße) direkt zu erreichen. Die Station der Straßenbahnlinie O ist 2 Minuten entfernt (Station Hintere Zollamtsstraße). Mit der Ringlinie 2 fährt man bis zur Station Julius-Raab-Platz. Die U-Bahn (U1, U4) ist ca. 5 Minuten Gehweg (Richtung Urania) entfernt (Station Schwedenplatz). Die Station Landstraße / Wien Mitte (U3, U4, Schnellbahn) ist über die Hintere Zollamtsstraße in ca. 5 Minuten zu Fuß zu erreichen.

Anreise mit dem Auto: An Werktagen ist das Parken in der Zeit von 9 bis 22 Uhr gebührenpflichtig. Parkdauer: 2 h. Vor dem Bundesamtsgebäude ist eine Fußgeherzone eingerichtet, daher besteht keine unmittelbare Zufahrt.

Figure 2: Folder of seminar "Sewage management" ("Kanalmanagement") (ÖWAV, 2019a)

The intensive workshop including a study tour "Integrative hydraulic engineering – Dealing with dynamics in practice" ("Integrativer Wasserbau – Umgang mit Dynamik in der Praxis") is organised by the Society for Water and Waste Management GmbH (subsidiary company of ÖWAV) on the 15th and 16th of May 2019 in East-Tyrol. The target groups of this workshop are hydropower companies, civil engineers and experts from public administrations and authorities. Participation is reserved for a certain amount of subscribers. Figure 3 depicts the folder of this workshop including the schedule of oral presentations given by representatives of public administrations, universities and private companies as well as study tours to selected sites.

ÖWAV-Kurse

Wasser

Österreichischer Wasser- und Abfallwirtschaftsverband

Kurs „Integrativer Wasserbau – Umgang mit Dynamik in der Praxis“

Datum: 15. und 16. Mai 2019

Ort: Nußdorf-Debant - Osttirol

Kursort:
REVITAL Integrative Naturraumplanung GmbH,
Nußdorf 71, 9990 Nußdorf-Debant - Osttirol
Tel.: 04852/674 99

Kursleitung:
GF DI Klaus Michor
REVITAL Integrative Naturraumplanung GmbH

Kursziel:
Integrative wasserbauliche Maßnahmen wie Aufweitungen, Nebenarme oder dynamische Ufergestaltungen zählen seit Jahrzehnten zu den grundlegenden Bautypen im Wasserbau. Anhand von ausgewählten Beispielen, die teilweise bereits vor Jahrzehnten umgesetzt wurden, werden die dynamischen Prozesse verschiedener Bautypen (Aufweitungen, Nebenarme und Seitengewässer, Uferrückversetzung) praxisnah von der Planung bis zur Instandhaltung und Pflege beleuchtet.

Kursinhalt:
Praxisbeispiele für multifunktionale wasserbauliche Maßnahmen, welche an der Isel und an der Drau in den letzten Jahrzehnten umgesetzt wurden, bilden die Basis für diesen Kurs. Anhand dieser Maßnahmen erfolgt eine Einführung in die theoretischen Grundlagen von Hydraulik, Feststoffhaushalt und Flussmorphologie. Die wesentlichen Planungsansätze und – werkzeuge werden vorgestellt und es wird auf den Projektentwicklungs- und Planungsprozess eingegangen.
Im Rahmen von ausführlichen Exkursionen unter der Begleitung von lokalen Experten werden die Maßnahmen von der Entwicklung über die Umsetzung bis hin zur Instandhaltung und Gewässerpflege vorgestellt.

TeilnehmerInnenkreis:
PlanerInnen (Fachbereiche Hochwasserschutz, Flussbau, Gewässerökologie, Landschaftsplanung); MitarbeiterInnen Verwaltung / Behörden (Fachbereiche Schutzwasserwirtschaft, Gewässerschutz, Naturschutz); MitarbeiterInnen Wasserkraft-/Infrastrukturunternehmen (für Vorhaben in der Phase der Projektentwicklung, Bewilligungsplanung, Wiederverleihung)

In Kooperation mit:

LAND KÄRNTEN

zukunft SEIT 1909 denken

Veranstalter:
Gesellschaft für Wasser- und Abfallwirtschaft GmbH.
Eine Tochtergesellschaft des Österreichischen Wasser- und Abfallwirtschaftsverbandes (ÖWAV)
1010 Wien, Marc-Aurel-Straße 5
Tel. +43 (1) 535 57 20
Fax: +43 (1) 532 07 47
E-Mail: buero@oewav.at

Programmübersicht

(Änderungen vorbehalten)

MITTWOCH, 15. MAI 2019

09.30 - 10.00	**Registrierung und Begrüßungskaffee**
10.00 - 10.30	**Allgemeiner Einstieg in die Thematik** Eröffnung und Vorstellung Übersicht integrative wasserbauliche Maßnahmen Einführung in die Fragestellungen *DI Klaus Michor*
10:30 - 11:30	**Umgang mit Dynamik im Wasserbau** Grundlagen Flussmorphologie, Feststoffhaushalt Konzepte und Methoden zum Umgang mit dynamischen Prozessen im Wasserbau *Univ.- Prof. DI Dr. Helmut Habersack*
11:30 - 12:00	**Umgang mit Dynamik in der Planung** Planungsansätze, Planungsprozesse, Abstimmungsbedarf Langfristige Entwicklung und Wirkung der Maßnahmen DI Stephan Senfter
12:00 - 12:30	**Einführung in die Praxisbeispiele an der Isel** Hintergründe und Entstehungsgeschichte der Maßnahmen Umsetzungsprozess *DI Walter Hopfgartner*
12:30 - 13:30	**Mittagspause**
13:30 - 14:00	**Gemeinsame Anreise (im Bus) zum Maßnahmenbereich an der Isel**
14:00 - 17:30	**Besichtigung verschiedener Maßnahmen an der Isel** Maßnahmenbeispiele mit dem Schwerpunkt Aufweitungen Diskussion mit den Verantwortlichen der zuständigen Wasserbauverwaltung vor Ort *DI Walter Hopfgartner u. a.*
17:30 - 18:00	**Rückfahrt zum Veranstaltungsort**
18:00 - open end	**Fachlicher Austausch und gemütlicher Ausklang im REVITAL Café** Ausklang bei Brot und Wein

DONNERSTAG, 16. MAI 2019

08:00 - 08:30	**Dynamische Prozesse und deren Auswirkungen in der Praxis** Verwaltungsinterne Sichtweise Rahmenbedingungen und Auswirkungen im Genehmigungs- und Instandhaltungsprozess *DI Norbert Sereinig **(angefragt)***
08:30 – 09:15	**Monitoring dynamischer Prozesse** Konzepte und Methoden für flussmorphologisches Monitoring Ergebnisse aus mehreren Jahren Monitoring an der Drau *Univ.- Prof. DI Dr. Helmut Habersack*

Österreichischer Wasser- und Abfallwirtschaftsverband

zukunft SEIT 1909 denken

09:15 - 09:45	**Einführung in die Praxisbeispiele an der Drau** Hintergründe und Entstehungsgeschichte der Maßnahmen Planungs- und Umsetzungsprozess Langfristige Entwicklung und Wirkung der Maßnahmen *Ing. Herbert Mandler, DI Klaus Michor*
09:45 - 10:00	**Kaffeepause**
10:00 - 12:30	**Maßnahmenbesichtigung vor Ort: Nebenarme an der Drau** Maßnahmenbeispiele mit dem Schwerpunkt Nebenarme Diskussion mit den Verantwortlichen der zuständigen Wasserbauverwaltung vor Ort *Ing. Herbert Mandler*
12:30 - 13:30	**Mittagspause**
13:30 - 16:30	**Maßnahmenbesichtigung vor Ort: Aufweitungen und dynamische Ufer an der Drau** Maßnahmenbeispiele mit dem Schwerpunkt Aufweitungen und dynamische Ufer Diskussion mit den Verantwortlichen der zuständigen Wasserbauverwaltung vor Ort *Ing. Herbert Mandler*
16:30 - 17:15	**Diskussion und Ausblick** Diskussion der wesentlichen Erkenntnisse aus den Kurstagen Ausblick auf künftige Entwicklungen
17:15 – 17:30	**Abschluss der Veranstaltung mit Feedback**

Mit der Absolvierung des Kurses werden planungsrelevante Erfahrungen in der Entwicklung, Planung und im Management von gewässermorphologischen Maßnahmen (Aufweitungen, Nebenarme, weiche Ufer) praxisnah vermittelt. Nach einer theoretischen Einführung mit wesentlichen fachlichen Grundlagen und Rahmenbedingungen (Wasser- und Naturschutzrecht, EU-Richtlinien, Stakeholderkommunikation) ergibt sich im Zuge der Exkursion die Möglichkeit, mit den Verantwortlichen zu diskutieren. Insbesondere können hier Fragen der Instandhaltung und Gewässerpflege in der langjährigen Erfahrung der zuständigen Wasserbauverwaltungen (Vegetationspflege, Geschiebemanagement, Umgang mit Dynamik) behandelt werden.

VORTRAGENDE

(Änderungen vorbehalten)

Univ.-Prof. DI Dr. Helmut HABERSACK
Universität für Bodenkultur Wien, Institut für Wasserwirtschaft, Hydrologie und konstruktiven Wasserbau

DI Walter HOPFGARTNER
Amt der Tiroler Landesregierung – Baubezirksamt Lienz

Ing. Herbert MANDLER
Amt der Kärntner Landesregierung, Abt. 8 – UAbt. Wasserwirtschaft Spittal/Drau

GF DI Klaus MICHOR
REVITAL Integrative Naturraumplanung GmbH

DI Stephan SENFTER
REVITAL Integrative Naturraumplanung GmbH

DI Norbert SEREINIG ***(angefragt)***
Internationale Forschungsgesellschaft INTERPRAEVENT

Figure 3: Folder of intensive workshop including a study tour “Integrative hydraulic engineering – Dealing with dynamics in practice” (“Integrativer Wasserbau – Umgang mit Dynamik in der Praxis”) (ÖWAV, 2019b)

The seminar "biology and microbiology in water treatment" ("Biologie und Mikrobiologie in der Wasserversorgung") organized by ÖVGW is planned on the 3rd and 4th of December 2019 at BOKU in Vienna. The target groups of this seminar are employees of drinking water supply companies, certified water masters, civil engineers, experts from public administrations and authorities and plumbers Participation is reserved for a certain amount of subscribers.

2.3 Norwegian University of Life Sciences, Norway (NMBU)

A list of LLL courses offered by NMBU for professionals in Water Resources Management (WRM) is presented in Table below.

Course	Target group	Duration	Format	Learning technique	Coordinators
Regulation technology	Operating engineers and operators	2 days	Intensive workshop	Classroom lectures and practical work	Finn Aakre Haugen
Courses in municipal supervision of smaller sewage systems	Case workers (advisors, consultants)	2 days (next 22-23 May)	Intensive workshop	Classroom lectures and practical work	Gjertrud Eid (Norsk vann) and Guro Randem Hensel
Production operator in waterworks	Production operators	3 weeks (not consecutive)	Project work	Group and project work	Norsk Vann BA
Production operator in waste waterworks	Production operators	3 weeks (not consecutive)	Project work	Group and project work	Norsk Vann BA
Production operator in Water Supply and transportation	Production operators	3 weeks (not consecutive)	Project work	Group and project work	Norsk Vann BA
Electrics for non-electricians	Non-electricians working with maintenance of plants with electrical components	2 days	Intensive workshop	Classroom lectures	Norsk Vann BA

Electrics certificate for production operators	Non-electricians working with maintenance of plants with electrical components	2 days	Intensive workshop	Classroom lectures	Norsk Vann BA
Introduction to Water and Sanitation	Personnel within the WS sector	2 days + E-learning	Intensive workshop	E-learning and classroom lectures	Norsk Vann BA
Industry standard for Waste and Sludge	Key personnel within quality assurance and operators of waste/sludge treatment facilities	1 day + E-learning	Intensive workshop	Classroom lectures and E- learning	Norsk Vann BA
Theoretical course for certificate of apprenticeship	Production operators, production assistants and apprentices	10 days + project work	Workshop	Classroom lectures and project work	Norsk Vann BA

2.4 University of Architecture, Civil Engineering and Geodesy, Bulgaria (UACEG)

UACEG generally, and Faculty of Hydraulic Engineering in particular, have not developed good list of LLL courses for professionals in water sector. The Bulgarian Water Association (BWA) is very active in offering training and learning courses through it Vocational Training Center, but they are focused mainly in the branch of water supply and sanitation. However, most of the LLL courses organised either by BWA or by other organisation involve faculty staff as teachers and/or trainers, due to the BWA membership of academic staff of FCE.

There is a Center of Open and Continuing Education in UACEG which offers courses for variety of professionals. In the field of water sector only one course was offered (and held) in the last 3 years. This was the seminar "Introduction to EPANET – software for water supply networks operation modelling". The target group was professional in utility companies, such as "Water Supply and Sewerage". The seminar was payable and the presentations of the lecturer were provided to all participants.

In 2017 Faculty of Hydraulic Engineering prepare a course on "Water Resources Management" for staff of Ministry of Environment and Water. Due to several reasons the course was not held. Nevertheless, it was a good base for preparation of similar course held the next year.

In 2018 Faculty of Hydraulic Engineering conducted a LLL course for professionals of River Basin Management Directorate "Black Sea" (in Bulgarian, written in Latin alphabet: "Cherno more"). It was held in city of Varna, for 3 weeks in the period between 10th of September and 5th of October 2018. There were 48 hours lectures total, split between three topics: "Hydraulics and Hydrology", "Hydraulic Structures and River Training" and "Hydraulic Modelling – practical examples". The course was under the topic "Capacity building for competent authorities" and it was subsidised by Ministry of Environment and Water, through funds allocated to implementation of Programme of measures of Flood Risk Management Plans. All 20 participants were staff of River Basin Management Directorate "Black Sea". Staff attended to lectures free of charge, but the course was compulsory. A certificate of attendance was issued to each participant after the course.

Courses in other HEIs

Considering water management, it should be mentioned the course "Economics and Management of Water Sector", which is offered by University of National and World Economy as postgraduate education. The course is conducted together with a private firm "Utilities Services" and it has several editions as "Economics and Management of Water Supply and Sanitation Sector", which is not quite an adequate title, since water supply and sanitation is a branch, rather than a sector. Members of WBA, who are not engineers, were involved in leading that course. It is mainly targeted to managers or low-level administration in public companies "Water Supply and Sewerage". The course contents comprises of themes on economics and business management, rather than on water engineering and water management.

Courses organised by NGOs

Bulgarian Water Association offered several LLL courses for professionals through its Vocational Training Center. The courses are:

(i) Operation of external water supply networks (in 2017);

(ii) Treatment of sewage sludge from settlements (2017);

(iii) Mechanical and biological treatment of wastewater from settlements (2017);

(iv) Purification of water intended for drinking water supply (2018);

(v) Energy efficiency in Bulgarian Water sector (2018).

The lectures were from Water Supply, Sewerage, Water and Wastewater Treatment Department of Faculty of Hydraulic Engineering at UACEG. The target group and participants of all courses was staff of "Water Supply and Sewerage" companies in the country.

Courses organised by educational firms

Private firms/companies operating in the field of LLL also try to offer courses on water resources and water engineering. In 2018 Faculty of Hydraulic Engineering (FCE) was approached by a private company which has won a public procurement announced by Ministry of Regional Development and Public Works for course "Economics and management of water supply and sanitation". The course had four different parts:

(i) Legal framework of water sector and environment protection;

(ii) Investment planning procedures (incl. FIDIC) and project management;

(iii) Accountancy and pricing in public water supply and sewerage companies;

(iv) Water supply and sewerage infrastructure – operation, management and challenges for improvement.

It happened that the private company didn't have specialist in water engineering field, as well as in the field of project management.

