

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	KAKOVOST IN STANDARDI
Course title:	QUALITY AND STANDARDS

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Varstvo okolja in ekotehnologije, 1. stopnja	/	3.	/
Environmental Protection and Eco-technologies, 1 st level	/	3 rd	/

Vrsta predmeta / Course type Izbirni predmet / Optional course

Univerzitetna koda predmeta / University course code: KS

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
20	0	10	/	0	60	3

Nosilec predmeta / Lecturer: viš. pred. Nataša Uranjek / Nataša Uranjek, Lecturer

Jeziki / Languages: **Predavanja / Lectures:** Slovenski / Slovenian
Vaje / Tutorial: Slovenski / Slovenian

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:

Pogojev ni.

Prerequisites:

No formal prerequisites.

Vsebina:

Predmet bo osredotočen na pridobitev temeljnih znanj s področja kakovosti, standardov kakovosti in aktivnosti, ki so potrebna za razumevanje, vzpostavitev in vodenje standardov kakovosti.

Poglavitne teme:

- **kakovost:** kaj je kakovost, kako jo lahko definiramo; celovita kakovost kot poslovna filozofija stalnega napredka; kakovost in njeni sinonimi; kratek zgodovinski pogled na razvoj in razsežnost kakovosti; odličnost kot najvišja stopnja kakovosti
- **celovito obvladovanje in zagotavljanje kakovosti:** obvladovanje kakovosti kot zmožnost razviti, načrtovati, proizvajati in servisirati kakovosten proizvod, ki je najbolj ekonomičen, najbolj uporaben ter vedno zadovoljuje uporabnika; kako upoštevati zahteve potrošnikov pri načrtovanju, proizvodnji in prodajanju proizvodov
- **orodja za obvladovanje kakovosti:** predstavitev različnih metod in njihov vpliv na sistem kakovosti

Content (Syllabus outline):

The course will focus on acquiring basic skills in the field of quality, quality standards and activities that are necessary for understanding, setting up and managing quality standards.

Main topics:

- **Quality:** what is the quality, how to define it; quality as a business philosophy of continuous progress; Quality and its synonyms; a brief historical review of the development and dimension of quality; excellence as the highest level of quality
- **Comprehensive management and quality assurance:** quality management as the ability to develop, plan, produce and service a quality product, which is the most economical, most useful and always satisfies the user; how to consider consumers' requirements when designing, producing and selling products
- **Quality control tools:** presentation of different methods and their impact on the quality system itself
- **Standards for improving quality and business excellence:** Quality Management System (ISO

- **standardi izboljševanja kakovosti in poslovne odličnosti:** sistem vodenja kakovosti (ISO 9001); sistem ravnanja z okoljem (ISO 14001); sistem poklicnega zdravja in varnosti (OHSAS 18000) in drugi
- **uvedba standarda kakovosti:** aktivnosti, potrebne za uvedbo standarda v delovanje družbe
- **sledljivost:** bistvene zahteve in aktivnosti za zagotavljanje sledljivosti
- **dokumenti in zapisi v procesu kakovosti:** dokument kot informacija in njen nosilni medij, ki vsebuje naziv, podatke o veljavnosti, verziji in obsegu; zapis kot "enkraten" dokument, ki navaja dosežene rezultate ali predstavlja dokaz o izvedenih aktivnostih
- **politika, cilji in strategija kakovosti:** opredelitev in pomen politike, ciljev in strategije kakovosti
- **PDCA krog:** PDCA (Plan-Do-Check-Act) krog kot skupek aktivnosti za izboljševanje sistema kakovosti
- **nenehno izboljševanje kakovosti:** nenehno izboljševanje kakovosti vključuje vrsto načel in predstavlja izziv za izboljšanje učinkovitosti ter uspešnosti poslovanja organizacije
- **tveganja in priložnosti:** tveganja kot vpliv nevarnosti, negativnih dogodkov, groženj, izgubljenih priložnosti, ki preko svoje uresničitve negativno vplivajo na delovanje podjetja; dinamično ocenjevanje tveganj in priložnosti v vsakodnevnem poslovnem odločanju
- **presoja:** presoja kakovosti kot metodičen pregled učinkovitosti sistema zagotavljanja kakovosti; zakaj in kako se jo izvaja; notranje in zunanje presoje; potrebne korektivne akcije za izboljšanje kakovosti
- **stroški kakovosti:** določanje kakovosti z upoštevanjem cene; načrtovanje kakovosti

