

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	ORGANSKI PREMAZI
Course Title:	ORGANIC COATINGS

Študijski program in stopnja Study Programme and Level	Študijska smer Study Field	Letnik Academic Year	Semester Semester
MAG Kemijsko inženirstvo, 2. stopnja	/	2.	3.
USP Chemical Engineering, 2 nd Cycle	/	2 nd	3 rd

Vrsta predmeta / Course Type:

izbirni strokovni / Elective Professional

Univerzitetna koda predmeta / University Course Code:

IN2110

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje Work	Druge oblike študija	Samost. delo Individual Work	ECTS
45	15	15 LV	/	/	75	5

Nosilec predmeta / Lecturer:

prof. dr. Matjaž Krajnc / Dr. Matjaž Krajnc, Full Professor

Jeziki / Languages:

Predavanja / Lectures: slovenski / Slovenian

Vaje / Tutorial: slovenski / Slovenian

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

Študent oz. kandidat mora imeti predmet opredeljen kot študijsko obveznost.

Prerequisites:

The course has to be assigned to the student.

Vsebina:

Temeljna vsebinska področja predmeta so:

- formiranje premaznih filmov;
- tokovne lastnosti organskih premazov;
- mehanske lastnosti organskih premazov;
- stabilnost in odpornost organskih premazov na vplive okolja;
- adhezija;
- korozijska zaščita premazov,
- lateksi,
- pregled veziv in njihove lastnosti,
- topila,
- barva in pigmenti;
- pigmentne disperzije;
- načini aplikacije organskih premazov,
- defekti premaznega filma;
- formulacije in priprava organskih premazov

Content (Syllabus outline):

Formation of organic coatings, flow characteristics, mechanical properties, stability and resistance to environmental effects, adhesion, corrosion protection, latexes, solvents, colour and pigments, pigment dispersions, ways of applications of organic coatings, organic coating defects, formulations and preparations, scale-up and transfer of technology to the production.

(izbrani primeri);

- povečevalni kriteriji in prenos tehnologije v proizvodnjo.

Temeljna literatura in viri / Readings:

- Z. W. Wicks, F. N. Jones, S. P. Pappas, Organic Coatings: Science and Technology, 2. izdaja, John Wiley & Sons, Inc., New York, 1999, 595 str., (60 %).

Dopolnilna literatura:

- T. C. Patton, Paint Flow and Pigment Dispersion: A Rheological Approach to Coating and Ink Technology, 2. izdaja, John Wiley & Sons, Inc., New York, 1979, 615 str.

Cilji in kompetence:

Cilj predmeta je, da študentje osvojijo različne stopnje razvoja organskih premazov.

Študentje pri predmetu pridobijo naslednje specifične kompetence:

- poznavanje nastanka oz. formiranja premaznega filma;
- poznavanje tokovnih lastnosti različnih premazov;
- poznavanje ključnih lastnosti premazov in premaznih filmov z vidika njihove uporabe;
- poznavanje premaznih komponent in njihove vloge;
- poznavanje načina aplikacije premazov;
- razumevanje izbranih primerov formulacij in priprave organskih premazov;
- razumevanje povečevalnih kriterijev in prenos tehnologije v proizvodnjo.

Objectives and Competences:

Understanding the formation of coatings.
Understanding flow characteristics of various coatings. Knowing key characteristics of coatings from the application perspective.
Knowing coating components and their roles.
Knowing the application of coatings.
Understanding selected cases of formulation and preparation of organic coatings.
Understanding the scale-up criteria and transfer of a technology to production.

Predvideni študijski rezultati:

Znanje in razumevanje

Študent osvoji znanja o lastnostih organskih premazov in njihovih filmov. Razume nastanek premaznega filma. Razume vpliv sestave premaza na lastnosti premaza in premaznega filma. Pozna osnovno formulacijo premaza. Pozna povečevalne kriterije za prenos tehnologije v proizvodni proces.

Uporaba

Pridobljena znanja je študent sposoben uporabiti pri svojem raziskovalnem delu na področju razvoja in optimizacije organskih premazov.

Intended Learning Outcomes:

Knowledge and Comprehension

Understanding different levels in the development of organic coatings.

Application

Student is able to apply the knowledge at independent research and development work in the area of organic coatings development and optimization.

<u>Refleksija</u> Študent je sposoben sintetizirati znanja s področij polimerne kemije, polimernih materialov ter produktnega inženirstva.	<u>Analysis</u> Student is able of synthesis of polymer chemistry, polymer materials and product engineering scientific fields.
<u>Prenosljive spretnosti</u> Študent je sposoben uporabljati tujo in domačo strokovno literaturo. Sposoben je samostojno sklepati, definirati problem, postavljati zaključke in problem reševati. Sposoben je zbirati in obdelovati podatke, predstaviti rezultate v pisni in ustni obliki.	<u>Skill-transference Ability</u> Ability to identify and solve problems, to collect and interpret data, to analyse results critically and to synthesize knowledge.

Metode poučevanja in učenja:

Predavanja, seminarji, vaje

Learning and Teaching Methods:

Lectures, seminars, laboratory practice

Načini ocenjevanja:

Pisni in ustni izpit. 70%
 Seminarska naloga. 30%
 Opravljene laboratorijske vaje in seminarska naloga so pogoj za pristop k izpitu.

Delež (v %) /
 Weight (in %)

Assessment:

Written and oral exam
 Project work.

Reference nosilca / Lecturer's references:

- ŠEBENIK, Urška, **KRAJNC, Matjaž**. Semibatch emulsion polymerization of methyl methacrylate using different polyurethane particles. *Journal of polymer science. Part A, Polymer chemistry*, ISSN 0887-624X, 2005, vol. 43, no. 4, str. 844-858, graf. prikazi. [COBISS.SI-ID [26393349](#)]
- ŠEBENIK, Urška, **KRAJNC, Matjaž**. Properties of acrylic-polyurethane hybrid emulsions synthesized by the semibatch emulsion copolymerization of acrylates using different polyurethane particles. *Journal of polymer science. Part A, Polymer chemistry*, ISSN 0887-624X, 2005, vol. 43, no. 18, str. 4050-4069. [COBISS.SI-ID [26883589](#)]
- ŠEBENIK, Urška, **KRAJNC, Matjaž**. Seeded semibatch emulsion copolymerization of methyl methacrylate and butyl acrylate using polyurethane dispersion : effect of soft segment length on kinetics. *Colloids and surfaces. A, Physicochemical and Engineering Aspects*, ISSN 0927-7757. [Print ed.], 2004, vol. 233, no. 1/3, str. 51-62, graf. prikazi. [COBISS.SI-ID [25609989](#)]