Other courses

According to Common Strategy for Management and Development of Hydro-melioration and Protection against Harmful Effects of Water, developed by the World Bank and adopted by Bulgarian Government in 2016, training courses for different stakeholders should be performed. All of them aim capacity building and increase of knowledge in the field of irrigation, drainage, river trainings and flood protection. There are a few target groups – farmers, municipality special administration (so called "Main engineers"), staff of the state-owned "Irrigation Systems Company", staff at Ministry of Agriculture, Food and Forestry and related agencies. As main leading institutions for development and conducting of such courses were explicitly mentioned Institute of Soil Science, Agro-technology and Plant Protection in Agricultural Academy and UACEG with its Faculty of Hydraulic Engineering. Training courses for farmers are included in Rural Development Programme for the period 2014-2020, Measure 1.1, which is about to start in May 2019.

2.5 University of Lisbon, Portugal (UL)

The following table lists the courses in Water Resources Management offered by FUNDEC in the last three years.

Course	Target group	# part.	Format	Learning technique	Date	Coordinators
Vulnerability of aquifers and delimitations of protection perimeters groundwater intakes	Practitioners working on public institutions or private companies	6	Intensive workshop	Classroom lectures	10, 11 Mar 2016; 25, 26 Oct 2016	Prof. Luís Ribeiro (IST)
Contracting of projects in developing countries - the water sector and the multilateral market	Practitioners working on public institutions or private companies	19	Intensive workshop	Classroom lectures	17, 18 May 2016	Prof. F. Nunes Correia (IST/PPA) Prof. Rui Cunha Marques (IST) Dr. Joaquim Simão Pires (PPA)
Water distribution systems. Water safety and modeling of quality parameters	Practitioners working on public institutions or private companies	1st ed. 11 2nd ed. 13	Intensive workshop	Classroom lectures	1st ed. 3, 4 Nov 2016 2nd ed. 27, 28 Apr2017	Prof.ª Didia Covas (IST)
Wastewater treatment plants - concepts, design and exploitation aspects	Practitioners working on public institutions or private companies	29	Intensive workshop	Classroom lectures	11, 12, 13 Oct 2017	Prof. José Saldanha Matos (IST) Prof.ª Filipa Ferreira (IST)
Dynamic Modeling of Urban Drainage Systems Using SWMM: Principles, Applications and Case Studies	Practitioners working on public institutions or private companies	24	Intensive workshop	Classroom lectures	23, 24, 25, 28, 29 30 Nov 2016	Prof. José Saldanha Matos (IST) Prof.ª Filipa Ferreira (IST)
Management of water loss in supply systems	Practitioners working on public institutions or private	10	Intensive workshop	Classroom lectures	16 Dec 2016	Prof.ª Didia Covas (IST)

	companies					
Defining a suitable program for soil decontamination	Practitioners working on public institutions or private companies	13	Intensive workshop	Classroom lectures	7, 8 de Mar 2018	Prof. Manuel Duarte Pinheiro
Evaluation of the energy efficiency in water supply systems	Practitioners working on public institutions or private companies	15	Intensive workshop	Classroom lectures	18 May 2018	Prof.ª Dídia Covas

2.6 University of Rijeka, Croatia (UNIRIFCE)

In the period 2006-2014 the Faculty offered training programmes for civil engineers that were not accredited as University LLL programs. For civil engineers that were members of the Chamber of Civil engineering it was obligatory by law (Regulation on Professional Examination and on the Completion and Upgrading of the Knowledge of Persons that are Working in Spatial Planning and Civil Engineering / Pravilnik o stručnom ispitu te upotpunjavanju i usavršavanju znanja osoba koje obavljaju poslove prostornog uređenja i graditeljstva) to collect a certain number of points in 5 years period in order to keep the Chamber's license. These points were collected by attending different training courses/programmes.

This Regulation changed in 2014. and there was no more mandatory to collect points so the interest of civil engineers in this type of education decreased and the Faculty stopped offering them.

In parallel, faculties got the opportunity to offer LLL programs that could be accredited by the University of Rijeka (with or without ECTS).

The first accredited LLL programme was based on a specialistic training organized from 2008 to 2011 by the Faculty of Civil Engineering in Rijeka. This specialistic training was co-financing by the Regione Veneto (Italy) and organised in collaboration with the University IUAV from Venice (Italy) and Primorsko-goranska county (Croatia), under the patronage of UNESCO. The title of the training was: Methodologies and techniques in the application of European directives in the field of environmental impact assessment and strategic environmental impact assessment of plans and programmes (see Annex 1). In 2012 this specialistic training was accredited by the University of Rijeka, and was organised with the co-financing from the Province of Belluno (Italy) (see Annex 2).

In 2018 based on interest from stakeholders this programme has split into two LLL programmes (without ECTS): ENVIRONMENTAL IMPACT ASSESSMENT OF PROJECTS (see Annex 3) and STRATEGIC ENVIRONMENTAL ASSESSMENT OF STRATEGIES, PLANS AND PROGRAMMES (see Annex 4). It is planned to start with enrolment in these LLL programmes in autumn 2019.

Title of LLL programme 1:

ENVIRONMENTAL IMPACT ASSESSMENT OF PROJECTS

Target groups: employees of authorities (counties, towns and municipalities, ministries etc.), utilities and various companies dealing with the environmental impact of projects, students enrolled in various study programs in which the impact of the project on the environment is analyzed

Number of participants: 20

LLL course formats: 16 teaching hours in the classroom (11 for lectures and 5 for workshops) – in 2 days

Learning techniques: Classroom lectures with academic and guest presenters, workshops for practical exercises

Title of LLL programme 2:

STRATEGIC ENVIRONMENTAL ASSESSMENT OF STRATEGIES, PLANS AND PROGRAMMES

Target groups: employees of authorities (counties, towns and municipalities, ministries etc.), utilities and various companies dealing with the strategic environmental impact strategies, plans and programs, students enrolled in various study programs in which the impact of strategies, plans and programs on the environment is analyzed

Number of participants: 20

LLL course formats: 16 teaching hours in the classroom (11 for lectures and 5 for workshops) in 2 days

Learning techniques: Classroom lectures with academic and guest presenters, workshops for practical exercises

Currently a LLL programme of a differential year for students that graduated at the Undergraduate vocational study programme and want to enrol the Master university study is in development. This LLL programme's goal is to cover the gap between competences of students that

graduated from undergraduate vocational and students that graduated from undergraduate university study programmes, in order to be able to follow the Master university study programme.

3 Topics covered by LLL courses for professionals in water sector in EU Partners HEIs

3.1 Aristotle University of Thessaloniki (AUTh)

Topic covered by LLL courses of AUTh is shown in the following table:

Topic	Readings
Analysis of Potable Water	Different in every lecture

3.2 University of Natural Resources and Life Sciences, Vienna (BOKU)

Several topics are covered by LLL courses of ÖWAV and ÖVGW in cooperation with BOKU and exemplary shown in the following table:

Topic	Course content	Readings
Compost course (ÖWAV)	Operation of composting plant, legal and technical basics, practical exercises	ÖWAV technical regulation 518
Course dealing with cleaning of and navigation through sewage systems (ÖWAV)	Performance and supervision of sewage system cleaning	
Management and maintenance of sewage systems (ÖWAV)	Management and maintenance of sewage systems	
Management of sewage systems (ÖWAV)	Status detection and valuation, hydraulic simulation, rain water management	ÖWAV technical regulation 22
Construction course – Soil engineering in practice (ÖWAV)	Professional implementation of soil engineering measures, Prevention of execution errors during implementation, practical exercises	
Integrative hydraulic engineering – Dealing with dynamics in practice (ÖWAV)	Planning, construction and maintenance of integrative hydraulic engineering measures	
Sediments in rivers and reservoirs – importance, monitoring and management (ÖWAV)	Current situation of sediments in rivers and reservoirs, monitoring systems and practical approaches for sediment management	
Biology and microbiology in water treatment (ÖVGW)	Laboratory exercises including a theoretical background on microbiology in water treatment systems	

3.3 Norwegian University of Life Sciences, Norway (NMBU)

Topics covered by LLL courses of NMBU are shown in the following table:

Regulation Technology	
Topics	Readings
Why use regulation technology? The principle of regulation with feedback, with relevant examples Documentation of control systems with technical flow chart (Piping & Instrumentation Diagram (P&ID)) and block diagram Overview of automation equipment for regulation Process dynamics (amplification, time constant, dead time, etc.) Measuring signal filter - why and how PID controller (proportional + integral + derivative) - basic algorithm and behavior On / Off controller - a possible alternative to the PID controller Setting of PID controllers - Ziegler-Nichols' method, Forest city method and auto tuning Stability problems in the control loop - causes and adjustment of the regulator cascade control conditions Regulation Forwarding - how to use process interference measurements for	Few PPT slides with short introduction, mostly independent simulation
Courses in municipal supervision of smaller sewage systems	
Topics	Readings
Relevant regulations, process of planning and preparation, finances, data management, mapping and assessment in the field, follow-up of deviations in the aftermath	Practical – videos, see real examples from the sector (what it should be vs what it is) Theory - Compendium • Part 1: Formalities (regulations, financing, data management) • Part 2: Photos and illustrations of different plants and different states one can find a plant in. Check lists and examples from different municipalities
Production operator in waterworks	
Topics	Readings

1) Practical operation of waterworks 2) The laboratory and analysis 3) Technical installations 4) Excursions to various treatment plants All topics will include some specialization in chemistry and microbiology, process and process control, Automation and control, operating problems and maintenance, hygiene and work environment, laws and regulations, laboratory and analysis.	Lecture slides, relevant research papers and didactic material and software manuals, when applicable
Production operator in waste waterworks	
Topics	Readings
1) Practical operation of waterworks 2) The laboratory and analysis 3) Technical installations 4) Excursions to various treatment plants All topics will include some specialization in chemistry and microbiology, process and process control, Automation and control, operating problems and maintenance, hygiene and work environment, laws and regulations, laboratory and analysis.	Lecture slides, relevant research papers and didactic material and software manuals, when applicable
Production operator in Water Supply and transportation	
Topics	Readings
1) Introduction to the Water and Sanitation sector 2) Operating and maintenance of systems for water distribution 3) Operating and maintenance of sewer systems and storm water systems 4) Health, environment and safety in general 5) Applicable laws and regulations. Systems. Internal control.	Lecture slides, relevant research papers and didactic material and software manuals, when applicable
Electrics for non-electricians	
Topics	Readings

1) Electrical power in water and waste water treatment plants: - Construction of a supply network - Components of an electrical installation – function and operation - Main boards and control panels - Measuring instruments - Enclosure 2) Instruments in water and waste water treatment plants - Important factors for measurements - Pipe flow - Pressure measurements - Temperature measurements - Level measurements - RPM measurements - Control and surveillance - Valves	Lecture slides, relevant research papers and didactic material and software manuals, when applicable
Electrics certificate for production operators	
Topics	Readings
- Regulations - Accidents - The owner's responsibilities and opportunities - Safety philosophy - Use of equipment for measurements - Replace fuses and reset motor protection - Replace motor - Replace donors - Responsibilities - Internal control - Documentation - Practical exercises	Lecture slides, relevant research papers and didactic material and software manuals, when applicable
Introduction to Water and Sanitation	
Topics	Readings
1) Rules and regulations 2) Reporting 3) Plans	E-learning, lecture slides, relevant research papers and didactic material and software manuals, when applicable
Industry standard for Waste and Sludge	
Topics	Readings

- Introduction to the industry standard - Regulations - Methods for sludge treatment - Control system for hygiene - Risk mapping – critical control points - Examples of procedures for following up critical control points - Reception of external fractions - Quality assurance of KOSTRA data on sludge disposal - Implementation of the industry standard (internal work processes) - How to inform and communicate with other	E-learning, lecture slides, relevant research papers and didactic material and software manuals, when applicable
Theoretical course for certificate of apprenticeship	
Topics	Readings
- Why use regulation technology - The principle of regulation with feedback, with relevant examples - Documentation of control systems with technical flow chart (Piping & Instrumentation Diagram (P&ID)) and block diagram - Overview of automation equipment for regulation - Process dynamics (amplification, time constant, dead time, etc.) - Measuring signal filter - why and how - PID controller (proportional + integral + derivative) - basic algorithm and behavior - On / Off controller - a possible alternative to the PID controller - Setting of PID controllers - Ziegler-Nichols' method, Forest city method and auto tuning - Stability problems in the control loop - causes and adjustment of the regulator - Cascade control - Conditions regulations	E-learning, lecture slides, relevant research papers and didactic material and software manuals, when applicable

3.4 University of Architecture, Civil Engineering and Geodesy, Bulgaria (UACEG)

Courses held or prepared by Faculty of Hydraulic Engineering at UACEG are briefly described in the following table.

Topic	Course content	Readings
Introduction to EPANET – a software for water supply networks operation modelling	EPANET software main features; Links with other software; Sections and nodes; Setting the characteristics of pipes and pumps; Operation modelling of a sample network	EPANET Manual; Slides of lectures/seminars
Water Resources Management	Hydraulics and Hydrology; Hydraulic and Hydrological modelling; Hydraulic Structures (dams); Hydropower systems and structures; Irrigation systems and structures; Flood protection; Runoff regulation and water balance; Water economics; Special topics: Fish passes, Fast floods; Climate change effect on water engineering; Web based runoff monitoring systems	Course was not held. It was provided special scripts and presentation copies to be developed and distributed amongst the participants
Flood Risk Management	Hydraulics and Hydrology; Marine hydrodynamics; Hydraulic Structures (dams and appurtenant structures; water intakes/headworks); River trainings; Drainage systems; Ports and coastal structures; Hydraulic and Hydrological modelling – practical examples/case studies of 1D and 2D modelling	Slides of lectures, books and research papers; design standards/norms; software manuals

3.5 University of Lisbon, Portugal (UL)

Courses held or prepared by UL are briefly described in the following table.

Vulnerability of aquifers and delimitations of protection perimeters groundwater intakes	
Topics	**Readings**
The course addresses the delimitation of protection perimeters according to the legislation in force and is directed to entities and engineers who carry out their professional activity in the area of geo-courses and environment. Emphasis is given to vulnerability and risk, legal framework, existing vulnerable areas, major contaminants and transport mechanisms in groundwater, key methodologies for assessing vulnerability and groundwater risk, application of vulnerability and risk assessment methodologies GIS, protection perimeters, legal framework and methodologies for its delimitation, analytical methodologies for delimitation of protection perimeters and numerical methodologies for delimitation of protection perimeters.	Lectures slides, relevant research papers and didactic material and software manuals, when applicable.
Contracting of projects in developing countries - the water sector and the multilateral market	
Topics	**Readings**
The course objective is the strengthening of the awareness and training of water managers and technical staff for a greater intervention in the water sector and the multilateral market. The operational modules of the course are addressed to managers and technical staff who assume or will assume responsibility for the management of these contracting processes, as regards the identification, prospection and selection of opportunities, preparation of proposals and monitoring of hiring. It is also intended the participation of the company leader or the manager with responsibility for the development of the international activities in the strategic module of the course that completes the morning of the first day of the course. Although the sectoral approach in the water sector is of a similar nature, it is also relevant for companies interested in projects funded by these institutions in other sectors, such as other types of infrastructure, waste management, energy, transport and public works.	Lectures slides, relevant research papers and didactic material and software manuals, when applicable.
Water distribution systems. Water safety and modeling of quality parameters	
Topics	**Readings**
The course is aimed at civil engineers and other professionals who develop their activity in the design and construction of water supply systems. It is focused on mathematical modelling and other issues related to water safety and quality in water systems.	Lectures slides, relevant research papers and didactic material and software manuals, when applicable.

