



Европейски съюз

ОПЕРАТИВНА ПРОГРАМА  
„РАЗВИТИЕ НА ЧОВЕШКИТЕ РЕСУРСИ” 2007-2013



Европейски социален фонд

МИНИСТЕРСТВО НА ОБРАЗОВАНИЕТО И НАУКАТА

Проект BG051PO001-3.1.07-0048 „Актуализиране на учебните планове и програми на специалностите във ФЕТТ, ФТК и МТФ на ТУ-София и създаване на нова съвместна магистърска специалност в съответствие с потребностите на пазара на труда”

## DESCRIPTION OF THE COURSE

Name of the course: <b>3D modelling and simulation of micro&amp;nano systems</b>	Number: MMTN 08.1	Semester: II
Type of teaching: <b>Lectures (L), Seminars(S) and Labs (Lab.)</b>	Lessons per week: L- 1 h; S-1 h, Lab- 2 h	Number of credits: <b>5</b>

**LECTURER:** Prof. Ph.D. Georgi D. Todorov (TMMM, FIT), tel. 9653323, e-mail: [gdt@tu-sofia.bg](mailto:gdt@tu-sofia.bg), Technical University of Sofia

**COURSE STATUS IN THE CURRICULUM:** Optional for the students of specialty “Micro Technologies& Nano Engineering” of the Faculty of Electronics and Faculty of Industrial Technology, Master Engineering degree.

**AIMS AND OBJECTIVES OF THE COURSE:** At the end of the course the students are expected to be able to apply 3D System in Micro Systems, especially in 3D Design and Simulation. To have advanced knowledge and practical skills to design and simulate for subsequent training in specialized courses in this area and following design projects.

### **DESCRIPTION OF THE COURSE:**

The course is focused to increasing and enlarging of student’s practical skills in field of effective application of 3D intelligence modelers for design and optimization of micro systems and behavior simulation . In course are used CAD/CAE Systems; Finite Elements Method software for design calculations and analyses and Software for process and system behavior simulation.

### **PREREQUISITES:**

Necessary basic knowledge in computers and foregoing courses in Mechanical Engineering, CAD/CAE Systems

### **TEACHING METHODS:**

Lectures are read using slides. Also there is a corresponding textbook in script format. The laboratory work is fully computer-aided with a corresponding to the given problem written manuals. Each student follows common project for entire semester, separated to “ step by step” approach. Each step have to be done during the laboratory class in same order.

### **METHODS OF ASSESSMENT:**

The acquired knowledge during the laboratory work is assessed by the final project presentation. On the end of the second semester - a written exam.

### **INSTRUCTION LANGUAGE: Bulgarian**

### **BIBLIOGRAPHY:**

1. ТОДОРОВ, Г Скрипт курс лекции по КІМІПС
2. ТОДОРОВ, Г., Г. НИКОЛЧЕВА. КОМПЮТЪРНО ПРОЕКТИРАНЕ НА СЛОЖНИ ФОРМООБРАЗУВАЩИ ПОВЪРХНИНИ(RAPID TOOLING), Изд.ТУ София, София 2011, ISBN 978-954-438-915-4, 330 стр ;
3. РНАМ, D.T., S.S. DIMOV. RAPID MANUFACTURING. SPRINGER-VERLAG LONDON LIMITED, 2001.
4. Тодоров, Н., Д. Чакърски. Автоматизация на проектирането в машиностроенето. С, Техника, 1994,
5. Kunwoo, lee,-PRINCIPLES OF CAD/CAM/CAE Systems, Addison Wesley Publishers Ltd, New York,2009