School and Subject Group		School of Engineering and Applied Science, Electronic Engineering	
Module Code		EE7002	
Module Title		Electronic Sensors	
Module Type		Taught	
Date of introduction of new module		2010	
Level		7	Credit Value 10
Programme(s) in which module is available		MSc in Sensing	
Involvement of Other Schools		None	
Resource Split			
Name of Module Co-ordinator		Dr. Alex Rozhin, Dr. Haitao Ye	
Name of Module Advisor		Dr. V. Mezentsev	
Related Modules	Pre-requisites	None	
	Co-requisites	None	
	Prohibited Combinations	None	
Minimum and Maximum Intake Sizes		None – None	

Aims of the Module
To provide an introduction to the materials, technologies, devices and signal processing used in electronic sensing systems.

Summary of Content

Fundamentals of Measurements: error and quality; units and standards; instruments and noise; mathematical methods of data processing.

Fundamentals of Sensors: active and passive sensors; static performance; dynamic performance; strain gauges; linear variable differential transformer; piezoelectric and piezoresistive sensors; temperature sensors; accelerometers; electromagnetic sensors.

Signal Processing, Amplifiers and Detectors: signal conditioning; signal amplifiers; filters; integrators and differentiators, phase-sensitive detectors

Sensor Materials and Technologies: overview of sensor materials; nanomaterials synthesis and functionalisation; micro/nano fabrication; nanomaterials characterisation.

Summary of Methods and Frequency of Teaching	**Lectures** 24 hours. **Tutorials** 3 hours. **Laboratory** 9 hours.

Summary of Methods of Assessment and Feedback including Formative Feedback

Assessment Type	*Status*	*%*	*Requirements*	*Due*
Written Report	Compulsory	30.0	Laboratory Reports	-
Formal Examination	Compulsory	70.0	1.5 hr Formal Examination Marks released via local online grades page prior to examination board.	-

Module Outcomes - what the student should gain from successful completion of the module:	Learning and Teaching and Assessment Strategies to enable outcomes to be achieved and demonstrated	
	Learning and Teaching Methods	Assessment Methods
A. Knowledge and Understanding		

materials, technologies, devices and signal processing used in electronic sensing systems.	Laboratory, Lectures, Tutorials	Formal Examination, Written Report
B. Intellectual Skills		
convey complex ideas in a structured scholarly manner and to perform independent work in problem solving	Laboratory	Written Report
C. Professional Skills		
D. Transferable Skills		
communication skills		Written Report

Please provide either or both of:	
(i) Introductory Learning Resources	1. Blackboard
(ii) Core Texts	TBA
Reading Lists	Attached
Specification completed by:	Dr. Alex Rozhin
Date	07-Nov-2009
Date module approved by Teaching Committee(s)	
Date module approved by School Board(s)	