The course comprehends two main modules. The first one is devoted to (i) the application of the EPANET software to distribution systems, (ii) the general principles of the mathematical approaches, (iii) the main applications of the model, and (iv) its construction and calibration. The second module is devoted to water safety, addressing (i) the basic concepts of water quality and safety in distribution systems and, (ii) the modelling of the water quality parameters based on the EPANET	
Wastewater treatment plants - concepts, design and exploitation aspects	
Topics	**Readings**
The course is organized around the following topics: i) Introduction: Basic concepts relayed to the urban water and sanitation cycles. Parameters and indicators of water quality. Types and causes of water pollution. Ii) National and international framework and legislation in the sector. Iii) Secondary treatment of waste water. Biological operations and processes (fixed biomass, suspended biomass, lagoon and beds of macrophytes); iv) Tertiary treatment of waste water. Chemical and biological stabilization of sludge and final destination. Reuse and eco-efficiency; v) Design concepts and components. Exploitation of treatment plants. Investments and operation costs. It also includes a field trip to a WWTP.	Lectures slides, relevant research papers and didactic material and software manuals, when applicable.
Dynamic modeling of urban drainage systems using SWMM: Principles, applications and case studies	
Topics	**Readings**
This course focusses on the design and dimensioning of components of the drainage system for flood control and performance of existing systems. In this context, the (flow rates, heights and speeds) for different drainage system requirements, based on in real rainfall events. Will be released equally "new" trends or approaches to the wastewater treatment with a view to systems sustainability. The main objective of this Training and Specialization therefore consists of the qualification of techniques in the use of the SWMM program, such as useful tool for modeling the behavior of drainage and sanitation infrastructures.	Lectures slides, relevant research papers and didactic material and software manuals, when applicable.
Management of water loss in supply systems	
Topics	**Readings**
The course seeks to provide skills for water loss control in public water supply systems and is aimed at design engineers and managers of water supply and wastewater drainage systems. This training	Lectures slides, relevant research papers and didactic material and software manuals, when applicable.

action is constituted by three main modular units: basic concepts and water balance, loss reduction methodologies and process of elaboration of a (water) control plan of water losses. In this context, practical exercises and case studies will be presented on the elaboration of water balances and the reduction of losses through the management of pressures	
Defining a suitable program for soil decontamination	
Topics	**Readings**
The course aims to present the best practices to select the most appropriate solutions and approaches for decontamination of the soils. By its end, the participants will be able to: (i) Identify the most promising solutions to apply; (ii) Develop approaches to assess the degree of contamination and to select the solutions for decontamination; (iii) Conduct a critical review of projects within the same topic. The course includes the presentation and discussion of applications examples to tourism, housing and offices.	Lectures slides, relevant research papers and didactic material and software manuals, when applicable.
Evaluation of the energy efficiency in water supply systems	
Topics	**Readings**
The course addresses the energy efficiency in water supply systems. Its main topics are (i) the management of energy efficiency, (ii) methodologies to address the energy efficiency, (iii) energy balance approaches, (iv) computation of energy efficiency indicators, and (v) comparison of energy efficiency among systems. Other subjects are (i) audit, diagnosis and performance, from an energetic point of view, of water pumping stations, (ii) production and consumption of energy from renewable sources in water supply systems and (iii) and assessment of the capability to recovery the water energy	Lectures slides, relevant research papers and didactic material and software manuals, when applicable.

3.6 University of Rijeka, Croatia (UNIRIFCE)

LLL programme title: **ENVIRONMENTAL IMPACT ASSESSMENT OF PROJECTS**

Topic	Readings
– Review of Environmental Legislation and Environmental Impact Assessment (EIA) Legislation – Regulation on EIA and EIA study content – Presentation of EIA study	– Glasson, J.; Therivel, R. and Chadwick, A. (2005.): Introduction to Environmental Impact Assessment, 3rd edition, Routledge, Oxon – Wood C. (2002.): Environmental Impact Assessment: a comparative review (3rd edition), Prentice Hall – Barrow, C.J. (2006.): Environmental

example – Overview and experience of EIA Procedures in Primorsko-goranska County – Assessment of impact of cultural heritage and examples from Croatia – Biodiversity protection in Croatia and the Primorsko-goranska County and the acceptability assessment of the impact of the Project on the Ecological Network – Presentation of examples – Activities of the Advisory Expert Panel in EIA and public involvement – Methods and techniques for EIA (theory and application)	management for sustainable development (2nd edition), Routledge, NY – Materials prepared by lecturers – Materials available on-line: – Ministry for environmental protection and energy (Ministarstvo zaštite okoliša i energetike) web site: *http://www.mzoip.hr/* – Croatian Official Gazette (Narodne novine RH - NN) web site: *www.nn.hr:* – Law on environmental protection (Zakon o zaštiti okoliša) NN 80/13, 78/15 i 12/18, – Regulation on Environmental Impact Assessment (Uredba o procjeni utjecaja zahvata na okoliš) NN 61/14 i 3/17 – Rulebook on the assessment of acceptability for the Ecological Network (Pravilnik o ocjeni prihvatljivosti za ekološku mrežu) NN 146/14 – Regulation on information and public participation and public interest in environmental issues (Uredba o informiranju i sudjelovanju javnosti i zainteresirane javnosti u pitanjima zaštite okoliša) NN 64/08 – Other national legal acts. – Web site of European commission: – Directives on Environmental Assessment: http://ec.europa.eu/environment/eia/home.htm

LLL programme title: **STRATEGIC ENVIRONMENTAL ASSESSMENT OF STRATEGIES, PLANS AND PROGRAMMES**

Content: – Review of Environmental Legislation and Environmental Impact Assessment Legislation – Regulation on Strategic Environmental Assessment (SEA) of strategies, plans and programmes and content of SEA study – Presentation of SEA studies – Overview and experiences	– Glasson, J.; Therivel, R. and Chadwick, A. (2005.): Introduction to Environmental Impact Assessment, 3rd edition, Routledge, Oxon – Wood C. (2002.): Environmental Impact Assessment: a comparative review (3rd edition), Prentice Hall – Materials prepared by lecturers – Materials available on-line: – Ministry for environmental protection and energy (Ministarstvo zaštite okoliša i energetike) web site: *http://www.mzoip.hr/* – Croatian Official Gazette (Narodne novine

related to SEA for Primorsko-goranska County Spatial Plan – Assessment of the impact of strategies, plans and programs on cultural heritage and landscape – Biodiversity protection in Croatia and the Primorsko-goranska County and assessment of acceptability of the strategy, plan or programme for the Ecological Network – Presentation of examples – Activities of the Panel for the SEA and the public involvement in the process – Methods and techniques for SEA (theory and application)	RH - NN) web site: *www.nn.hr:* – Law on environmental protection (Zakon o zaštiti okoliša) NN 80/13, 78/15 i 12/18 – Regulation on Strategic Environmental Assessment of strategies, plans and programmes (Uredba o strateškoj procjeni utjecaja strategije, plana i programa na okoliš) NN 3/17 – Rulebook on the assessment of acceptability for the Ecological Network (Pravilnik o ocjeni prihvatljivosti za ekološku mrežu) NN 146/14 – Regulation on information and public participation and public interest in environmental issues (Uredba o informiranju i sudjelovanju javnosti i zainteresirane javnosti u pitanjima zaštite okoliša) NN 64/08 – Other national legal acts. – Web site of European commission: – Strategic Environmental Assessment (SEA) Directive (Direktiva o strateškoj procjeni utjecaja strategija, plana i programa na okoliš): http://ec.europa.eu/environment/eia/sea-legalcontext.htm

4 Capacities used in LLL courses for professionals in water sector in EU Partners HEIs

4.1 Aristotle University of Thessaloniki (AUTh)

Laboratory works on both seminars were done on the ENVIRONMENTAL POLLUTION CONTROL LABORATORY in the Dept. of Chemistry of Aristotle University of Thessaloniki.

LABORATORY INSTRUMENTATION-EQUIPMENT

Analytical Instruments

- HPLC-MSD
- HPLC-FLD and HPLC-UV
- GC-ECD, GC-NPD, GC-MSD
- IC
- ICP-MS
- GF-AAS
- TOC analyzers

Sample Preparation Equipment

- SPE device
- MAE system

General Laboratory Equipment

- pH, DO, redox, conductivity, salinity meters
- BOD and COD analyzers
- UV-Vis spectrophotometers
- LUMIStox Luminometer

Sampling Devices

- Surface water samplers
- Passive water samplers (SPMDs, POCIS, etc)
- Sediment samplers

Personel involved in water quality:

2 Academic staff, 1 technical staff, PhD students

4.2 University of Natural Resources and Life Sciences, Vienna (BOKU)

Due to joint offers by BOKU and ÖWAV/ÖVGW staff involved in LLL courses can be classified in:

BOKU:

- Professors (e.g. Prof. Dr. Ertl, Prof. Dr. Habersack, Prof. Dr. Stangl, etc.)
- Senior Scientists (e.g. Dr. Zunabovic-Pichler, Dr. Obriejetan, etc.)
- Research assistants (e.g. DI Fiedler, DI Rindler, etc.)

Other members of ÖWAV/ÖVGW:

- Experts of provincial/federal state governments (e.g. Dr. Stüger-Hopfgartner, Dr. Rudolf-Miklau, etc.)
- Civil engineers (e.g. Dr. Plihal, DI Telegdy, etc.)
- Members of other Universities (e.g. Prof. Dr. Boes, Prof. Dr. Schneider, etc.)

Equipment used in LLL courses:

- Presentations
- Microbiological laboratory (http://www.wau.boku.ac.at/en/sig/infrastruktur/ (SIG, 2019))
- Study tours
- Construction equipment

4.3 Norwegian University of Life Sciences, Norway (NMBU)

E-learning tools, video, simulators are the most used equipment for the courses. The focus is on practical learning, often using simulators, so that each course participants can practice what they were taught in the courses. They are also encouraged to bring real life examples from their own company.

4.4 University of Architecture, Civil Engineering and Geodesy, Bulgaria (UACEG)

UACEG staff involved in LLL courses is academic one – professors, associate professors and assistant professors.

Equipment used in LLL courses:

- Multimedia
- PC or laptops of participants (for courses related to software training)

4.5 University of Lisbon, Portugal (UL)

Each of the FUNDEC courses are organized by their coordinators, with the help of the other professors or lecturers involved. Some coordinators receive the support of their PhD students or research assistants when their research is covered by the course topics.

Most courses are organized around lectures and practical case studies, with participants bringing their own laptops for working on the case studies. Software is often distributed to the participants by the course coordinators.

Some courses include technical tours to sites and facilities that illustrate the topics and concepts discussed in class.

4.6 University of Rijeka, Croatia (UNIRIFCE)

The LLL programs ENVIRONMENTAL IMPACT ASSESSMENT OF PROJECTS and STRATEGIC ENVIRONMENTAL ASSESSMENT OF STRATEGIES, PLANS AND PROGRAMMES are organized in UNIRIFCE classrooms, no laboratories or laboratory equipment is used. 6 persons of the academic staff employed at the Faculty and 2 external experts are involved into training activities in each of the LLL programmes.

5 Certification

5.1 Aristotle University of Thessaloniki (AUTh)

Attendance is generally mandatory and the absences limit cannot exceed 10% of the planned training hours for the award of the prescribed certificate.

In every program the Scientific Responsible gives the rules and the criteria of who is due to get the certificate.

The Rules of Operation of each educational activity is prepared by the Scientific Responsible of the LLL program and approved by the Commission for LLL of AUTh.

5.2 University of Natural Resources and Life Sciences, Vienna (BOKU)

Depending on the offered LLL course different procedures for awarding certificates are available:

- Confirmation of participation
- Oral examination
- Written examination

5.3 Norwegian University of Life Sciences, Norway (NMBU)

Course certificates are issued to any participants who complete the teaching and pass the project assignments.

5.4 University of Architecture, Civil Engineering and Geodesy, Bulgaria (UACEG)

It is a general practice to issue a Certificate of attendance to all participants. In some instances, like the above-mentioned course of EPANET software the certificate is issued after passing a practical exam, which consists of solving an exam task.

5.5 University of Lisbon, Portugal (UL)

Participants of FUNDEC courses receive a certificate which is valid to satisfy the legal requirements of LLL each employer has to offer to their employees, according to the Portuguese Labour Law.

5.6 University of Rijeka, Croatia (UNIRIFCE)

Attendees are obliged to attend at least 70% of lectures and workshops during the LLL programmes, and to actively participate in workshops.

After successful completion of the LLL programme certificates of completion for attendees are issued by the Faculty of Civil Engineering of the University of Rijeka, signed by the dean and with the Faculty stamp.

6 Communication

6.1 Aristotle University of Thessaloniki (AUTh)

The scientific responsible of the program is responsible to publish the information of the program in a local newspaper and also circulate the relevant information in the social media (Facebook etc.) and put printed leaflets in the Department and elsewhere so that potential attendees learn about the program.

The LLL program is uploaded on the web of AUTh at the specific link: https://www.auth.gr/en/diaviou

After the approval of the program from the Commission for LLL of AUTh, the information is also uploaded in the link of AUTh news.

Also the scientific responsible publicizes the program in order to enhance the cooperation with commercial enterprises in terms of internship offers in order to improve our students' employability.

6.2 University of Natural Resources and Life Sciences, Vienna (BOKU)

Several opportunities are available for promotion of LLL courses provided by ÖWAV and OVGW:

- Websites: https://www.oewav.at/ (ÖWAV, 2019c) and https://www.ovgw.at/wasser/ (OVGW, 2019d)
- E-mails to members
- Folders of upcoming events
- Advertisements in journals (e.g. *„Österreichische Wasser- und Abfallwirtschaft – offizielle Mitteilungen"*)

Promotion at conferences, seminars, courses, etc.

6.3 Norwegian University of Life Sciences, Norway (NMBU)

Courses are promoted through the Norwegian Water website (https://www.norskvann.no/) and through mailing lists.

6.4 University of Architecture, Civil Engineering and Geodesy, Bulgaria (UACEG)

The concept of payable seminars does not work well in Bulgaria, at least for universities. In order to cover the costs for seminars, a given number of participants should be enrolled. This, in turn, is

difficult, due to different preferences of people – weekly schedule, monthly schedule, etc. Most of participants work in private of municipal companies, which restricts their time availability. In addition, in most cases participants have to pay the seminar themselves.

More efficient way of conducting LLL courses is when they are free for participants and are paid through some government or EU program. In this case the course content is prepared by highly professional academic staff and the venue is in the working place – River Basin Management Directorates, Agencies, and Ministries. It is also convenient for staff of these stakeholders to have course organised at Universities, but all costs for travel and stay are covered by funds; during the course the staff is on a business trip.

The huge disadvantage of organising free of charge courses for ministry, agency, etc. staff is that such courses are assigned after public procurement. Sometimes these procurements are won by private companies which do not have needed specialists, so they become a redistributor of government funds.

There is important issue with the staff of ministries, agencies and directorates in Bulgaria. Usually most of the staff doesn't have needed qualification for doing a certain job or occupying a given position. Short-term courses, held under the LLL motto, are not sufficient to increase staff capacity to needed level. For example, an economist or environmental specialist cannot become water engineer by means of one or two LLL courses in the field of water engineering. Thus, serious attention should be paid to skill and education requirements for occupying a position of "water manager".

6.5 University of Lisbon, Portugal (UL)

FUNDEC courses are promoted through FUNDEC web site (www.fundec.pt), mailing lists and occasionally through advertisements published in the main Portuguese newspapers.

6.6 University of Rijeka, Croatia (UNIRIFCE)

LLL programmes are promoted and communicated with potential attendees by publishing information on the UNIRIFCE web page: www.gradri.uniri.hr and sending press release text to local media (newspapers, radio stations etc.) before and after the completion of the course, but also by sending e-mails with info to UNIRIFCA alumni and stakeholders (local and regional authorities, water utilities, design firms, agencies etc.).

Info about LLL programmes is available on: https://www.gradri.uniri.hr/hr/cjelozivotno-obrazovanje/programi-cjelozivotnog-ucenja.html.

University of Rijeka has submitted some Annexes:

Annex 1 - Program of the specialistic training: *Methodologies and techniques in the application of European directives in the field of environmental impact assessment and strategic environmental impact assessment of plans and programmes*

Annex 2 - Accredited by the University of Rijeka LLL programme: *Methodologies and techniques in the application of European directives in the field of environmental impact assessment and strategic environmental impact assessment of plans and programmes*

Annex 3 - Accredited by the University of Rijeka LLL programme: *Environmental impact assessment of projects*

Annex 4 - Accredited by the University of Rijeka LLL programme: *Strategic environmental assessment of strategies, plans and programmes*

Specijalistički tečaj za održivi razvoj – I. godina
(Scuola di Alta Formazione per lo sviluppo sostenibile - I anno)

Metodologije i tehnike u primjeni europskih direktiva u području procjene utjecaja zahvata na okoliš i strateške procjene utjecaja plana i programa na okoliš

(Metodologie e tecniche nell'applicazione delle direttive Europee in materia di Valutazione ambientale dei grandi progetti e dei piani urbanistici)

Specijalistički tečaj za održivi razvoj – I. godina
(Scuola di Alta Formazione per lo sviluppo sostenibile - I anno)

Prvi tjedan

9. travnja 2009.

