



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: Thin film electronics	Code: MMTN 10.03	Semester: 2
Type of teaching: Lectures, seminar and laboratory works	Lessons per week: L-1 h, SW – 1 h, LW-2 h	Number of credits: 5

LECTURER(S):

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COURSE STATUS IN THE CURRICULUM:

“Thin film electronics” is optional course in specialty "Microtechnology and nanoengineering" for Master of Science degree.

AIMS AND OBJECTIVES OF THE COURSE:

The aim of the course is to give knowledge to the students about the properties and application of the most advanced devices in the field of microelectronics, designed as a organic and inorganic coatings with nanoscale thickness on solid or flexible substrate.

DESCRIPTION OF THE COURSE:

There will be reviewed and studied practically thin-film technologies for fabrication of passive components in microelectronic circuits; Thin-film transistors (TFT); Thin film optical components and thin-film optoelectronic devices (LEDs and photovoltaics); Modern displays for smartphones and e-readers. micro displays; Thin-film batteries and other microelectronic alternative sources of energy; Thin-film sensor elements. Applications in medicine and for control of environmental parameters.

PREREQUISITES:

Knowledge in material science, nanomaterials, physics, nanochemistry surface technology for micro-and nanosystems is necessary.

TEACHING METHODS:

Lectures are held in hall with multimedia. The seminars are related to the laboratory works' topics. The laboratory group conduct experimental topic under the guidance of assistant.

METHOD OF ASSESSMENT:

Assessment (current control) at the end of the second semester, which consists of two components: assessment of laboratory and seminars (which is the average of the protocols and homework) + scores from 2 tests conducted in the middle of the semester and at the end of the semester, covering material from lectures, seminars and laboratory works.

TEACHING LANGUAGE: Bulgarian (with possibility for English teaching).

BIBLIOGRAPHY:

1. M. Stanisavljevic, • A. Schmid, •Y. Leblebici, Reliability of Nanoscale Circuits and Systems. Methodologies and Circuit Architectures, Springer, 2011.
2. Nanoelectronics and information technologies, Reiner Waser (Ed.), WILEY-VCH, 2012.