Course Unit Descriptor

Study Programme: Production engineering

Course Unit Title: Collaborative Engineering

Course Unit Code: DP022

Name of Lecturer(s): Milošević Mijodrag, Lukić Dejan

Type and Level of Studies: doctorate

Course Status (compulsory/elective): elective

Semester (winter/ summer): summer

Language of instruction: english

Mode of course unit delivery (face-to-face/distance learning): face-to-face

Number of ECTS Allocated: 10

Prerequisites: none

Course Aims:.

The basic aim is introduction to the concept and principles of collaborative engineering in framework of distributed manufacturing systems.

Learning Outcomes:
Introduction to modern approach in manufacturing by application of collaborative engineering concept. Possibilities and methods of WEB-based collaborative engineering within distributive manufacturing systems.

Syllabus.
Collaborative design approach. Collaborative design environments. Collaborative product development systems. Aspects of distribution and collaboration. Synchronous and asynchronous communication. Collaborative design functions. Collaboration based on visualization. Co-design collaboration. Hierarchical (CE-based) collaboration. Collaborative systems based on visualization. Efficient 3D visualization of objects in web applications. Co-design collaborative systems. Architecture of co-design collaborative systems. Coordination and management of collaborative design processes. Hierarchical (CE-based) collaborative systems. Hierarchical collaborative environment. Mechanisms for system integration. Data-centric integration. Service-centric integration. Collaborative and distributed process planning. Overview of the developed systems for collaborative and distributed process planning.

Required Reading:
Li, W.,D., Ong, S.K., Nee, A.Y.C. Integrated and Collaborative Product Development Environment World Scientific 2006
Wang, L., Nee, Y.C.A.: Collaborative Design and Planning for Digital Manufacturing Springer-Verlag London Ltd.2009
Kamrani, A.K., Nasr, E.A. Collaborative Engineering - Theory and Practice Springer Science+Business Media 2008
Coleman, D., Levine, S. Collaboration 2.0 - Technology and Best Practices for Successful Collaboration in a Web 2.0 World HappyAbout.info 2008
Kühnle, H. Distributed Manufacturing - Paradigm, Concept, Solutions and Examples Springer-Verlag London Ltd. 2010
McClellan, M. Collaborative Manufacturing St. Lucie Press 2003
Kock, N. Encyclopedia of E-Collaboration IGI Publishing 2008

Weekly Contact Hours:2	**Lectures: 5**	**Practical work:**

Teaching Methods:
Lectures, independent study and research work, consultations. Lectures are held in combined way. Theoretical part is presented in lectures and it is followed by appropriate exampled contributing easier understanding of the subject content. Students expand knowledge through study and research work, studying of scientific journals and other literature. In cooperation with professor, student is enabled ot independently write scientific papers.

Knowledge Assessment (maximum of 100 points):

Pre-exam obligations	points	**Final exam**	points
Attendance			
Computer exercises			
Tests (4x)			