Tema A ODRŽIVI RAZVOJ I PROCJENA UTJECAJA NA OKOLIŠ (SVILUPPO SOSTENIBILE E VALUTAZIONE AMBIENTALE)			
Broj modula	**Naslov nastavnog modula**		**Sati**
1	**Uvod u specijalistički tečaj** (Introduzione al corso) *Giovanni Campeol, Mladen Črnjar, Nevenka Ožanić*	10,00-13,00	3
2	**Složenost tematike okoliša u održivom razvoju: iskustva UNESCO-a na području Balkana** (La trasversalità delle tematiche ambientali nello sviluppo sostenibile: l'esperienza UNESCO nell'ambito dei Balcani) *Philippe Pypaert*	14,30-17,30	3
		Ukupno	***6***

10. travnja 2009.

Tema B PROCJENA UTJECAJA NA OKOLIŠ (VALUTAZIONE DI IMPATTO AMBIENTALE (VIA))			
Broj modula	**Naslov nastavnog modula**		**Sati**
3	**Teorijsko-metodološki sadržaj analize i procjene utjecaja na okoliš** (Contenuti teorico-metodologici dell'analisi e valutazione ambientale) *Giovanni Campeol*	10,00-12,00	2
4	**Iskustva procjene utjecaja na okoliš velikih infrastrukturnih zahvata u Italiji** (Esperienze di VIA di grandi progetti infrastrutturali in Italia) *Sandra Carollo*	12,00-13,00 14,30-15,30	2
5	**Procjena prirodnog hazarda i rizika: primjena na području Primorsko-goranske županije (obalne zone Hrvatske)** (La valutazione del rischio ambientale: implementazione nella Contea "Primorsko-goranska"(zona costiera di Croatia)) *Čedomir Benac*	15,30-17,30	2
		Ukupno	***6***

Specijalistički tečaj za održivi razvoj – I. godina
(Scuola di Alta Formazione per lo sviluppo sostenibile - I anno)

Drugi tjedan

23. travnja 2009.

Tema C **PROCJENA UTJECAJA NA OKOLIŠ – ASPEKT BIORAZNOLIKOSTI** (VALUTAZIONE DI INCIDENZA AMBIENTALE (VIncA))			
Broj modula	**Naslov nastavnog modula**		**Sati**
6	**Bioraznolikost i procjena utjecaja na okoliš** (La biodiversità e la valutazione ambientale) *Davide Scarpa*	10,00-13,00	3
7	**Sadržaj europske legislative koja obuhvaća procjenu utjecaja na okoliš za zaštitu bioraznolikosti: talijanska legislativa i legislativa Regije Veneto** (I contenuti della normativa europea sulla VIncA per la tutela della Biodiversità; le normative italiane e della Regione Veneto) *Maria Cristina Molon*	14,30-17,30	3
		Ukupno	***6***

24. travnja 2009.

Tema C.1 **PROCJENA UTJECAJA NA OKOLIŠ – ASPEKT BIORAZNOLIKOSTI** (VALUTAZIONE DI INCIDENZA AMBIENTALE (VIncA))			
Broj modula	**Naslov nastavnog modula**		**Sati**
8	**Zaštita bioraznolikosti u Hrvatskoj: hrvatska legislativa i legislativa Primorsko-goranske županije** (La tutela della biodiversità in Croazia: le normative croate e della Primorsko-Goranska Županija) *Sonja Šišić*	10,00-12,00	2
9	**Primjeri procjene utjecaja na okoliš (urbanistički planovi i projekti) u Italiji** (Casi applicativi di VIncA (piani urbanistici e progetti) in Italia) *Davide Scarpa*	12,00-13,00 14,30-15,30	2
10	**Primjeri procjene utjecaja na okoliš u Hrvatskoj** (Casi applicativi di VIncA in Croazia) *Koraljka Vahtar-Jurković*	15,30-17,30	2
		Ukupno	***6***

Specijalistički tečaj za održivi razvoj – I. godina
(Scuola di Alta Formazione per lo sviluppo sostenibile - I anno)

Treći tjedan

7. svibanj 2009.

Tema D **STRATEŠKA PROCJENA UTJECAJA NA OKOLIŠ** (VALUTAZIONE AMBIENTALE STRATEGICA (VAS))			
Broj modula	**Naslov nastavnog modula**		**Sati**
11	**Teorijsko-metodološki aspekti strateške procjene utjecaja na okoliš** (Aspetti teorico-metodologici della VAS) *Giovanni Campeol*	10,00-13,00	3
12	**Strateška procjena utjecaja na okoliš u hrvatskoj legislativi** (Il recepimento della VAS nell'ordinamento giuridico croato) *Koraljka Vahtar-Jurković*	14,30-17,30	3
		Ukupno	***6***

8. svibanj 2009.

Tema D.1 **STRATEŠKA PROCJENA UTJECAJA NA OKOLIŠ** (VALUTAZIONE AMBIENTALE STRATEGICA (VAS))			
Broj modula	**Naslov nastavnog modula**		**Sati**
13	**Sadržaj strateške procjene utjecaja na okoliš i organizacijska struktura u Regiji Veneto** (Il contenuto normativo della VAS e la struttura organizzativa della Regione Veneto) *Paola Noemi Furlanis*	10,00-13,00	3
14	**Procedure Regije Veneto za stratešku procjenu utjecaja na okoliš** (Procedure della Regione Veneto per le VAS) *Giovanni Battista Pisani*	14,30-17,30	3
		Ukupno	***6***

Specijalistički tečaj za održivi razvoj – I. godina
(Scuola di Alta Formazione per lo sviluppo sostenibile - I anno)

Četvrti tjedan

21. svibanj 2009.

Tema D.2 **STRATEŠKA PROCJENA UTJECAJA NA OKOLIŠ** (VALUTAZIONE AMBIENTALE STRATEGICA (VAS))			
Broj modula	**Naslov nastavnog modula**		**Sati**
15	**Primjeri strateške procjene utjecaja na okoliš u Italiji: model procjene korištenjem fizikalno-kemijskih indikatora** (Casi applicativi di VAS in Italia: modello di valutazione degli indicatori chimico-fisici) *Sandra Carollo*	10,00-13,00	3
16	**Primjeri strateške procjene utjecaja na okoliš u Italiji: model procjene utjecaja na krajobraz** (Casi applicativi di VAS in Italia: modello di valutazione del paesaggio) *Giovanni Campeol*	14,30-17,30	3
		Ukupno	***6***

22. svibanj 2009.

Tema D.3 **STRATEŠKA PROCJENA UTJECAJA NA OKOLIŠ** (VALUTAZIONE AMBIENTALE STRATEGICA (VAS))			
Broj modula	**Naslov nastavnog modula**		**Sati**
17	**Primjeri strateške procjene utjecaja na okoliš u Italiji: model procjene utjecaja na krajobraz** (Casi applicativi di VAS in Italia: modello di valutazione del paesaggio) *Sandra Carollo*	10,00-13,00	3
18	**Stanje u Hrvatskoj** (Sperimentazioni in Croazia) *Koraljka Vahtar-Jurković*	14,30-17,30	3
		Ukupno	***6***

Peti tjedan

4. lipanj 2009.

Tema F **PROCJENA UTJECAJA NA OKOLIŠ – KRAJOBRAZNI ASPEKT** (LA VALUTAZIONE PAESAGGISTICA)			
Broj modula	**Naslov nastavnog modula**		**Sati**
19	**Mostovi i vijadukti za kvalifikaciju područja** (Ponti e viadotti per la qualificazione dei territori) *Enzo Siviero*	10,00-12,00	2
20	**Procjena utjecaja na krajobraz** (La valutazione paesaggistica) *Giovanni Campeol*	12,00-13,00 14,30-15,30	2
21	**Kriteriji za procjenu utjecaja na krajobraz u Italiji** (Criteri per la valutazione paesaggistica in Italia) *Michele Culatti*	15,30-17,30	2
		Ukupno	***6***

5. lipanj 2009.

Tema F **PROCJENA UTJECAJA NA OKOLIŠ – KRAJOBRAZNI ASPEKT** (LA VALUTAZIONE PAESAGGISTICA)			
Broj modula	**Naslov nastavnog modula**		**Sati**
22	**Primjeri procjene utjecaja na krajobraz u Italiji** (Casi applicativi di valutazione paesaggistica in Italia) *Sandra Carollo*	10,00-13,00	3
23	**Primjeri procjene utjecaja na krajobraz u Hrvatskoj** (Casi applicativi di valutazione paesaggistica in Croazia) *Koraljka Vahtar-Jurković*	14,30-17,30	3
		Ukupno	***6***

Specijalistički tečaj za održivi razvoj – I. godina
(Scuola di Alta Formazione per lo sviluppo sostenibile - I anno)

Šesti tjedan

18. lipanj 2009.

Tema E **PROCJENA UTJECAJA NA OKOLIŠ - EKONOMSKI ASPEKT** (LA VALUTAZIONE ECONOMICA)			
Broj modula	**Naslov nastavnog modula**		**Sati**
24	**Sadržaj procjene utjecaja na okoliš s ekonomskog aspekta** (Contenuti della valutazione economica) *Mladen Črnjar*	10,00-13,00	3
25	**Primjeri u Hrvatskoj** (Casi applicativi in Croazia) *Mladen Črnjar*	14,30-17,30	3
		Ukupno	***6***

19. lipanj 2009.

Radionica **Workshop**			
Broj modula	**Naslov nastavnog modula**		**Sati**
26	**Simulacija izrade procjene utjecaja okoliš** (Simulazione di valutazioni ambientali) *Giovanni Campeol, Sandra Carollo, Barbara Karleusa*	10,00-13,00	3
27	**Zaključno predavanje – završetak specijalističkog tečaja** (Conclusione del corso) *Mladen Črnjar*, *Giovanni Campeol*	14,30-17,30	3
		Ukupno	***6***

Specijalistički tečaj za održivi razvoj – I. godina
(Scuola di Alta Formazione per lo sviluppo sostenibile - I anno)

TALIJANSKI PREDAVAČI:
- Giovanni Campeol, Università Iuav di Venezia
- Enzo Siviero, Università Iuav di Venezia
- Philippe Pypaert, UNESCO Venice Office
- Sandra Carollo, Università Iuav di Venezia
- Paola Noemi Furlanis, Nucleo Valutazione Progetti e Investimenti della Regione Veneto
- Giovanni Battista Pisani, Nucleo Valutazione Progetti e Investimenti della Regione Veneto
- Maria Cristina Molon, Commissione VINCA Regione Veneto
- Michele Culatti, Università Iuav di Venezia
- Davide Scarpa, Venezia

HRVATSKI PREDAVAČI:
- Mladen Črnjar, Zavod za prostorno uređenje Primorsko-goranske županije
- Nevenka Ožanić, Građevinski fakultet Sveučilišta u Rijeci
- Čedomir Benac, Građevinski fakultet Sveučilišta u Rijeci
- Sonja Šišić, Priroda - javna ustanova za upravljanje zaštićenim dijelovima prirode, Primorsko-goranska županija
- Koraljka Vahtar-Jurković, Upravni odjel za graditeljstvo i zaštitu okoliša Primorsko-goranske županije
- Barbara Karleuša, Građevinski fakultet Sveučilišta u Rijeci

Organizacija:
- Barbara Karleuša, Građevinski fakultet Sveučilišta u Rijeci
- Sandra Carollo, Facoltà di Architettura, Università Iuav di Venezia

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I. OBRAZAC ZA OPIS PROGRAMA CJELOŽIVOTNOG UČENJA

NAPOMENA: Neka polja u obrascima su označena simbolima [a, b, c, d] . Ta polja nisu obavezna za sve programe. Potrebno ih je ispuniti jedino ako se prijavljuje odgovarajući program prema polju *Vrsta programa* u Obrascu I – dio *Opće informacije*.
Polja koja nisu posebno označena su obavezna za sve.

Opće informacije	
Naziv programa	**Metodologije i tehnike u primjeni europskih direktiva u području procjene utjecaja zahvata na okoliš i strateške procjene utjecaja plana i programa na okoliš**
Nositelj programa	**Građevinski fakultet Sveučilišta u Rijeci**
Izvoditelj programa	**Građevinski fakultet Sveučilišta u Rijeci**
Vrsta programa	b) Stjecanje kreditnih bodova u akreditiranom studijskom programu c) Daljnje usavršavanje nakon stečenog akademskog naziva

1. UVOD

1.1. Razlozi za pokretanje programa

Normativni sustav EU nameće globalni i strateški pristup svim pitanjima, sukladno principima održivog razvoja, radi općeg poboljšanja kvalitete prostora u najširem smislu te riječi. U tu svrhu od temeljne je važnosti shvatiti stvarno stanje okoliša te utjecaje zahvata, planova i programa na okoliš kako bi se mogla odrediti planska politika koja će dovesti do sveopćeg poboljšanja i jamčiti poboljšanje za buduće generacije.
Zakonom o zaštiti okoliša ('Narodne novine', broj: 110/07), i Uredbom o procjeni utjecaja zahvata na okoliš ('Narodne novine', broj 64/08, 67/09) propisana je provedba postupka procjene utjecaja zahvata na okoliš. Donošenjem tih propisa postupak je sustavno uređen i usklađen s odgovarajućim direktivama EU: Direktivom Vijeća 85/337/EEZ od 27. lipnja 1985. o procjeni učinaka određenih javnih i privatnih projekata na okoliš, izmijenjena Direktivom Vijeća 97/11/EZ od 3. ožujka 1997., i Direktivom 2003/35/EZ Europskog Parlamenta i Vijeća od 26. svibnja 2003.
Zakonom o zaštiti okoliša (Narodne novine, broj 110/07), Uredbom o strateškoj procjeni utjecaja plana i programa na okoliš (Narodne novine, broj 64/08) i Pravilnikom o povjerenstvu za stratešku procjenu (Narodne novine, broj 70/08) propisana je provedba postupka strateške procjene plana i programa na okoliš. Donošenjem navedenih propisa postupak je sustavno uređen i usklađen s odredbama Direktive 2001/42/EZ o procjeni učinaka pojedinih planova i programa na okoliš i Protokola o strateškoj procjeni UN konvencije o procjeni utjecaja na okoliš preko državnih granica (Espoo konvencija).
Predloženim programom cjeloživotnog učenja (CŽU): *Metodologije i tehnike u primjeni europskih direktiva u području procjene utjecaja zahvata na okoliš i strateške procjene utjecaja plana i programa na okoliš* želi se polaznike osposobiti za sudjelovanje u procjenama utjecaja zahvata na okoliš i strateškim procjenama utjecaja plana i programa na okoliš prema direktivama Europske Unije koje su implementirane u zakone i drugu regulativu RH.
Iako se postupci procjene utjecaja zahvata na okoliš u Hrvatskoj provode već dulje vrijeme u sklopu programa CŽU analizirat će se razne metode i postupci koje je moguće primjenjivati.
Strateška procjena utjecaja plana i programa na okoliš se provodi po prvi put u Hrvatskoj za Prostorni plan Primorsko-goranske županije i Istarske županije te su iskustva sudionika u izradi tih dokumenata kao i iskustva inozemnih predavača koji sudjeluju u strateškim procjenama utjecaja planova i programa na okoliš izuzetno dragocjena.
Specijalistički tečaj slične strukture predloženom programu CŽU održan je već tri puta u organizaciji Građevinskog

fakulteta (tijekom 2009.,2010. i 2011. godine) i pri tome ga je završilo preko osamdeset polaznika. Tečaj je većim dijelom bio financiran od strane Regione Veneto (Italija) i izvođen uz suradnju sa Sveučilištem IUAV u Veneciji i Primorsko-goranskom županijom (Javnom ustanovom Zavod za prostorno uređenje i planiranje) pod pokroviteljstvom UNECO-a.
Predloženi program CŽU bi se izvodio uz sufinanciranje od strane grada Belluno u Regiji Veneto - Italija (osigurano je sufinanciranje za slijedeće tri godine u iznosu od 15 000 eura) uz suradnju s Primorsko-goranskom županijom te sudjelovanje stručnjaka iz Hrvatske i Italije, te predstavnika Europske komisije i UNESCO-a.
Uspješnim završetkom predloženog programa CŽU polaznici bi ostvarili 5 ECTS bodova i 15 bodova koji se dodjeljuju u sklopu stručnog usavršavanja inženjera koji obavljaju poslove prostornog uređenja i graditeljstva (prema *Pravilniku o stručnom ispitu te upotpunjavanju i usavršavanju znanja osoba koje obavljaju poslove prostornog uređenja i graditeljstva* (NN 24/08, 141/09)).
Program bi mogli pohađati i studenti Poslijediplomskog specijalističkog studija Građevinarstvo Građevinskog fakulteta u Rijeci (prijedlog studijskog programa je usvojen na Fakultetskom vijeću 02.12.2011. i proslijeđen u postupak inicijalne akreditacije Centru za studije Sveučilišta u Rijeci) kao dio kolegija Procjena utjecaja na okoliš u građevinarstvu.

