
DEPARTMENT OF BIOMEDICAL ENGINEERING
TRANSPORT PHENOMENA IN BIOLOGICAL SYSTEMS – IBIO-3160

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: Jaebum Son

Main Textbooks:

- Hibbeler RC, Engineering Mechanics: Statics, 13th Ed, Prentice Hall, 2013 (9 copies at the library).
- Hibbeler RC, Mechanics of Materials, 9th Ed, Prentice Hall, 2014 (17 copies at the library).
- Hibbeler RC, Dynamics, Dynamics, 10th Ed, Prentice Hall, 2004 (10 copies at the library).

Specific course information

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

This course covers fundamental mechanical theories of statics, solid mechanics, and kinematics, with emphasis on biological systems. Even though the background theories are very similar to those of mechanical engineering, we will try to find applications in biological systems instead of mechanical mechanisms. We will also learn basic mechanism design and its stress analysis for biomedical engineering applications through laboratories.

b. Prerequisites

IBIO-2102 Quantitative Physiology for Biomedical Engineering
IBIO2240- Scientific programming

c. Co-requisites

IBIO-3161 Biomechanics Lab; LEN-2999 English reading requirement

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:

- Solve basic biomechanical problems requiring knowledge of statics, solid mechanics and kinematics.
- Understand stress and strain concept and how to use it for biomechanical applications
- Understand kinematics in human system and how to apply it to analyze human motion
- Use engineering software for the design using biomechanical theories
- Use engineering software to run stress analysis

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

OUTCOME K: An ability to use the techniques, skills, and modern engineering tools necessary for engineering

Brief list of topics to be covered

Topic	Suggested duration (weeks)
Statics	7
Solid mechanics	4
Kinematics	4