

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet: Zagotavljanje kakovosti
Course title: Quality Assurance

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Tehnologije in sistemi – prva stopnja	/	tretji	peti
Technologies and Systems – 1st cycle	/	third	fifth

Vrsta predmeta / Course type

izbirni/elective

Univerzitetna koda predmeta / University course code:

TS IP UN 2

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Laboratorijske vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
45		15	15		100	6

Nosilec predmeta / Lecturer:

prof. dr. Mirko Soković

**Jeziki /
Languages:**

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

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

- vpis v tretji letnik študija.

Prerequisites:

- enrollment in the third year of study.

Vsebina:

- **Uvod**
Splošno o kakovosti.
Osnovni pojmi in definicije kakovosti.
Razlike med proizvodom in storitvijo.
- **Sodobni koncepti kakovosti**
Razvojna pot in družbeni vidiki zagotavljanja kakovosti.
Kakovost se spleča.
- **Razvoj sistema kakovosti**
Organizacija in struktura sistema vodenja kakovosti (QMS).
Poslovník kakovosti.

Content (Syllabus outline):

- **In Introduction**
General about quality.
Basic concepts and definitions of quality.
Differences between product and service.
- **Modern concepts of quality**
Development path and social aspects of quality assurance.
Quality is worth.
- **Development of the quality system**
Organisation and structure of the quality management system (QMS).
Quality regulations.

*Presoje in certificiranje QMS.
Ocena kakovosti dobaviteljev.
Standard za avtomobilsko industrijo ISO/TS 16949.
Sistemi ravnanja z okoljem (ISO 14001).
Sistemi vodenja varnosti in zdravja pri delu OHSAS 18001.
Integrirani sistemi vodenja (IMS).*

- **Organizacija kontrole kakovosti**
*Vhodna, medfazna, končna kontrola, avtokontrola.
Ocena kakovosti dobaviteljev.
Prevzemno vzorčenje.*
- **Stroškovni in vrednostni vidiki kakovosti**
*Stroški kakovosti.
Kakovost in produktivnost.*
- **Orodja in tehnike zagotavljanja kakovosti**
*Sedem osnovnih orodij kakovosti (7QC).
Sedem menedžerskih orodij (7QM).
PDCA krog.
Sedem stopenjski pristop reševanja problemov kakovosti.*
- **Statistični nadzor procesov (SPC)**
*Procesi in njihova variabilnost.
Stabilnost in sposobnost procesov.
Statistika v nadzoru kakovosti procesov in proizvodov.*
- **Analiza merilnih sistemov (MSA)**
- **Obvladovanje kakovosti od novega projekta do redne proizvodnje**
*Obvladovanje kakovosti novega projekta:
- razvoj in snovanje proizvoda/storitve,
- razvoj in snovanje proizvodnega procesa.
Obvladovanje kakovosti v proizvodnem procesu:
- preventivne metode,
- reševanje problemov.*
- **Poslovna odličnost**
*Evropski model odličnosti EFQM
Priznanje RS za poslovno odličnost (PRSP0)*

*QMS audits and certification.
Quality assessment of suppliers.
Automotive industry standard ISO/TS 16949.
Environmental management systems (ISO 14001).
Occupational health and safety management systems OHSAS 18001.
Integrated management systems (IMS).*

- **Organisation of quality control**
*Input, intermediate, final control, self-control.
Quality assessment of suppliers.
Acquisition sampling.*
- **Cost and value aspects of quality**
*The cost of quality.
Quality and productivity.*
- **Quality assurance tools and techniques**
*Seven Basic Quality Tools (7QC).
Seven Managerial Tools (7QM).
PDCA round.
A seven-step approach to solving quality problems.*
- **Statistical Process Control (SPC)**
*Processes and their variability.
Process stability and capability.
Statistics in process and product quality control.*
- **Analysis of measurement systems (MSA)**
- **Quality control from new project to regular production**
*New project quality control:
- product/service development and design,
- development and design of the production process.*
*Quality control in the production process:
- preventive methods,
- problem solving.*
- **Business excellence**
*EFQM European model of excellence
Recognition of the Republic of Slovenia for Business Excellence (PRSP0)*

Temeljni literatura in viri / Readings:

- [1] Basu, R. *Implementing Quality – A Practical Guide to Tools and Techniques*, Thomson Learning, London, 2004.
- [2] Marolt, J., Gomišček, B. *Management kakovosti*, Moderna organizacija, Kranj, 2005.
- [3] Montgomery, D.C., Jennings, C.L., Pfund, M.E. *Managing, Controlling, and Improving Quality*, John Wiley & Sons Wiley, Inc., USA, 2011.
- [4] Tague, N.R. *Quality Toolbox, Second Edition*, ASQ Quality Press, Milwaukee, Wisconsin, USA, 2005.
- [5] Standardi: ISO 9001:2015, ISO 14001, ISO/TC 16949, ISO 18001 – izbrana poglavja.