1.2. Procjena svrhovitosti s obzirom na potrebe tržišta rada u javnom i privatnom sektoru [a, b, c]

Iako se postupci procjene utjecaja zahvata na okoliš u Hrvatskoj provode već dulje vrijeme u sklopu programa analizirat će se metode i postupci koje se primjenjuju u RH i u Europskoj uniji i koji su pokazali primjerenim.
Strateška procjena utjecaja plana i programa na okoliš se provodi po prvi put u Hrvatskoj za Prostorni plan Primorsko-goranske županije i Prostorni plan Istarske županije stoga su iskustva koja predavači prenose polaznicima izuzetno korisna.
U prethodnom trogodišnjem ciklusu izvođenja specijalističkog tečaja interes za tečaj je pokazao velik broj stručnjaka: inženjera građevinarstva, arhitekata, sanitarnih inženjera, ekonomista i dr., zaposlenih u javnom i u privatnom sektoru.
Iako je tečaj završilo više od osamdeset polaznika i dalje postoji interes za pohađanjem tečaja/programa istog sadržaja i to od osoba koje žive i rade u Primorsko-goranskoj, Istarskoj, Ličko-senjskoj, ali i u drugim udaljenijim županijama.

1.2.1. Povezanost s lokalnom zajednicom (gospodarstvo, poduzetništvo, civilno društvo) [a, b, c]

U izvedbi programa uz nastavnike Građevinskog fakulteta i inozemne stručnjake sudjelovat će stručnjaci zaposleni u Javnoj ustanovi Zavod za prostorno uređenje i planiranje i Javnoj ustanovi za upravljanje zaštićenim dijelovima prirode (Priroda), te i Upravnog odjela za graditeljstvo i zaštitu okoliša Primorsko-goranske županije kako bi prenijeli iskustva vezana uz provedbu postupaka procjene utjecaja zahvata na okoliš i strateške procjene plana i programa na okoliš.
Prethodni tečaj se pokazao izuzetno interesantan i koristan različitim strukama i obuhvatio je polaznike iz više Županija, stoga se očekuje da će i ovaj program CŽU biti interesantan i koristan te da će biti zainteresiranih polaznika.
U sklopu programa različite metodologije i tehnike analiziraju se na primjerima iz lokalnog okruženja kao i na primjerima iz Italije što omogućava polaznicima da procijene mogućnosti korištenja odgovarajućih metodologija i tehnika u vlastitom radu.

1.2.2. Usklađenost sa zahtjevima strukovnih udruženja (preporuke) [a, b, c]

Predloženi program CŽU je prijavljen i sklopu programa stručnog usavršavanja i upotpunjavanja znanja osoba koje obavljaju poslove graditeljstva Građevinskog fakulteta za godinu 2012. kojeg odobrava Uprava za graditeljstvo Ministarstva za zaštitu okoliša, prostornog uređenja i graditeljstva.
Pohađanjem i uspješnim završetkom programa polaznici će ostvariti 15 bodova za stručno usavršavanje.

1.2.3. Navesti moguće partnere izvan visokoškolskog sustava koji su iskazali interes za program

Interes za predloženi program CŽU se očekuje od strane zaposlenika županija te gradova i općina koji se bave prostornim uređenjem i planiranjem, sudionika u izradi prostornih planova kao i sudionika u izradi procjena utjecaja zahvata na okoliš i provedbi monitoringa te studenata na diplomskom sveučilišnom i poslijediplomskom specijalističkom studiju Građevinarstvo, ali i drugim studijima na kojima se sagledavaju utjecaji (građevina, planova i programa) na okoliš.

1.3. Usklađenost s programom cjeloživotnog učenja Sveučilišta u Rijeci

Program CŽU je usklađen s ishodištima, načelima i strateškim ciljevima programa cjeloživotnog učenja Sveučilišta u Rijeci.
1.4. Institucijska strategija razvoja programa cjeloživotnog učenja (usklađenost s misijom i strateškim ciljevima institucije)
Program tečaja usklađen je s vizijom, misijom i strategijom Građevinskog fakulteta Sveučilišta razdoblje 2011. - 2013. http://www.gradri.uniri.hr/dokumenti/2011-01/STRATEGIJA_FAKULTETA_2011-2015.pdf (vidi viziju i misiju te zadatke 5.1.8.; 5.1.13.; 5.1.15.; 5.3.7b.; 5.4.11b).
1.5. Ostali važni podaci – prema mišljenju predlagača

2. OPĆI DIO
2.1. Naziv programa cjeloživotnog učenja
Metodologije i tehnike u primjeni europskih direktiva u području procjene utjecaja zahvata na okoliš i strateške procjene utjecaja plana i programa na okoliš
2.1.1. Vrsta programa
b) Stjecanje kreditnih bodova u akreditiranom studijskom programu **c) Daljnje usavršavanje nakon stečenog akademskog naziva**
2.1.2. Razina studijskog programa [a, b]
diplomski
2.1.3. Područje programa (znanstveno/umjetničko)-navesti naziv [a, b, c]
Tehničke znanosti
2.2. Nositelj/i programa
Građevinski fakultet
2.3. Izvoditelj/i programa
Građevinski fakultet
2.4. Trajanje programa
72 sata (u 6 ciklusa po dva uzastopna dana kroz period od četiri do šest mjeseci)
2.4.1. ECTS bodovi – minimalni broj bodova potrebnih da bi polaznik završio program [a, b, c]
5
2.5. Uvjeti upisa na program
Završen min. preddiplomski sveučilišni ili stručni studij, odnosno dodiplomski sveučilišni ili stručni studij.
2.6. Ishodi učenja programa (kompetencije koje polaznik stječe završetkom programa)
Polaznik će biti osposobljen za sudjelovanje, u domeni svoje struke, u procjenama utjecaja zahvata na okoliš i strateškim procjenama utjecaja plana i programa na okoliš prema direktivama Europske Unije i hrvatskim pozitivnim zakonima i propisima.
2.7. Kod prijave programa navesti studijske programe predlagača ili drugih institucija u RH s kojih je moguć upis na predloženi program [a]
Program mogu upisati polaznici koji su prethodno završili preddiplomski sveučilišni ili stručni studij u RH ili inozemstvu, a koji su na neki način uključeni u procjene utjecaja na okoliš.

3. OPIS PROGRAMA

3.1. Struktura programa, ritam pohađanja i obveze polaznika

Program CŽU se planira izvoditi u 48 sati predavanja tijekom kojih će se polaznike upoznati s regulativom u području procjene utjecaja na okoliš (u EU i RH), teorijom metoda i tehnika koje se primjenjuju u procjeni utjecaja na okoliš te analizirati različiti aspekti procjene utjecaja na okoliš na primjerima iz Hrvatske i inozemstva.
Nakon predavanja teorijska znanja će polaznici primijeniti u sklopu radionica na konkretnim primjerima.
Prisustvovanje nastavi i sudjelovanje u radionicama su obavezni.
Min. prisustvovanje 50% predavanja i 70% seminara (radionica).
Provjeravanje usvojenih znanja, vještina i kompetencija provodit će se u sklopu radionica, kroz izradu seminarskog rada i usmeni ispit.

3.2. Popis predmeta i/ili modula (ukoliko postoje) s brojem sati aktivne nastave potrebnih za njihovu izvedbu (i brojem ECTS – bodova za vrste programa a, b, ili c) (prilog: Tablica 1)

Popis je dan u tablici 1.

3.3. Opis svakog predmeta (ukoliko postoji) (prilog: Tablica 2)

U tablici je dan opis tečaja koji se sastoji od niza predavanja (tema) i radionica.

3.3.1. Uvjeti upisa u sljedeći semestar ili trimestar (naziv predmeta) [a]

-

3.4. Popis predmeta i/ili modula koji se mogu izvoditi na stranom jeziku (navesti koji jezik)

Predavanja se izvode dio na hrvatskom, dio na talijanskom i dio na engleskom jeziku.
Ovisno o znanju stranog jezika polaznika tečaja za predavanja koja se izvode na stranom jeziku osigurava se konzekutivno prevođenje.

3.5. Multidisciplinarnost/interdisciplinarnost programa

U programu CŽU se obrađuje tematika procjene utjecaja na okoliš. Neophodno je da na poslovima vezanim uz procjenu utjecaja na okoliš rade interdisciplinarni timovi stručnjaka, kako bi se obuhvatili svi aspekti utjecaja na okoliš.
Sudjelovanje u programu CŽU omogućava upoznavanje i suradnju polaznika (stručnjaka različitih disciplina) te stvaranje mreže osoba koje i u budućnosti mogu surađivati na poslovima procjena utjecaja na okoliš.

3.8 Način završetka programa

Moraju biti zadovoljeni uvjeti minimalnog prisustvovanja i aktivnog sudjelovanja u radionicama.
Prihvaćen seminarski rad i položen usmeni ispit.

Tablica1.

3.1. Popis predmeta i/ili modula (ukoliko postoje) s brojem sati aktivne nastave potrebnih za njihovu izvedbu i brojem ECTS bodova

POPIS MODULA / PREDMETA						
Semestar [a]:						
MODUL	PREDMET (tema)	NOSITELJ	P	V	S	ECTS [a, b, c]
	Uvodno predavanje	Dr.sc. Aleksandra Deluka-Tibljaš Dr.sc. Barbara Karleuša Dr.sc. Giovanni Campeol	1			
	Složenost tematike okoliša u održivom razvoju: iskustva UNESCO-a	Philippe Pypaert	1			
	Kulturološki , teoretski i metodološki aspekti procjene utjecaja na okoliš	Dr.sc. Giovanni Campeol	2			
	Višekriterijska analiza projekata	Dr.sc. Aleksandra Deluka-Tibljaš Dr.sc. Barbara Karleuša	3			
	Procjena geohazarda i rizika: primjena na području Primorsko-goranske i Istarske županije	Dr.sc. Čedomir Benac	4			
	Bioraznolikost i procjena utjecaja na okoliš	Davide Scarpa	2			
	Zaštita bioraznolikosti u Hrvatskoj: hrvatska legislativa i legislativa Primorsko-goranske županije	Sonja Šišić	1			
	Sadržaj europske legislative koja obuhvaća procjenu utjecaja na okoliš za zaštitu bioraznolikosti: talijanska legislativa i legislativa Regije Veneto	Maria Cristina Molon	2			
	Primjeri procjene utjecaja na okoliš u Hrvatskoj	Dr.sc. Koraljka Vahtar-Jurković	2			
	Primjeri procjene utjecaja na okoliš u Italiji	Davide Scarpa	2			
	Pravni modeli i modeli europske integracije u procjeni utjecaja na okoliš	Simona Viola	3			
	Primjena GIS-a u procjeni utjecaja na okoliš	Gianmarco Paris	3			
	Procedure Regije Veneto za stratešku procjenu utjecaja na okoliš	Giovanni Battista Pisani	3			
	Dopune u području izrade procjena utjecaja na okoliš od strane Europske komisije	Johnatan D. Parker	1			
	Primjeri izrade strateške procjene utjecaja na okoliš u Hrvatskoj	Dr.sc. Koraljka Vahtar-Jurković	3			

	Primjeri izrade strateške procjene utjecaja na okoliš u Italiji	Dr.sc. Giovanni Campeol Dr.sc. Sandra Carollo	3			
	Procjene utjecaja na krajobraz	Dr.sc. Giovanni Campeol Dr.sc. Sandra Carollo	3			
	Primjeri procjene utjecaja na krajobraz u Hrvatskoj	Dr.sc. Koraljka Vahtar-Jurković	3			
	Primjeri procjene utjecaja na krajobraz u Italiji	Dr.sc. Giovanni Campeol Dr.sc. Sandra Carollo	3			
	Modeli procjene kulturne baštine: studije iz Hrvatske	Iva Mrak	3			
	Radionice na kojima se provode procjene utjecaja zahvata na okoliš i strateške procjene utjecaja plana i programa na okoliš	Dr.sc. Giovanni Campeol Dr.sc. Sandra Carollo Gianmarco Paris Iva Mrak			24	
		UKUPNO	48	0	24	2,5

Nije provedena raspodjela ECTS-a po pojedinom predavanju i radionicama (seminarima) jer se ukupno radi o 48 sati predavanja i 24 sati vježbi što čini opterećenje od 2,5 ECTS-a.

Tablica 2.

3.2. Opis predmeta / predavanja

NAPOMENA: Ukoliko u programu nema predmeta (npr. kod kratkih tečajeva), ispuniti polja koja su relevantna za program

Opće informacije		
Nositelj predmeta	**Voditelj programa CŽU - prof.dr.sc. Barbara Karleuša**	
Naziv predmeta	**Metodologije i tehnike u primjeni europskih direktiva u području procjene utjecaja zahvata na okoliš i strateške procjene utjecaja plana i programa na okoliš**	
Semestar [a]	**-**	
Bodovna vrijednost i način izvođenja nastave	ECTS koeficijent opterećenja polaznika [a, b, c]	5,0 ECTS-a
	Broj sati (P+V+S)	48+0+24

1. OPIS PREDMETA
1.1. Ciljevi predmeta
Osposobiti polaznike za sudjelovanje (u domeni svoje struke) u procjenama utjecaja zahvata na okoliš i strateškim procjenama utjecaja plana i programa na okoliš prema direktivama Europske Unije (85/337/CEE, 92/43/CEE, 2001/42/CE) i hrvatskim pozitivnim zakonima i propisima.
1.2. Uvjeti za upis predmeta [a]
nema
1.3. Očekivani ishodi učenja za predmet
Polaznik će biti osposobljen za sudjelovanje u procjenama utjecaja zahvata na okoliš i strateškim procjenama utjecaja plana i programa na okoliš prema direktivama Europske Unije (85/337/CEE, 92/43/CEE, 2001/42/CE) i hrvatskim pozitivnim zakonima i propisima.
1.4. Sadržaj predmeta
Uvodno predavanje **Složenost tematike okoliša u održivom razvoju: iskustva UNESCO-a** **Kulturološki , teoretski i metodološki aspekti procjene utjecaja na okoliš** **Višekriterijska analiza projekata** **Procjena prirodnog hazarda i rizika: primjena na području Primorsko-goranske županije** **Bioraznolikost i procjena utjecaja na okoliš** **Zaštita bioraznolikosti u Hrvatskoj: hrvatska legislativa i legislativa Primorsko-goranske županije** **Sadržaj europske legislative koja obuhvaća procjenu utjecaja na okoliš za zaštitu bioraznolikosti: talijanska legislativa i legislativa Regije Veneto** **Primjeri procjene utjecaja na okoliš u Hrvatskoj** **Primjeri procjene utjecaja na okoliš u Italiji** **Pravni modeli i modeli europske integracije u procjeni utjecaja na okoliš** **Primjena GIS-a u procjeni utjecaja na okoliš** **Procedure Regije Veneto za stratešku procjenu utjecaja na okoliš** **Dopune u području izrade procjena utjecaja na okoliš od strane Europske komisije** **Primjeri izrade strateške procjene utjecaja na okoliš u Hrvatskoj** **Primjeri izrade strateške procjene utjecaja na okoliš u Italiji** **Procjene utjecaja na krajobraz** **Primjeri procjene utjecaja na krajobraz u Hrvatskoj**

Primjeri procjene utjecaja na krajobraz u Italiji
Modeli procjene kulturne baštine: studije iz Hrvatske
Radionice na kojima se provode procjene utjecaja zahvata na okoliš i strateške procjene utjecaja plana i programa na okoliš

1.5. Vrste izvođenja nastave	☒ predavanja ☒ seminari i radionice ☐ vježbe ☐ obrazovanje na daljinu ☐ terenska nastava	☐ samostalni zadaci ☐ multimedija i mreža ☐ laboratorij ☐ mentorski rad ☐ ostalo _____
1.6. Komentari		

1.7. Obveze polaznika

Prisustvovanje predavanjima i radionicama. Izrada procjena utjecaja na okoliš na konkretnim primjerima (grupni i timski rad) u sklopu radionica, izrada seminarskog rada, polaganje ispita.