- 9001); System Environmental Management (ISO 14001); Occupational Health and Safety System (OHSAS 18000), and others
- **Introduction of a quality standard:** the activities needed to introduce the standard into the company's operations
- **Traceability:** essential requirement and delivery activities for traceability
- **Documents and records in the quality process:** the document as and information and its carrier medium, which contains the name, validity information, version, and scope; the record as a "one-off" document, indicating the results achieved or presents evidence of the activities carried out.
- **Quality policy, objectives, and strategy:** definition and importance of the quality policy, objectives, and strategy
- **PDCA round (Plan-Do-Check-Act):** the PDCA round as a set of activities to improve the quality system.
- **Continuous Quality Improvement (CQI):** continuous improvement includes a number of principles, and presents a challenge for improving the efficiency and effectiveness of the organization's business
- **Risks and opportunities:** risks as the consequence of danger, negative events, threats, and lost opportunities, which through their realization negatively affect the company's operations; dynamic assessment of risks and opportunities in everyday business decision-making
- **Audit:** audit as a methodical overview of the effectiveness of the quality system assurance; why and how it is carried out; internal and external audits; corrective actions for improvement of quality
- **Quality costs:** determination of quality by regarding the price; quality planning

Temeljna literatura in viri / Textbooks:

Obvezna / Required:

1. Koubek, A., 2016. Priročnik ISO 9001:2015. Razumevanje in izvajanje novih zahtev. Ljubljana: Slovensko združenje za kakovost in odličnost
2. Marolt, J., Gomišček, B., 2005. Management kakovosti. Kranj: Moderna organizacija
3. Pivka, M., 2000. Management kakovosti. Maribor: Ekonomsko poslovna fakulteta

Priporočena / Recommended:

4. Pyzdek, T., Keller, P.A. 2013. The handbook for quality management: a complete guide to operational excellence. New York: McGraw-Hill
5. Sower, V.E. 2011. Essentials of quality: with cases and experiential exercises. Hoboken: John Wiley & Sons
6. Evans, J.R., Lindsay, W.M. 2011. The management and control of quality. Australia: South-Western cop.

Cilji in kompetence:**Predmetno specifični cilji in kompetence:**

- seznaniti študente s pojmom kakovosti in različnimi sistemi, ki opisujejo kakovost in odličnost v organizacijah
- seznaniti študente z orodji za obvladovanje kakovosti
- seznaniti študente s standardi, posebno s standardi skupine ISO
- podrobno preučiti standarde s področja varstva okolja.
- seznaniti študente z najpomembnejšimi točkami standardov
- seznaniti študente s pomenom posameznih izrazov, ki se uporabljajo na področju kakovosti
- študentom predstaviti konkretne dokumente, ki opisujejo sistem kakovosti in obvladovanje le-teh
- študentom predstaviti način presoje, ugotovitve neskladnosti in vpeljavo korektivnih in preventivnih ukrepov

Splošne kompetence:

- razumevanje pomena kakovosti in prizadevanje za kakovost strokovnega dela skozi avtonomnost, kritičnost, refleksivnost in evalvacijo
- sposobnost za načrtovanje in samokontrolo izvajanja načrtov
- občutljivost za odnose med ljudmi pri delu, fleksibilnost in sposobnost za skupinsko delo, samoiniciativnost, prevzemanje odgovornosti, sposobnost razmišljanja in lastnega mnenja
- sposobnost timskega dela, tj. pripravljenost na sodelovanje, upoštevanje mnenj drugih in izpolnjevanje dogovorjene vloge v okviru tima oz. skupine
- poznavanje in razumevanje procesov v poslovnem okolju organizacije in sposobnost za njihovo analizo, sintezo, predvidevanje rešitev ter njihovih posledic
- sposobnost analize, sinteze in obvladovanja raziskovalnih ter strokovnih metod/tehnik s področja kakovosti

Objectives and competences:**Specific competences:**

- to acquaint students with the concept of quality and different systems that describe quality and excellence in organizations
- to acquaint students with quality control tools
- to acquaint students with standards, in particular with ISO standards
- to determine environmental standards in detail
- to acquaint students with the most important points of the standards
- to acquaint students with the meaning of individual terms used in the field of quality
- to present the students concrete documents describing the quality system and manipulation with the documents
- to present students a way of auditing, finding inconsistencies and introducing corrective and preventive measures

General competences:

- understanding the importance of quality and striving for the quality of professional work through autonomy, criticality, reflection and evaluation
- ability to planning and self-control of the implementation of plans
- sensitivity for relationships between people at work, flexibility and ability for group work, self-initiative, responsibility, ability to think and own an opinion
- ability of team work, i.e. willingness to cooperate, take in the account the opinions of others and meeting the agreed role within the team and groups
- knowledge and understanding of processes in the organization's business environment, and the ability to analyze, synthesize and anticipate solutions and their consequences
- ability to analyze, synthesize and master the research and professional methods/techniques in the field of quality

