



## 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>Fundamental principles and application of micro and nanosystems</b>	Code: <b>MMTN03</b>	Semester: 1
Type of teaching: Lectures and laboratory work	Lessons per week L-2 hours LW-2 hours	Number of credits <b>6</b>

**LECTURERS:**

Prof. Ph. D. Todor Todorov, phone: 9652794, email: tst@tu-sofia.bg, Department of Theory of Mechanisms and machines;

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Technical University of Sofia, Faculty of Industrial Technology.

**COURSE STATUS IN THE CURRICULUM:**

Compulsory subject for the students of specialty "Microtechnology and nanoengineering" MSc program of FIT.

**AIMS AND OBJECTIVES OF THE COURSE**

The aim of the education of the subject "Fundamental principles and application of micro and nanosystems" is students to acquire knowledge for the basic operational principles, design and application of micro and nanosystems. The so obtained knowledge and abilities allow the students to solve problems involving the design and application of micro and nanosystems.

**DESCRIPTION OF THE COURSE:**

The fundamental transducing principles and the various applications of the micro and nanosystems are considered in the course as it is accented on the specific micro and nanoscale features of these systems.

The students learn modern micro and nanosystems which are applied in miniaturized portable devices, sensors and actuators with diverse application.

**PREREQUISITES:**

Knowledge of mechanics, strength of materials, theory of elasticity, electrical engineering, electronics and material science are required.

**TEACHING METHODS:**

The lectures are conducted by the aim of samples and video projector. Laboratory works are implemented by the help of modern evaluation setups. There is optional course project in this subject.

**METHOD OF ASSESSMENT:** Written exam in the end of 1th semester.

**INSTRUCTION LANGUAGE:** Bulgarian.

- BIBLIOGRAPHY:** Todorov T., MEMS modeling and application, Part 1: Basic transducer principles, TU-Sofia, 2013, 211 p. (in Bulgarian).
- Todorov G., Todorov T., Manual for laboratory work of technology and design of MEMS, TU-Sofia, 2001, 81 p. (in Bulgarian).
- Gianchandani Y. B., Tabata O, Zappe H, Comprehensive Microsystems, Elsevier, 2007, p.1805
- Nen T. R., Uusitalo M., A., Ikkala O., Inen A. R., Nanotechnologies for Future Mobile Devices, Cambridge University press, 2010.