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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty** | Faculty of Mechanical Engineering |
| **GENERAL INFORMATION** |
| Study program  | **Manufacturing & Information Technologies** |
| Study Module (if applicable) | -  |
| Course title | CAPP-CAM systems |
| Level of study | ☐Bachelor × Master’s ☐ Doctoral |
| Type of course | ☐ Obligatory× Elective |
| Semester  | ☐ Autumn ×Spring |
| Year of study  | First |
| Number of ECTS allocated | 6 |
| Name of lecturer/lecturers | Dr Milos S. Stojkovic, Dr Milan Trifunovic |
| Teaching mode | ×Lectures ×Group tutorials ☐ Individual tutorials×Laboratory work × Project work ☐ Seminar☐Distance learning ☐ Blended learning × Other (Workshop tour) |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| *The purpose of the course is to teach students modern CAPP / CAM systems as well as to train them to use these systems for planning and designing of manufacturing processes,for generating complex executive code for the CNC machines and robots as well as for the integration of complex manufacturing systems.**The expected outcome: After completing the course and passing the exam, the student should be able to:*1. *Design, simulate and analyse a wide variety of machining and control operationsusing modern CAPP / CAM systems.*
2. *Generate executive code (APT and G-code) for CNC machining andmeasuring machines as well as operating lists,*
3. *Apply the direct numerical control (DNC) in the integration of complex manufacturingsystems*
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| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| 1. *Introduction to the subject - CAx systems and CAPP / CAM application,*
2. *Input formats of CAD models (CAD Data Exchange) (DXF, IGES, STEP, STL)*
3. *Output formats of CAPP / CAM model (CL, APT and G-code, operating lists)*
4. *CAPP methods (variant, generative and hybridCAPP design methods)*
5. *The application of databases, rules (knowledge) and expert systems in CAPP / CAM (tool selection, fixtures, equipment, machining geometry and parameters selection and decision-making)*
6. *The machining geometry (coordinatesystems, machining or surfaces to be control, geom. of tools and toolpaths)*
7. *Setting technological parameters and CNC system working modes,*
8. *Analysis, simulation / verification and optimization of machining/control sequences and operations,*
9. *Design of concurrentmachining operations (group machining sequences) by CAM*
10. *Direct numerical control of machining and measuring machines and computer systems for managing intelligent and flexible manufacturing systems.*
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| **LANGUAGE OF INSTRUCTION** |
| ×Serbian (complete course) × English (complete course) ☐ Other \_\_\_\_\_\_\_\_\_\_\_\_\_ (complete course)×Serbian with English mentoring ☐Serbian with other mentoring \_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **ASSESSMENT METHODS AND CRITERIA** |
| **Pre exam duties** | **Points** | **Final exam** | **points** |
| **Activity during lectures** | **15** | **Test of CAPP/CAM skills on in time (Written examination)** | **35** |
| **Practical teaching** |  | **Oral examination** | **15** |
| **Two projects (Teaching colloquia)** | **35** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |
| **Attendance to the lectures and exercises as well as preparation of the project tasks is mandatory** |