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DEPARTMENT OF BIOMEDICAL ENGINEERING  
INTRODUCTION TO BIOMEDICAL ENGINEERING – IBIO-1010

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Credits and contact hours

	Credits	Contact hours (per week)	Sessions per week	Offer frequency
Course	3	3	2	Yearly
Complementary class				
Laboratory	0	1.5	1	

Instructor's or course coordinator's name: Diana Gaitán

Main Textbooks:

- *Introduction to Biomedical Engineering*, Elsevier Academic Press. 2<sup>nd</sup> edition. Enderle, J.D., Blanchard S.M. & Bronzino J.D. 2005

Specific course information

a. Brief description of the content of the course (catalog description)

The course is intended to provide first semester students the necessary skills to identify, explain and apply basic concepts and tools in Biomedical Engineering, and those common to other Engineering domains, in the understanding and solution of problems in biology and medicine. After this course, the student will be able to differentiate Biomedical Engineering from other Engineering disciplines, as well as, to develop appropriate skills on communication, teamwork and evaluation. The course will provide students the necessary skills to identify, interpret and execute the different rights and duties she/he acquires as student of the University of Los Andes as well as the services the university offers.

b. Prerequisites

None

c. Co-requisites

IBIO-1011 Introduction to Biomedical Engineering Lab

d. Indicate whether a required, elective or selective elective course in the program

Required	Elective	Selective
X		

### Specific goals for the course

#### a. Specific outcomes of instruction

At the end of this course, students will be able to:

- Identify and describe basic biological and engineering concepts and tools associated with Biomedical Engineering.
- Describe different applications of basic research on Biomedical Engineering.
- Identify and describe different ethical aspects associated with the research on Biomedical Engineering, innovation and copyright.

#### b. Explicitly indicate which of the student outcomes (listed in Criterion 3 or any other outcomes) are addressed by the course

OUTCOME C: An ability to design a system component or process to meet desired needs

OUTCOME D: An ability to function on multi-disciplinary teams

OUTCOME F: An understanding of professional and ethical responsibility

OUTCOME G: An ability to communicate effectively

OUTCOME H: A broad education to understand the impact of engineering solutions in a global and societal context

OUTCOME I: Recognition of the need for, and ability to engage in life-long learning

OUTCOME J: Knowledge of contemporary issues

### Brief list of topics to be covered

Topic	Suggested duration (weeks)
Ethical aspects associated with research on biomedical engineering	2
Basic concepts on Modeling of physiological systems	1.5
Basic concepts on Biomaterials	1.5
Basic concepts on Biomechanics	1.5
Basic concepts on Cardiovascular dynamics	1.5
Basic concepts on Tissue engineering	1.5
Basic concepts on Biomedical signal processing and instrumentation	1.5
Basic concepts on Medical images	1.5
Basic concepts on Biotechnology	1.5
Basic concepts on Hospital logistic	1