Cilji in kompetence:

Učna enota prispeva predvsem k razvoju naslednjih splošnih in specifičnih kompetenc:

- sposobnost evidentiranja problema in njegove analize ter predvidevanja operativnih rešitev v smislu zagotavljanja kakovosti,
- sposobnost obvladovanja standardnih razvojnih metod, postopkov in procesov,
- poznavanje osnovnih orodij in tehnik zagotavljanja kakovosti v vseh fazah nastanka proizvoda/storitve,
- sposobnost uporabe pridobljenega teoretičnega znanja o kakovosti pri svojem bodočem inženirskem delu,
- kooperativnost, usposobljenost za timsko delo,
- sposobnost interdisciplinarnega povezovanja znanja,
- razvoj strokovnih veščin in spretnosti na področju zagotavljanja kakovosti proizvodov/storitev,
- sposobnost stalne uporabe informacijske in komunikacijske tehnologije na svojem strokovnem področju.

Objectives and competences:

The learning unit mainly contributes to the development of the following general and specific competences:

- the ability to identify the problem and analyze it, as well as foresee operational solutions in terms of quality assurance,
- the ability to master standard development methods, procedures and processes,
- knowledge of basic quality assurance tools and techniques in all phases of product/service creation,
- the ability to use the acquired theoretical knowledge about quality in your future engineering work,
- cooperativeness, teamwork skills,
- the ability to connect knowledge interdisciplinary,
- development of professional skills and abilities in the field of product/service quality assurance,
- the ability to constantly use information and communication technology in one's professional field.

Predvideni študijski rezultati:

Znanje in razumevanje:

Študent/študentka:

- se seznani s splošnimi pojmi in pomenom kakovosti v delovnem okolju in vsakdanjem življenju,
- se seznani z osnovnimi pojmi povezanimi z nastajanjem proizvoda/storitve ter vlogo zagotavljanja kakovosti pri tem,
- spozna tendence v zvezi s kakovostjo proizvoda/storitve glede na sistem vodenja

Intended learning outcomes:

Knowledge and understanding:

Student:

- becomes familiar with the general concepts and importance of quality in the work environment and in daily life,
- becomes familiar with the basic concepts related to the creation of a product/service and the role of quality assurance in this context,

kakovosti, varnosti in zdravja pri delu, sistem ravnanja z okoljem ter energetske učinkovitostjo procesov, in s tem ustvari osebni odnos do kakovosti v širšem kontekstu,

- spozna sodobne trende pri razvoju novih pristopov pri zagotavljanju kakovosti, glede na stalni razvoj proizvodnih tehnologij.

- learns the trends related to the quality of the product/service in relation to the quality management system, occupational health and safety, environmental management system and energy efficiency of processes, thereby developing a personal attitude towards quality in a broader context,

learns about modern trends in the development of new approaches to quality assurance in view of the constant development of production technologies.

Metode poučevanja in učenja:

- Avditorna oblika poučevanja z uporabo sodobnih in uveljavljenih tehnik.
- Vključevanje gostujočih predavateljev, priznanih strokovnjakov iz področja kakovosti.
- Računske vaje in analiza praktičnih primerov iz proizvodnega okolja.
- Individualne seminarske naloge iz področja zagotavljanja kakovosti.

Learning and teaching methods:

- Auditory form of teaching using modern and established techniques.
- Involvement of guest lecturers, recognized experts in the field of quality.
- Calculation tutorials and analysis of practical examples from the production environment.
- Individual seminar assignments in the field of quality assurance.

Delež (v %) /

Načini ocenjevanja:

Weight (in %)

Assessment:

<p>Način (pisni izpit, ustno izpraševanje, naloge, projekt):</p> <ul style="list-style-type: none"> • pisni izpit • ustni izpit • projektno in seminarsko delo <p>Ocenjevalna lestvica: ECTS.</p>		<p>Type (examination, oral, coursework, project):</p> <ul style="list-style-type: none"> • written exam • verbal exam • project and seminar work <p>Grading scale: ECTS.</p>
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