1.8. Praćenje[1] rada polaznika [a, b, c]

Pohađanje nastave	2,5	Aktivnost u nastavi	0,5	Seminarski rad	1	Eksperimentalni rad	
Pismeni ispit		Usmeni ispit	1	Esej		Istraživanje	
Projekt		Kontinuirana provjera znanja		Referat		Praktični rad	
Portfolio							

1.9. Ocjenjivanje i vrednovanje rada polaznika [a, b, c]

Polaznici su tijekom tečaja obavezni prisustvovati predavanjima i seminarima (radionicama). Vrednuje se prisustvovanje na nastavi i njihova aktivnosti tijekom nastave. Obavezni su sudjelovati u radionicama na kojima se rade primjeri/simulacija izrade procjena utjecaja zahvata na okoliš i strateške procjene utjecaja na okoliš plana i programa i izraditi seminarski rad te položiti usmeni ispit.

1.10. Obvezna literatura (u trenutku prijave prijedloga programa)[a, b, c, d]

Materijali s predavanja
Materiji do kojih je moguće doći putem interneta:

- **Web-stranice www.nn.hr :**
  - **Zakon o zaštiti okoliša**
  - **Uredba o procjeni utjecaja zahvata na okoliš**
  - **Uredba o strateškoj procjeni utjecaja plana i programa na okoliš**
  - **Uredba o informiranju i sudjelovanju javnosti i zainteresirane javnosti u pitanjima zaštite okoliša**
  - **Pravilnik o povjerenstvu za stratešku procjenu**
  - **i drugi pravni akti**
- **Web stranice Europske komisije:**
  - **Directives on Environmental Assessment– Direktiva o procjeni utjecaja na okoliš: http://ec.europa.eu/environment/eia/home.htm**
  - **Strategic Environmental Assessment (SEA) Directive – Direktiva o strateškoj procjeni utjecaja na okoliš: http://ec.europa.eu/environment/eia/sea-legalcontext.htm**
- **Porter A. and Fittipaldi J. (1998.): *Environmental Methods Review*: *Retooling Impact Assessment for the New Century*, The Press Club, Fargo, USA; http://www.iaia.org/publicdocuments/special-publications/Green%20Book_Environmental%20Methods%20Review.pdf**

1.11. Dopunska literatura (u trenutku prijave prijedloga programa)[a, b, c]

- **Glasson, J.; Therivel, R. and Chadwick, A. (2005.): Introduction to Environmental Impact Assessment, 3rd edition, Routledge, Oxon**
- **Wood C. (2002.): Environmental Impact Assessment: a comparative review (3rd edition), Prentice Hall**
- **Barrow, C.J. (2006.): Environmental management for sustainable development (2nd edition), Routledge, NY**

[1] **VAŽNO**:Uz svaki od načina praćenja rada polaznika unijeti odgovarajući udio u ECTS bodovima pojedinih aktivnosti tako da ukupni broj ECTS bodova odgovara bodovnoj vrijednosti predmeta. Prazna polja upotrijebiti za dodatne aktivnosti.

1.12. Broj primjeraka obvezne literature u odnosu na broj polaznika koji trenutno pohađaju nastavu na predmetu [a, b]		
Naslov	*Broj primjeraka*	*Broj studenata*
Sva obavezna literatura bit će dostupna na mrežnoj stranici programa CŽU ili putem linkova objavljenih na mrežnoj stranici programa CŽU	-	-
– **Glasson, J.; Therivel, R. and Chadwick, A. (2005.): Introduction to Environmental Impact Assessment, 3rd edition, Routledge, Oxon**	1	20
– **Wood C. (2002.): Environmental Impact Assessment: a comparative review (3rd edition), Prentice Hall**	1	20
– **Barrow, C.J. (2006.): Environmental management for sustainable development (2nd edition), Routledge, NY**	1	20
1.13. Načini praćenja kvalitete koji osiguravaju stjecanje izlaznih znanja, vještina i kompetencija		
Provedba ankete za evaluaciju programa prema Priručniku za kvalitetu Sveučilišta u Rijeci i Pravilniku za kvalitetu Građevinskog fakulteta (anketa se nalazi u privitku).		

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I. OBRAZAC ZA OPIS PROGRAMA CJELOŽIVOTNOG UČENJA

NAPOMENA: Neka polja u obrascima su označena simbolima [a, b, c, d] . Ta polja nisu obavezna za sve programe. Potrebno ih je ispuniti jedino ako se prijavljuje odgovarajući program prema polju *Vrsta programa* u Obrascu I – dio *Opće informacije*.
Polja koja nisu posebno označena su obavezna za sve.

Opće informacije	
Naziv programa	**Procjena utjecaja zahvata na okoliš**
Nositelj programa	**Građevinski fakultet Sveučilišta u Rijeci**
Izvoditelj programa	**Građevinski fakultet Sveučilišta u Rijeci**
Vrsta programa	d) Programi usavršavanja bez ECTS bodova

1. UVOD

1.1. Razlozi za pokretanje programa

Zakonom o zaštiti okoliša ('Narodne novine', broj: 80/13, 78/15, 12/18), i Uredbom o procjeni utjecaja zahvata na okoliš ('Narodne novine', broj 61/14, 3/17) propisana je provedba postupka procjene utjecaja zahvata na okoliš. Navedeni propisi su u skladu s odgovarajućim direktivama EU. U postupku procjene utjecaja zahvata na okoliš uz navedenu regulativu potrebno je obuhvatiti i druge relevantne zakone i podzakonske akte zaštite okoliša i prirode (npr. utjecaj zahvata na ekološku mrežu i krajobraz), uključivanja javnosti, zaštite kulturne baštine i sl.

Predloženim programom cjeloživotnog učenja (CŽU): *Procjena utjecaja zahvata na okoliš* želi se polaznike upoznati sa pozitivnom regulativom koja obuhvaća sve elemente procjene utjecaja zahvata na okoliš, obuhvatiti sve korake i sve sudionike u postupku te osposobiti polaznike za sudjelovanje u postupcima procjena utjecaja zahvata na okoliš u okviru njihove primarne struke i ovisno o razini njihove kvalifikacije.

Građevinski fakultet je tijekom 2009.,2010. i 2011. provodio specijalistički tečaj pod *naslovom Metodologije i tehnike u primjeni europskih direktiva u području procjene utjecaja zahvata na okoliš i strateške procjene utjecaja plana i programa na okoliš*. Tečaj je većim dijelom bio financiran od strane Regione Veneto (Italija) i izvođen uz suradnju sa Sveučilištem IUAV u Veneciji i Primorsko-goranskom županijom (Javnom ustanovom Zavod za prostorno uređenje i planiranje) pod pokroviteljstvom UNESCO-a. U 2012. godini navedeni tečaj pod istim nazivom je akreditiran u obliku programa cjeloživotnog učenja Sveučilišta u Rijeci i bio je sufinanciran sredstvima grada Belluno (Italija).
Od 2009. do 2012. tečaj/program je završilo stotinjak polaznika. Voditeljica tečaja je bila prof.dr.sc. Barbara Karleuša.

Nakon dulje pauze na zahtjev Primorsko-goranske županije, a za njihove potrebe odnosno potrebe djelatnika Županije, gradova, općina, komunalnih društava i sl., organizirali smo 19.06.2018. edukaciju na temu procjene utjecaja zahvata na okoliš. Temeljem iskustva sa provedbe te edukacije i povratnih informacija polaznika kroz provedeno anketiranje u kojem su polaznici održanu edukaciju ocijenili visokim ocjenama, istaknuli da im je edukacija bila izrazito korisna, te da bi takve edukacije trebalo nuditi i u budućnosti, zaključili smo da postoji potreba za organiziranjem edukacije iz područja procjene utjecaja zahvata na okoliš i strateške procjene strategije, plana i programa na okoliš koja bi se nudila široj javnosti.

Smatramo da bi bilo korisno izmijeniti postojeći program cjeloživotnog učenja *Metodologije i tehnike u primjeni*

europskih direktiva u području procjene utjecaja zahvata na okoliš i strateške procjene utjecaja plana i programa na okoliš **odnosno ponuditi dva nova i ažurirana programa cjeloživotnog učenja:**

1. **Procjena utjecaja zahvata na okoliš**
2. **Strateška procjena utjecaja plana i programa na okoliš**

U ovom obrascu obrazlaže se prijedlog prvog programa: *Procjena utjecaja zahvata na okoliš.*

1.2. Procjena svrhovitosti s obzirom na potrebe tržišta rada u javnom i privatnom sektoru [a, b, c, e]

Iako se postupci procjene utjecaja zahvata na okoliš u Hrvatskoj provode preko 30 godina uvijek ima novih generacija sudionika u ovome postupku koji se tek uključuju u te postupke, a pogotovo danas kada je za potrebe povlačenja sredstava iz EU potrebno pripremiti brojnu dokumentaciju koja često uključuje i utvrđivanje prihvatljivosti zahvata za okoliš (što podrazumijeva izradu studije utjecaja zahvata na okoliš i provedbu postupka procjene utjecaja zahvata na okoliš).
Temeljem iskustva sa provedbe edukacije na temu procjene utjecaja zahvata na okoliš za Primorsko-goransku županiju i povratnih informacija polaznika kroz provedeno anketiranje uočili smo potrebu za pružanjem usluge edukacije iz područja procjene utjecaja zahvata na okoliš i strateške procjene plana i programa na okoliš široj javnosti.
Program cjeloživotnog učenja potencijalno može biti zanimljiv i koristan djelatnicima županija, gradova i općina, komunalnih društava, djelatnicima tvrtki koje se bave prijavom projekata financiranih iz EU, te onih tvrtki koje vode projekte i postupke u ime investitora, ali i svim ostalim zainteresiranima.

1.2.1. Povezanost s lokalnom zajednicom (gospodarstvo, poduzetništvo, civilno društvo) [a, b, c, e]

U izvedbi programa uz nastavnike Građevinskog fakulteta sudjelovat će stručnjaci zaposleni u Upravnom odjelu za graditeljstvo i zaštitu okoliša Primorsko-goranske županije i Javnoj ustanovi za upravljanje zaštićenim dijelovima prirode (Priroda) i kako bi prenijeli iskustva vezana uz provedbu postupaka procjene utjecaja zahvata na okoliš.
Prethodni tečaj/program se pokazao izuzetno interesantan i koristan različitim strukama (stručnjacima iz područja građevinarstva, arhitekture, krajobrazne arhitekture, okolišnog inženjerstva, geografije, sanitarnog inženjerstva i dr.) i obuhvatio je polaznike iz više županija, stoga se očekuje da će i ovaj novi program CŽU biti interesantan i koristan te da će biti zainteresiranih polaznika. U sklopu programa analiziraju se različiti primjeri iz lokalnog okruženja.

1.2.2. Usklađenost sa zahtjevima strukovnih udruženja (preporuke) [a, b, c]

-

1.2.3. Navesti moguće partnere izvan visokoškolskog sustava koji su iskazali interes za program

Interes za predloženi program CŽU se očekuje od strane zaposlenika županija te gradova i općina, komunalnih društava i raznih tvrtki koje se bave navedenom problematikom, studenata na raznim studijima na kojima se sagledavaju utjecaji zahvata na okoliš, ali i šire javnosti.

1.3. Usklađenost s programom cjeloživotnog učenja Sveučilišta u Rijeci

Programi CŽU su obuhvaćeni Strategijom razvoja Sveučilišta u Rijeci 2014-2020. Pokretanje ovog programa doprinijet će ostvarenju cilja/zadatka „povećanje broja programa CŽU“ na Sveučilištu što je definirano u Strategiji http://www.uniri.hr/files/staticki_dio/strategija/Strategija_UNIRI_2014_2020_HR.pdf pod II.g.1.
Također program doprinosi realizaciji “javne funkcije“ Sveučilišta kroz transfer specijaliziranih znanja edukacijom polaznika, što će u konačnici doprinijeti i gospodarskom razvoju okruženja vodeći računa o zaštiti okoliša.

1.4. Institucijska strategija razvoja programa cjeloživotnog učenja (usklađenost s misijom i strateškim ciljevima institucije)

Program tečaja usklađen je s vizijom, misijom i strategijom Građevinskog fakulteta Sveučilišta razdoblje 2018. - 2022. http://www.gradri.uniri.hr/hr/o-fakultetu/strategija-fakulteta.html (vidi viziju i misiju te zadatak 6.2.19.).

1.5. Ostali važni podaci – prema mišljenju predlagača

2. OPĆI DIO

2.1. Naziv programa cjeloživotnog učenja

Procjena utjecaja zahvata na okoliš

2.1.1. Vrsta programa

d) Programi usavršavanja bez ECTS bodova

2.1.2. Razina studijskog programa [a, b]

-

2.1.3. Područje programa (znanstveno/umjetničko)-navesti naziv [a, b, c]

-

2.2. Nositelj/i programa

Građevinski fakultet Sveučilišta u Rijeci

2.3. Izvoditelj/i programa

Građevinski fakultet Sveučilišta u Rijeci

2.4. Trajanje programa

16 sati (2 dana)

2.4.1. ECTS bodovi – minimalni broj bodova potrebnih da bi polaznik završio program [a, b, c]

-

2.5. Uvjeti upisa na program

Završena četverogodišnja srednja škola

2.6. Ishodi učenja programa (kompetencije koje polaznik stječe završetkom programa)

Nabrojati zakone i drugu pravnu regulativu iz područja zaštite okoliša i objasniti njihov sadržaj
Objasniti postupak procjene utjecaja zahvata na okoliš i obaveze svih sudionika uključenih u postupak
Opisati postupak izrade studije utjecaja zahvata na okoliš i sadržaj studije
Objasniti postupak i dokumente za ocjenu potrebe za provedbom procjene utjecaja zahvata na okoliš
Objasniti postupak i dokumente potrebne za utvrđivanje sadržaja studije utjecaja zahvata na okoliš
Objasniti postupak glavne ocjene prihvatljivosti utjecaja zahvata na ekološku mrežu
Objasniti postupak procjene utjecaja zahvata na kulturnu baštinu
Objasniti i primijeniti neke od postojećih metoda i tehnika za procjenu na konkretnom primjeru
Sudjelovati u postupcima procjene utjecaja zahvata na okoliš (u domeni svoje struke i ovisno o razini prethodne kvalifikacije)

2.7. Kod prijave programa navesti studijske programe predlagača ili drugih institucija u RH s kojih je moguć upis na predloženi program [a]

Program mogu upisati polaznici koji su prethodno završili četverogodišnju srednju školu.

3. OPIS PROGRAMA

3.1. Struktura programa, ritam pohađanja i obveze polaznika

Program CŽU se planira izvoditi u 16 sati nastave (kroz 2 dana) tijekom koje će se polaznike upoznati s regulativom u području procjene utjecaja na okoliš (u RH i EU), sudionicima i koracima u postupku, osnovnim metodologijama i tehnikama koje se primjenjuju u procjeni utjecaja na okoliš te analizirati različiti aspekti procjene utjecaja na okoliš na primjerima iz Hrvatske.
Prisustvovanje nastavi je obavezno, min. prisustvovanje nastavi iznosi 70%.
Sudionici trebaju aktivno sudjelovati u predviđenim radionicama.