Predvideni študijski rezultati:**Znanje in razumevanje:**

Študent bo ob zaključku predmeta sposoben:

- prepoznati ključne značilnosti sistema kakovosti
- razumeti najpomembnejša orodja za obvladovanje kakovosti
- razumeti zakonitosti in osnovne zahteve standardov
- razlikovati med dokumentacijo, ki opisuje kakovost, prepoznati dokumente in zapise

Intended learning outcomes:**Knowledge and understanding:**

At the end of the subject, student will be able to:

- identify the key features of the quality system
- understand the most important quality control tools
- understand the legality and basic requirements of the standards
- distinguish between documentation describing quality, identify documents and records

<ul style="list-style-type: none"> • uporabiti pridobljeno znanje kakovosti in orodja za vzpostavitev standarda kakovosti ter zagotavljanje kakovosti • prepoznati in zapisati primere politike kakovosti ter cilje in strategijo kakovosti • prepoznati tveganja in priložnosti kot del kakovosti • uporabiti znanje za izvedbo presoje, tako notranje kot tudi zunanje • prepoznati stroške kakovosti <p>Prenosljive/ključne spretnosti in drugi atributi:</p> <ul style="list-style-type: none"> • sposobnost uporabe domače in tuje literature, zbiranja in interpretiranja podatkov, identifikacije in iskanja rešitev za probleme • sposobnost pisanja člankov in javnega predstavljanja rezultatov • sposobnost uporabe zbirk podatkov 	<ul style="list-style-type: none"> • use acquired quality knowledge and tools to establish a quality standard and quality assurance • identify and write down examples of quality policy and quality objectives and strategies • identify risks and opportunities as part of the quality • use knowledge to carry out an audit, both internal and external • recognize the costs of quality <p>Transferable/key skills and other attributes:</p> <ul style="list-style-type: none"> • ability to use domestic and foreign literature, collecting and interpreting data, identifying and finding solutions to problems • ability to write articles and public presentation of results • ability to use databases
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Metode poučevanja in učenja:

<p><u>Oblike dela:</u></p> <ul style="list-style-type: none"> • predavanja z aktivno udeležbo študentov (razlaga snovi, pogovori, vprašanja, primeri, reševanje problemov) • samostojno delo študentov • seminarske vaje (z vključevanjem strokovnjakov iz prakse) <p><u>Metode dela:</u></p> <ul style="list-style-type: none"> • razlaga • dialog, diskusija • preučevanje praktičnih primerov

Learning and teaching methods:

<p><u>Forms of teaching:</u></p> <ul style="list-style-type: none"> • lectures with the active participation of students (explanations, discussions, questions, examples, problem solving) • individual work of students • tutorials (provided by invited guest lectures, i.e. experts from the practice) <p><u>Teaching methods:</u></p> <ul style="list-style-type: none"> • explanation • discussion, debate • presentation and discussion on case studies

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
<p>Pogoj za pristop k izpitu: sprejeto poročilo za seminarske vaje.</p> <p>Končna ocena pri predmetu je sestavljena iz ocene ustnega ali pisnega izpita (glede načina izvedbe so študenti obveščeni na uvodnem predavanju) in ocene poročila:</p> <ul style="list-style-type: none"> • poročilo s seminarskih vaj • izpit <p>Vprašanja na izpitu se nanašajo na snov, podano na predavanjih.</p> <p>Ocenjevalna lestvica:</p> <ul style="list-style-type: none"> ▪ zadostno 6: 60–67 % ▪ dobro 7: 68–75 % ▪ prav dobro 8: 76–83 % ▪ prav dobro 9: 84–90 % ▪ odlično 10: 91–100 % 	<p>20 %</p> <p>80 %</p>	<p>A prerequisite for access to the exam: accepted report for tutorials and fieldwork.</p> <p>Final evaluation consists of the mark for oral or written exam (students are informed about the type of the exam at the first lecture), and the mark for the report:</p> <ul style="list-style-type: none"> • report for tutorials • final exam <p>Questions for the exam are in relation to material delivered in lectures.</p> <p>Grading scale:</p> <ul style="list-style-type: none"> ▪ Sufficient D (6): 60–67% ▪ Good C (7): 68–75% ▪ Very good B (8): 76–83% ▪ Very good B+ (9): 84–90% ▪ Excellent A (10): 91–100%

Materialni pogoji za izvedbo predmeta :

- Predavalnica z multimedijško opremo.

