

Course Unit Descriptor

Study Programme: Chemical Engineering			
Course Unit Title: Fluidized bed processes			
Course Unit Code: DHI19			
Name of Lecturer(s): Prof. Branislava Nikolovski, PhD; Assoc. Prof. Marija Radojković, PhD			
Type and Level of Studies: Doctoral Academic Studies			
Course Status (compulsory/elective): Elective			
Semester (winter/summer): Winter and Summer			
Language of instruction: English			
Mode of course unit delivery (face-to-face/distance learning): Face-to-face			
Number of ECTS Allocated: 10			
Prerequisites: Unit Operations I, Unit Operations II			
Course Aims: The course is aimed to provide students an opportunity to acquire the latest scientific knowledge and academic skills in the field of transfer phenomena in fluidized beds. Familiarity with the wide application of the unit operations of fluidization in the chemical, food, pharmaceutical industry and biotechnology.			
Learning Outcomes: After completing and passing the course in this subject, students will be able to engage in more complex calculations and design of complex devices in which processes take place in a fluidized bed, as well as for independent research work. On the other hand, by mastering the material taught in this subject, students will be more prepared to use commercial application software in chemical engineering.			
Syllabus: <i>Theory</i> Describing the behavior of fluidized beds. Aerodynamics of a fluidized bed, Heat transfer in a fluidized bed. Characteristics of aggregative fluidization. Applications of fluidization in the chemical, food, pharmaceutical industry and biotechnology. <i>Practice</i> Review of modern scientific and professional journals and publications, selection and use of valid information on different fluidized systems. A studio research paper that includes a comparison of conventional and modern techniques on selected examples.			
Required Reading: Ertel, G. et al.: Handbook of Heterogeneous Catalysis: Fluid Catalytic cracking, John Wiley & Sons, 2008. McCabe. W., Smith., J., Harriott, P.: Unit Operations Of Chemical Engineering, 7th Ed, McCabe And Smith, McGraw Hill international editions, Chemical Engineering series, 2005. Oka, S.: Fluidized bed combustion, CRC Press, 2003. Smith, P.G.: Applications of fluidization to food processing, Blackwell Science Publishing, 2007. Yang, W-Ch.:Handbook of Fluidization and Fluid-Particle systems, Marcel Dekker, Inc. Tylor and Francis Group, 2003.			
Weekly Contact Hours:	Lectures: 4	Practical work: 2	
Teaching Methods: Lectures and students group work			
Knowledge Assessment (maximum of 100 points):			
Pre-exam obligations	points	Final exam	points
Active class participation	10	oral exam	50
Seminar(s)	40		