3.2. Popis predmeta i/ili modula (ukoliko postoje) s brojem sati aktivne nastave potrebnih za njihovu izvedbu (i brojem ECTS – bodova za vrste programa a, b, ili c) (prilog: Tablica 1)

Popis je dan u tablici 1.

3.3. Opis svakog predmeta (ukoliko postoji) (prilog: Tablica 2)

U tablici je dan opis programa koji se sastoji od niza predavanja i radionica.

3.3.1. Uvjeti upisa u sljedeći semestar ili trimestar (naziv predmeta) [a]

-

3.4. Popis predmeta i/ili modula koji se mogu izvoditi na stranom jeziku (navesti koji jezik)

Predavanja se izvode na hrvatskom jeziku.

3.5. Multidisciplinarnost/interdisciplinarnost programa

U predloženom programu CŽU se obrađuje tematika procjene utjecaja zahvata na okoliš. Neophodno je da na poslovima vezanim uz procjenu utjecaja zahvata na okoliš rade interdisciplinarni timovi stručnjaka, kako bi se obuhvatili svi aspekti utjecaja na okoliš. Sudjelovanje u programu CŽU omogućava upoznavanje i suradnju polaznika (stručnjaka različitih disciplina) te stvaranje mreže osoba koje i u budućnosti mogu surađivati na poslovima procjena utjecaja zahvata na okoliš.

3.8 Način završetka programa

Moraju biti zadovoljeni uvjeti minimalnog prisustvovanja i aktivnog sudjelovanja u radionicama.

Tablica1.

3.1. Popis predmeta i/ili modula (ukoliko postoje) s brojem sati aktivne nastave potrebnih za njihovu izvedbu i brojem ECTS bodova

POPIS MODULA / PREDMETA						
Semestar [a]:						
MODUL	PREDMET (tema)	NOSITELJ	P	V	S	ECTS [a, b, c]
	Pregled zakonske regulative u području zaštite okoliša i procjene utjecaja zahvata na okoliš	Dr.sc. Sanja Dugonjić Jovančević	2			
	Uredba o procjeni utjecaja zahvata na okoliš i sadržaj studije utjecaja na okoliš	Dr.sc. Barbara Karleuša	2			
	Prezentacija studija utjecaja na okoliš (Radionica)	Dr.sc. Ivana Sušanj Čule			2	
	Pregled i iskustva postupaka procjene utjecaja zahvata na okoliš u Primorsko-goranskoj županiji	Dr.sc. Koraljka Vahtar Jurković	2			
	Procjena utjecaja zahvata na kulturnu baštinu i krajobraz	Dr. sc. Iva Mrak	1			
	Zaštita bioraznolikosti u Hrvatskoj i Primorsko-goranskoj županiji i ocjena prihvatljivosti utjecaja zahvata na ekološku mrežu (Glavna ocjena)	Sonja Šišić	1			
	Prezentacija primjera Glavne ocjene (Radionica)	Sonja Šišić			1	
	Aktivnosti Savjetodavno stručnog povjerenstva za procjenu utjecaja zahvata na okoliš i uključivanje javnosti u postupak	Dr.sc. Nevenka Ožanić	2			
	Metode i tehnike procjene utjecaja zahvata na okoliš	Dr.sc. Barbara Karleuša	1			
	Primjena metoda i tehnika za procjenu utjecaja zahvata na okoliš (Radionica)	Dr.sc. Nevena Dragičević			2	
		UKUPNO	11		5	
		Ukupno 16 sati nastave.				

Tablica 2.

3.2. Opis predmeta / predavanja

NAPOMENA: Ukoliko u programu nema predmeta (npr. kod kratkih tečajeva), ispuniti polja koja su relevantna za program

Opće informacije		
Nositelj predmeta	**Voditelj programa CŽU - prof.dr.sc. Barbara Karleuša**	
Naziv predmeta	**Procjena utjecaja zahvata na okoliš**	
Semestar [a]	**-**	
Bodovna vrijednost i način izvođenja nastave	ECTS koeficijent opterećenja polaznika [a, b, c]	
	Broj sati (P+V+S)	11+0+5

1. OPIS PREDMETA		
1.1. Ciljevi predmeta		
Osposobiti polaznike za sudjelovanje (u domeni svoje struke i ovisno o razini prethodne kvalifikacije) u postupcima procjene utjecaja zahvata na okoliš prema hrvatskim pozitivnim zakonima i propisima.		
1.2. Uvjeti za upis predmeta [a]		
Nema		
1.3. Očekivani ishodi učenja za predmet		
Nabrojati zakone i drugu pravnu regulativu iz područja zaštite okoliša i objasniti njihov sadržaj **Objasniti postupak procjene utjecaja zahvata na okoliš i obaveze svih sudionika uključenih u postupak** **Opisati postupak izrade studije utjecaja zahvata na okoliš i sadržaj studije** **Objasniti postupak i dokumente za ocjenu potrebe za provedbom procjene utjecaja zahvata na okoliš** **Objasniti postupak i dokumente potrebne za utvrđivanje sadržaja studije utjecaja zahvata na okoliš** **Objasniti postupak glavne ocjene prihvatljivosti utjecaja zahvata na ekološku mrežu** **Objasniti postupak procjene utjecaja zahvata na kulturnu baštinu i krajobraz** **Objasniti i primijeniti neke od postojećih metoda i tehnika na konkretnom primjeru** **Sudjelovati u postupcima procjene utjecaja zahvata na okoliš (u domeni svoje struke i ovisno o razini prethodne kvalifikacije)**		
1.4. Sadržaj predmeta		
Pregled zakonske regulative u području zaštite okoliša i procjene utjecaja zahvata na okoliš **Uredba o procjeni utjecaja zahvata na okoliš i sadržaj studije utjecaja na okoliš** **Prezentacija studija utjecaja na okoliš (Radionica)** **Pregled i iskustva postupaka procjene utjecaja zahvata na okoliš u Primorsko-goranskoj županiji** **Procjena utjecaja zahvata na kulturnu baštinu i primjeri iz Hrvatske** **Zaštita bioraznolikosti u Hrvatskoj i Primorsko-goranskoj županiji i ocjena prihvatljivosti utjecaja zahvata na ekološku mrežu (Glavna ocjena)** **Prezentacija primjera Glavne ocjene (Radionica)** **Aktivnosti Savjetodavno stručnog povjerenstva za procjenu utjecaja zahvata na okoliš i uključivanje javnosti u postupak** **Metode i tehnike procjene utjecaja zahvata na okoliš** **Primjena metoda i tehnika za procjenu utjecaja zahvata na okoliš (Radionica)**		
1.5. Vrste izvođenja nastave	☒ predavanja ☒ seminari i radionice	☐ samostalni zadaci ☐ multimedija i mreža

	☐ vježbe ☐ obrazovanje na daljinu ☐ terenska nastava	☐ laboratorij ☐ mentorski rad ☐ ostalo _____
1.6. Komentari		

1.7. Obveze polaznika

Prisustvovanje predavanjima i radionicama. Aktivno sudjelovanje na radionicama.

1.8. Praćenje[1] rada polaznika [a, b, c]

Pohađanje nastave		Aktivnost u nastavi		Seminarski rad		Eksperimentalni rad	
Pismeni ispit		Usmeni ispit		Esej		Istraživanje	
Projekt		Kontinuirana provjera znanja		Referat		Praktični rad	
Portfolio							

1.9. Ocjenjivanje i vrednovanje rada polaznika [a, b, c]

Polaznici su tijekom tečaja obavezni prisustvovati predavanjima i radionicama, min 70% nastave. Obavezni su aktivno sudjelovati u radionicama na kojima se analiziraju primjeri i simulira izrada procjena utjecaja zahvata na okoliš.

1.10. Obvezna literatura (u trenutku prijave prijedloga programa)[a, b, c, d]

Materijali s predavanja
Materiji do kojih je moguće doći putem interneta:

- **Mrežna stranica Ministarstva zaštite okoliša i energetike http://www.mzoip.hr/**
- **Mrežna stranica Narodnih novina RH www.nn.hr:**
  - **Zakon o zaštiti okoliša NN 80/13, 78/15 i 12/18**
  - **Uredba o procjeni utjecaja zahvata na okoliš NN 61/14 i 3/17**
  - **Pravilnik o ocjeni prihvatljivosti za ekološku mrežu NN 146/14**
  - **Uredba o informiranju i sudjelovanju javnosti i zainteresirane javnosti u pitanjima zaštite okoliša NN 64/08**
  - **i drugi pravni akti**
- **Mrežne stranice Europske komisije:**
  - **Directives on Environmental Assessment– Direktive o procjeni utjecaja na okoliš: http://ec.europa.eu/environment/eia/home.htm**

1.11. Dopunska literatura (u trenutku prijave prijedloga programa)[a, b, c]

- **Glasson, J.; Therivel, R. and Chadwick, A. (2005.): Introduction to Environmental Impact Assessment, 3rd edition, Routledge, Oxon**
- **Wood C. (2002.): Environmental Impact Assessment: a comparative review (3rd edition), Prentice Hall**
- **Barrow, C.J. (2006.): Environmental management for sustainable development (2nd edition), Routledge, NY**

1.12. Broj primjeraka obvezne literature u odnosu na broj polaznika koji trenutno pohađaju nastavu na predmetu [a, b]

Naslov	*Broj primjeraka*	*Broj studenata*
Sva obavezna literatura bit će dostupna na mrežnoj stranici programa CŽU.	-	-
Glasson, J.; Therivel, R. and Chadwick, A. (2005.): Introduction to Environmental Impact Assessment, 3rd edition, Routledge, Oxon	1	20
Wood C. (2002.): Environmental Impact Assessment: a comparative review (3rd edition), Prentice Hall	1	20
Barrow, C.J. (2006.): Environmental management for sustainable	1	20

[1] **VAŽNO**:Uz svaki od načina praćenja rada polaznika unijeti odgovarajući udio u ECTS bodovima pojedinih aktivnosti tako da ukupni broj ECTS bodova odgovara bodovnoj vrijednosti predmeta. Prazna polja upotrijebiti za dodatne aktivnosti.

development (2nd edition), Routledge, NY		
1.13. Načini praćenja kvalitete koji osiguravaju stjecanje izlaznih znanja, vještina i kompetencija		
Provedba ankete za evaluaciju programa, anketa se nalazi u privitku. Rezultati ankete razmatraju se na Odboru za kvalitetu Građevinskog fakulteta.		

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I. OBRAZAC ZA OPIS PROGRAMA CJELOŽIVOTNOG UČENJA

NAPOMENA: Neka polja u obrascima su označena simbolima [a, b, c, d] . Ta polja nisu obavezna za sve programe. Potrebno ih je ispuniti jedino ako se prijavljuje odgovarajući program prema polju *Vrsta programa* u Obrascu I – dio *Opće informacije*.
Polja koja nisu posebno označena su obavezna za sve.

Opće informacije	
Naziv programa	**Strateška procjena utjecaja strategije, plana i programa na okoliš**
Nositelj programa	**Građevinski fakultet Sveučilišta u Rijeci**
Izvoditelj programa	**Građevinski fakultet Sveučilišta u Rijeci**
Vrsta programa	d) Programi usavršavanja bez ECTS bodova

1. UVOD

1.1. Razlozi za pokretanje programa

Zakonom o zaštiti okoliša ('Narodne novine', broj: 80/13, 78/15 i 12/18,), i Uredbom o strateškoj procjeni utjecaja strategije, plana i programa na okoliš ('Narodne novine', broj 3/17) propisana je provedba postupka strateške procjene utjecaja strategije, plana i programa na okoliš. Navedeni propisi su usklađeni s odgovarajućim direktivama EU. U postupku strateške procjene utjecaja na okoliš uz navedenu regulativu potrebno je obuhvatiti i druge relevantne zakone i podzakonske akte zaštite okoliša i prirode (npr. utjecaj na ekološku mrežu i krajobraz), uključivanja javnosti, zaštite kulturne baštine i sl.

Predloženim programom cjeloživotnog učenja (CŽU): *Strateška procjena utjecaja strategije, plana i programa na okoliš* želi se polaznike upoznati sa pozitivnom regulativom koja obuhvaća sve elemente strateške procjena utjecaja strategije, plana i programa na okoliš, obuhvatiti sve korake i sve sudionike u postupku te osposobiti polaznike za sudjelovanje u postupcima strateške procjene utjecaja strategije, plana i programa na okoliš u okviru njihove primarne struke i ovisno o razini njihove kvalifikacije.

Građevinski fakultet je tijekom 2009.,2010. i 2011. provodio specijalistički tečaj pod *naslovom Metodologije i tehnike u primjeni europskih direktiva u području procjene utjecaja zahvata na okoliš i strateške procjene utjecaja plana i programa na okoliš*. Tečaj je većim dijelom bio financiran od strane Regione Veneto (Italija) i izvođen uz suradnju sa Sveučilištem IUAV u Veneciji i Primorsko-goranskom županijom (Javnom ustanovom Zavod za prostorno uređenje i planiranje) pod pokroviteljstvom UNESCO-a. U 2012. godini navedeni tečaj pod istim nazivom je akreditiran u obliku programa cjeloživotnog učenja Sveučilišta u Rijeci i bio je sufinanciran sredstvima grada Belluno (Italija).
Od 2009. do 2012. tečaj/program je završilo stotinjak polaznika. Voditeljica tečaja je bila prof.dr.sc. Barbara Karleuša.

Nakon dulje pauze na zahtjev Primorsko-goranske županije, a za njihove potrebe odnosno potrebe djelatnika Županije, gradova, općina, komunalnih društava i sl., organizirali smo 19.06.2018. edukaciju na temu procjene utjecaja zahvata na okoliš. U okviru edukacije provedeno je anketiranje polaznika. Polaznici su održanu edukaciju ocijenili visokim ocjenama, istaknuli da im je edukacija bila izrazito korisna, da bi takve edukacije trebalo nuditi i u budućnosti, te da bi njima bila vrlo interesantna edukacija koja bi obuhvatila postupke strateške procjene utjecaja strategije, plana i programa na okoliš. Temeljem navedenog zaključili smo da postoji potreba za organiziranjem edukacije iz područja procjene utjecaja zahvata na okoliš i strateške procjene strategije, plana i programa na okoliš

koja bi se nudila široj javnosti.

Smatramo da bi bilo korisno izmijeniti postojeći program cjeloživotnog učenja *Metodologije i tehnike u primjeni europskih direktiva u području procjene utjecaja zahvata na okoliš i strateške procjene utjecaja plana i programa na okoliš* odnosno ponuditi dva nova i ažurirana programa cjeloživotnog učenja:

1. **Procjena utjecaja zahvata na okoliš**
2. **Strateška procjena utjecaja strategije, plana i programa na okoliš**

U ovom obrascu obrazlaže se prijedlog drugog programa: *Strateška procjena utjecaja strategije, plana i programa na okoliš.*

1.2. Procjena svrhovitosti s obzirom na potrebe tržišta rada u javnom i privatnom sektoru [a, b, c, e]

Postupci strateške procjene strategija, planova i programa na okoliš u Hrvatskoj se provode zadnjih 10-tak godina. S obzirom na brojne strategije, planove i programe koje se izrađuju potrebno je educirati nove generacije sudionika u postupcima izrade tih dokumenata o postupku strateške procjene, ocjeni potrebe o izradi strateške procjene i utvrđivanju sadržaja studije.
Temeljem iskustva sa provedbe edukacije na temu procjene utjecaja zahvata na okoliš za Primorsko-goransku županiju i povratnih informacija polaznika kroz provedeno anketiranje uočili smo potrebu za pružanjem usluge edukacije iz područja procjene utjecaja zahvata na okoliš, ali i strateške procjene utjecaja strategija, plana i programa na okoliš široj javnosti.
Program cjeloživotnog učenja potencijalno može biti zanimljiv i koristan djelatnicima županija, gradova i općina, komunalnih društava, Hrvatskih voda, te drugim zainteresiranim sudionicima u izradi strategija, planova i programa..