Material conditions for subject realization:

- Classroom with the multimedia equipment.

Obveznosti študentov:

100 % prisotnost na seminarskih vajah. Za seminarske vaje morajo študenti pripraviti poročilo, ki mora strokovno povzeti pridobljena znanja oz. morajo v njemu smiselno odgovoriti na zastavljena vprašanja. Potrebna je izvirnost, jezikovna pravilnost in oblikovna doslednost poročila.

Pozitivno opravljen izpit.

Student's commitments:

100% attendance at tutorials. Students must prepare report for tutorials; the report has to professionally summarized knowledge obtained or, alternatively, has to contain relevant answers on different questions. Originality, linguistic accuracy, and editorial consistency of the report are mandatory.

Positive mark at the exam.

Reference nosilca predmeta:**Pedagoško delo:**

- nosilka predmeta Čiščenje odpadnih vod na Visoki šoli za varstvo okolja
- mentorica in somentorica več diplomantom na dodiplomskem ter magistrskem študiju

Raziskovalno delo:

- vodenje več industrijskih projektov, ki so produkt rednega dela v podjetju in sodelovanja z drugimi podjetji

Strokovno delo:

- vodja Službe za tehnologije in nadzor v Komunalnem podjetju Velenje, d.o.o.
- aktivna udeležba pri projektih: Izgradnja CČN Šaleške doline, Celovita oskrba s pitno vodo v Šaleški dolini, Izgradnja MKČN Lokovica 250 PE in 500 PE, Izgradnja MKČN Vinska gora 1000 PE, Izgradnja MKČN Zavodnje
- elaborat: Ločevanje zmesi sadra/apnenec/silikati s hidrociklonom v odžvepljevalni napravi Termoelektrarne Šoštanj
- preliminarna študija kanalizacije Velenje – Šoštanj

Priznanja in sodelovanje v mednarodnih organizacijah:

- zlato priznanje za inovacijo SŠGZ: Naprava za denitrifikacijo pitne vode
- srebrno priznanje za inovacijo GZS: Naprava za denitrifikacijo pitne vode
- članica upravnega odbora v Slovenskem društvu za zaščito voda
- predstavnica GZS Slovenije za odpadne vode v EurEau v skupini

Lecturer's references:**Pedagogical work:**

- lecturer at the course Wastewater treatment at the Environmental Protection College
- mentor and co-mentor to several graduate and post-graduate students

Research work:

- leading of industrial projects which are product of regular work at the employers' company, and of collaboration with other companies

Professional work:

- Director of Department for technologies and control at the Komunalno podjetje Velenje, d.o.o.
- active participation at projects: Construction of WWTP Šalek Valley, Complete drinking water supply in the Šalek Valley, Construction of SWTP Lokovica 250 PE and 500 PE, Construction of SWTP Vinska gora 1000 PE, Construction of SWTP Zavodnje
- Expertise: Separation of the mixture gypsum/limestone/silicates using hydrocyclone in desulfurization process of the Thermal Power Plant Šoštanj
- preliminary study of sewage Velenje – Šoštanj

Awards and participation in international organizations:

- gold plaque for innovation at SŠGZ: Device for denitrification of drinking water
- silver plaque for innovation at GZS: Device for denitrification of drinking water
- member of the Management Board of the Slovenian Association for Water Protection (SDZV)
- representative of the GZS Slovenia for waste water in the EurEau group

Pomembnejša raziskovalna dela / Selected research publications:

Česen M., Lenarčič K., Mislej V., Levstek M., Kovačič A., Cimrmančič B., **Uranjek Ževart N.**, Kosjek T., Heath D.J., Sollner D.M., Heath E., 2018. The occurrence and source identification of bisphenol compounds in wastewaters. *Science of the total environment*, 616/617:744-752.

Avberšek M., Žegura B., Filipič M., **Uranjek Ževart N.**, Heath E., 2013. Determination of estrogenic potential in waste water without sample extraction. *Journal of hazardous materials*, 260:527-533.

Zupančič G.D., Grilc V., Roš M., **Uranjek Ževart N.**, 2008. Municipal waste sludge digestion in an autothermal aerobic sequencing batch reactor. *Water science and technology*, 58:1237-1243.

Zupančič G.D., **Uranjek Ževart N.**, Roš M., 2008. Full-scale anaerobic co-digestion of organic waste and municipal sludge. *Biomass & bioenergy*, 132:162-167.