1.2.1. Povezanost s lokalnom zajednicom (gospodarstvo, poduzetništvo, civilno društvo) [a, b, c, e]

U izvedbi programa uz nastavnike Građevinskog fakulteta sudjelovat će stručnjaci zaposleni u Upravnom odjelu za graditeljstvo i zaštitu okoliša Primorsko-goranske županije i Javnoj ustanovi za upravljanje zaštićenim dijelovima prirode (Priroda) i kako bi prenijeli iskustva vezana uz provedbu postupaka strateške procjene utjecaja strategija, planova i programa na okoliš.
Prethodni tečaj/program se pokazao izuzetno interesantan i koristan različitim strukama (stručnjacima iz područja građevinarstva, arhitekture, krajobrazne arhitekture, okolišnog inženjerstva, geografije, sanitarnog inženjerstva i dr.) i obuhvatio je polaznike iz više Županija, stoga se očekuje da će i ovaj novi program CŽU biti interesantan i koristan te da će biti zainteresiranih polaznika. U sklopu programa analiziraju se različiti primjeri iz Hrvatske, ali i lokalnog okruženja.

1.2.2. Usklađenost sa zahtjevima strukovnih udruženja (preporuke) [a, b, c]

-

1.2.3. Navesti moguće partnere izvan visokoškolskog sustava koji su iskazali interes za program

Interes za predloženi program CŽU se očekuje od strane zaposlenika županija te gradova i općina, komunalnih društava i raznih tvrki koje se bave navedenom problematikom, studenata na raznim studijima na kojima se sagledavaju utjecaji zahvata na okoliš, ali i šire javnosti.

1.3. Usklađenost s programom cjeloživotnog učenja Sveučilišta u Rijeci

Programi CŽU su obuhvaćeni Strategijom razvoja Sveučilišta u Rijeci 2014-2020. Pokretanje ovog programa doprinijet će ostvarenju cilja/zadatka „povećanje broja programa CŽU“ na Sveučilištu što je definirano u Strategiji http://www.uniri.hr/files/staticki_dio/strategija/Strategija_UNIRI_2014_2020_HR.pdf pod II.g.1.

Također program doprinosi realizaciji "javne funkcije" Sveučilišta kroz transfer specijaliziranih znanja edukacijom polaznika, što će u konačnici doprinijeti i gospodarskom razvoju okruženja vodeći računa o zaštiti okoliša.
1.4. Institucijska strategija razvoja programa cjeloživotnog učenja (usklađenost s misijom i strateškim ciljevima institucije)
Program tečaja usklađen je s vizijom, misijom i strategijom Građevinskog fakulteta Sveučilišta razdoblje 2018. - 2022. http://www.gradri.uniri.hr/hr/o-fakultetu/strategija-fakulteta.html (vidi viziju i misiju te zadatak 6.2.19.).
1.5. Ostali važni podaci – prema mišljenju predlagača

2. OPĆI DIO
2.1. Naziv programa cjeloživotnog učenja
Strateška procjena utjecaja strategija, plana i programa na okoliš
2.1.1. Vrsta programa
d) Programi usavršavanja bez ECTS bodova
2.1.2. Razina studijskog programa [a, b]
-
2.1.3. Područje programa (znanstveno/umjetničko)-navesti naziv [a, b, c]
-
2.2. Nositelj/i programa
Građevinski fakultet Sveučilišta u Rijeci
2.3. Izvoditelj/i programa
Građevinski fakultet Sveučilišta u Rijeci
2.4. Trajanje programa
16 sati (2 dana)
2.4.1. ECTS bodovi – minimalni broj bodova potrebnih da bi polaznik završio program [a, b, c]
-
2.5. Uvjeti upisa na program
Završena četverogodišnja srednja škola
2.6. Ishodi učenja programa (kompetencije koje polaznik stječe završetkom programa)
Nabrojati zakone i drugu pravnu regulativu iz područja zaštite okoliša i objasniti njihov sadržaj **Objasniti postupak strateške procjene utjecaja strategije, plana i programa na okoliš i obaveze svih sudionika uključenih u postupak** **Opisati postupak izrade studije utjecaja strategije, plana i programa na okoliš i sadržaj studije** **Objasniti postupak i dokumente za ocjenu i strateške procjene utjecaja strategije, plana i programa na okoliš** **Objasniti način utvrđivanja sadržaja strateške studije utjecaja strategije, plana i programa na okoliš**

Objasniti postupak glavne ocjene prihvatljivosti utjecaja strategije, plana i programa na ekološku mrežu
Objasniti i primijeniti neke od postojećih metoda i tehnika za procjenu na konkretnom primjeru
Sudjelovati u postupcima strateške procjene utjecaja strategije, plana i programa zahvata na okoliš (u domeni svoje struke i ovisno o razini prethodne kvalifikacije)

2.7. Kod prijave programa navesti studijske programe predlagača ili drugih institucija u RH s kojih je moguć upis na predloženi program [a]

Program mogu upisati polaznici koji su prethodno završili četverogodišnju srednju školu.

3. OPIS PROGRAMA

3.1. Struktura programa, ritam pohađanja i obveze polaznika

Program CŽU se planira izvoditi u 16 sati nastave (kroz 2 dana) tijekom koje će se polaznike upoznati s regulativom u području strateške procjene utjecaja strategije, plana i programa na okoliš (u RH i EU), sudionicima i koracima u postupku, osnovnim metodologijama i tehnikama koje se primjenjuju u strateškoj procjeni utjecaja strategije, plana i programa na okoliš te analizirati različiti aspekti procjene utjecaja strategije, plana i programa na okoliš na primjerima iz Hrvatske.
Prisustvovanje nastavi je obavezno, min. prisustvovanje nastavi iznosi 70%.
Sudionici trebaju aktivno sudjelovati u predviđenim radionicama.

3.2. Popis predmeta i/ili modula (ukoliko postoje) s brojem sati aktivne nastave potrebnih za njihovu izvedbu (i brojem ECTS – bodova za vrste programa a, b, ili c) (prilog: Tablica 1)

Popis je dan u tablici 1.

3.3. Opis svakog predmeta (ukoliko postoji) (prilog: Tablica 2)

U tablici je dan opis programa koji se sastoji od niza predavanja i radionica.

3.3.1. Uvjeti upisa u sljedeći semestar ili trimestar (naziv predmeta) [a]

-

3.4. Popis predmeta i/ili modula koji se mogu izvoditi na stranom jeziku (navesti koji jezik)

Predavanja se izvode na hrvatskom jeziku.

3.5. Multidisciplinarnost/interdisciplinarnost programa

U predloženom programu CŽU se obrađuje tematika strateške procjene utjecaja strategije, plana i programa na okoliš. Neophodno je da na poslovima vezanim uz stratešku procjenu utjecaja strategije, plana i programa zahvata na okoliš rade interdisciplinarni timovi stručnjaka, kako bi se obuhvatili svi aspekti utjecaja na okoliš. Sudjelovanje u programu CŽU omogućava upoznavanje i suradnju polaznika (stručnjaka različitih disciplina) te stvaranje mreže osoba koje i u budućnosti mogu surađivati na poslovima strateške procjena utjecaja strategije, plana i programa na okoliš.

3.8 Način završetka programa

Moraju biti zadovoljeni uvjeti minimalnog prisustvovanja i aktivnog sudjelovanja u radionicama.

Tablica1.

3.1. Popis predmeta i/ili modula (ukoliko postoje) s brojem sati aktivne nastave potrebnih za njihovu izvedbu i brojem ECTS bodova

POPIS MODULA / PREDMETA						
Semestar [a]:						
MODUL	PREDMET (tema)	NOSITELJ	P	V	S	ECTS [a, b, c]
	Pregled zakonske regulative u području zaštite okoliša i procjene utjecaja na okoliš	Dr.sc. Sanja Dugonjić Jovančević	2			
	Uredba o strateškoj procjeni utjecaja strategije, plana i programa na okoliš i sadržaj strateške studije	Dr.sc. Barbara Karleuša	2			
	Prezentacija strateških studija utjecaja strategije, plana ili programa na okoliš (Radionica)	Dr.sc. Ivana Sušanj Čule			2	
	Pregled i iskustva postupaka strateške procjene utjecaja strategije, plana i programa na okoliš u Hrvatskoj i Primorsko-goranskoj županiji	Dr.sc. Koraljka Vahtar Jurković	2			
	Procjena utjecaja strategija, plana i programa na kulturnu baštinu i krajobraz	Dr.sc. Iva Mrak	1			
	Zaštita bioraznolikosti u Hrvatskoj i Primorsko-goranskoj županiji i ocjena prihvatljivosti utjecaja strategije, plana ili programa na ekološku mrežu (Glavna ocjena)	Sonja Šišić	1			
	Prezentacija primjera Glavne ocjene (Radionica)	Sonja Šišić			1	
	Aktivnosti Povjerenstva za stratešku procjenu utjecaja strategije, plana ili programa na okoliš i uključivanje javnosti u postupak	Dr.sc. Nevenka Ožanić	2			
	Metode i tehnike strateške procjene utjecaja strategije, plana i programa na okoliš	Dr.sc. Barbara Karleuša	1			
	Primjena metoda i tehnika za stratešku procjenu utjecaja strategije, plana i programa na okoliš (Radionica)	Dr.sc. Nevena Dragičević			2	
		UKUPNO	11		5	
		Ukupno 16 sati nastave.				

Tablica 2.

3.2. Opis predmeta / predavanja

NAPOMENA: Ukoliko u programu nema predmeta (npr. kod kratkih tečajeva), ispuniti polja koja su relevantna za program

Opće informacije		
Nositelj predmeta	**Voditelj programa CŽU - prof.dr.sc. Barbara Karleuša**	
Naziv predmeta	**Strateška procjena utjecaja strategije, plana i programa na okoliš**	
Semestar [a]	**-**	
Bodovna vrijednost i način izvođenja nastave	ECTS koeficijent opterećenja polaznika [a, b, c]	
	Broj sati (P+V+S)	11+0+5

1. OPIS PREDMETA		
1.1. Ciljevi predmeta		
Osposobiti polaznike za sudjelovanje (u domeni svoje struke i ovisno o razini prethodne kvalifikacije) u postupcima procjene utjecaja zahvata na okoliš prema hrvatskim pozitivnim zakonima i propisima.		
1.2. Uvjeti za upis predmeta [a]		
Nema		
1.3. Očekivani ishodi učenja za predmet		
Nabrojati zakone i drugu pravnu regulativu iz područja zaštite okoliša i objasniti njihov sadržaj **Objasniti postupak strateške procjene utjecaja strategije, plana i programa na okoliš i obaveze svih sudionika uključenih u postupak** **Opisati postupak izrade studije utjecaja strategije, plana i programa na okoliš i sadržaj studije** **Objasniti postupak i dokumente za ocjenu i strateške procjene utjecaja strategije, plana i programa na okoliš** **Objasniti način utvrđivanja sadržaja strateške studije utjecaja strategije, plana i programa na okoliš** **Objasniti postupak glavne ocjene prihvatljivosti utjecaja strategije, plana i programa na ekološku mrežu** **Objasniti i primijeniti neke od postojećih metoda i tehnika za procjenu na konkretnom primjeru** **Sudjelovati u postupcima strateške procjene utjecaja strategije, plana i programa zahvata na okoliš (u domeni svoje struke i ovisno o razini prethodne kvalifikacije)**		
1.4. Sadržaj predmeta		
Pregled zakonske regulative u području zaštite okoliša i procjene utjecaja na okoliš **Uredba o procjeni utjecaja strategije, plana i programa na okoliš i sadržaj strateške studije** **Prezentacija strateških studija utjecaja strategije, plana i programa na okoliš (Radionica)** **Pregled i iskustva postupaka strateške procjene utjecaja strategije, plana i programa na okoliš u Hrvatskoj i Primorsko-goranskoj županiji** **Procjena utjecaja strategija, plana i programa na kulturnu baštinu i krajobraz** **Zaštita bioraznolikosti u Hrvatskoj i Primorsko-goranskoj županiji i ocjena prihvatljivosti utjecaja** strategije, plana i **programa na ekološku mrežu (Glavna ocjena)** **Prezentacija primjera Glavne ocjene (Radionica)** **Aktivnosti povjerenstva za stratešku procjenu utjecaja strategije, plana i programa na okoliš i uključivanje javnosti u postupak** **Metode i tehnike strateške procjene utjecaja strategije, plana i programa na okoliš** **Primjena metoda i tehnika za stratešku procjenu utjecaja strategije, plana i programa na okoliš (Radionica)**		
1.5. Vrste izvođenja nastave	☒ predavanja ☒ seminari i radionice ☐ vježbe	☐ samostalni zadaci ☐ multimedija i mreža ☐ laboratorij

	☐ obrazovanje na daljinu ☐ terenska nastava	☐ mentorski rad ☐ ostalo _____
1.6. Komentari		

1.7. Obveze polaznika

Prisustvovanje predavanjima i radionicama. Aktivno sudjelovanje na radionicama.

1.8. Praćenje[1] rada polaznika [a, b, c]

Pohađanje nastave		Aktivnost u nastavi		Seminarski rad		Eksperimentalni rad	
Pismeni ispit		Usmeni ispit		Esej		Istraživanje	
Projekt		Kontinuirana provjera znanja		Referat		Praktični rad	
Portfolio							

1.9. Ocjenjivanje i vrednovanje rada polaznika [a, b, c]

Polaznici su tijekom tečaja obavezni prisustvovati predavanjima i radionicama, min 70% nastave. Obavezni su aktivno sudjelovati u radionicama na kojima se analiziraju primjeri i simulira izrada procjena utjecaja zahvata na okoliš.

1.10. Obvezna literatura (u trenutku prijave prijedloga programa)[a, b, c, d]

Materijali s predavanja
Materiji do kojih je moguće doći putem interneta:
- **Mrežna stranica Ministarstva zaštite okoliša i energetike http://www.mzoip.hr/**
- **Mrežna stranica Narodnih novina RH www.nn.hr:**
  - **Zakon o zaštiti okoliša NN 80/13, 78/15 i 12/18**
  - **Uredbom o strateškoj procjeni utjecaja strategije, plana i programa na okoliš ('Narodne novine', broj 3/17)**
  - **Pravilnik o ocjeni prihvatljivosti za ekološku mrežu NN 146/14**
  - **Uredba o informiranju i sudjelovanju javnosti i zainteresirane javnosti u pitanjima zaštite okoliša NN 64/08**
  - **i drugi pravni akti**
- **Mrežne stranice Europske komisije:**
  - **Strategic Environmental Assessment (SEA) Directive – Direktiva o strateškoj procjeni utjecaja na okoliš: http://ec.europa.eu/environment/eia/sea-legalcontext.htm**

1.11. Dopunska literatura (u trenutku prijave prijedloga programa)[a, b, c]

- **Glasson, J.; Therivel, R. and Chadwick, A. (2005.): Introduction to Environmental Impact Assessment, 3rd edition, Routledge, Oxon**
- **Wood C. (2002.): Environmental Impact Assessment: a comparative review (3rd edition), Prentice Hall**

1.12. Broj primjeraka obvezne literature u odnosu na broj polaznika koji trenutno pohađaju nastavu na predmetu [a, b]

Naslov	*Broj primjeraka*	*Broj studenata*
Sva obavezna literatura bit će dostupna na mrežnoj stranici programa CŽU.	-	-
– **Glasson, J.; Therivel, R. and Chadwick, A. (2005.): Introduction to Environmental Impact Assessment, 3rd edition, Routledge, Oxon**	1	20
– **Wood C. (2002.): Environmental Impact Assessment: a comparative review (3rd edition), Prentice Hall**	1	20

1.13. Načini praćenja kvalitete koji osiguravaju stjecanje izlaznih znanja, vještina i kompetencija

Provedba ankete za evaluaciju programa, anketa se nalazi u privitku. Rezultati ankete razmatraju se na Odboru za kvalitetu Građevinskog fakulteta.

[1] **VAŽNO**:Uz svaki od načina praćenja rada polaznika unijeti odgovarajući udio u ECTS bodovima pojedinih aktivnosti tako da ukupni broj ECTS bodova odgovara bodovnoj vrijednosti predmeta. Prazna polja upotrijebiti za dodatne aktivnosti.