

MATSCEN 4382.02 (Approved): Design and Professional Practice II, Biomedical

Course Description

Second course in a two-course MSE Senior Design sequence with a biomedical engineering emphasis. Applying design principles; challenges of biomedical device design; engineering and testing devices that focus on helping persons with disabilities.

Transcript Abbreviation: Sr Design, Biomed

Grading Plan: Letter Grade

Course Deliveries: Classroom

Course Levels: Undergrad

Student Ranks: Senior

Course Offerings: Spring

Flex Scheduled Course: Never

Course Frequency: Every Year

Course Length: 14 Week

Credits: 3.0

Repeatable: No

Time Distribution: 3.0 hr Lec

Expected out-of-class hours per week: 6.0

Graded Component: Lecture

Credit by Examination: No

Admission Condition: No

Off Campus: Never

Campus Locations: Columbus

Prerequisites and Co-requisites: 4381.02; enrollment as MATSCEN-BS major; or permission of the instructor.

Exclusions:

Cross-Listings: BME 4902

Course Rationale: Permits MSE students with an interest in biomedical engineering applications of MSE to work in design teams with BME students.

The course is required for this unit's degrees, majors, and/or minors: Yes

The course is a GEC: No

The course is an elective (for this or other units) or is a service course for other units: No

Subject/CIP Code: 14.1801

Subsidy Level: Baccalaureate Course

Programs

Abbreviation	Description
MATSCEN	Materials Science and Engineering

General Information

Second course in a two-course MSE Senior Design sequence. The course sequence provides a capstone for undergraduates in MSE and is focused on hands-on design experiences that help persons with disabilities, technical communication, and learning the commercialization process.

Course Goals

Students will be able to design and build a device by working in a team on a project to aid clients with disabilities
Students will be able to abstract engineering specifications from clinical needs
Students will be able to implement, manage, and document the engineering design process
Students will be able to make a professional presentation and write a technical team report.

Course Topics

Topic	Lec	Rec	Lab	Cli	IS	Sem	FE	Wor
Build Devices	20.0							
Design team updates and meetings	12.0							
Test Devices	10.0							

Grades

Aspect	Percent
Group update presentations	20%
Group final design presentation	50%
Homework and reports	30%

Representative Textbooks and Other Course Materials

Title	Author
<i>Design of Biomedical Devices and Systems, Marcel Dekker, 2003</i>	King, P.H. and R.C. Fries

ABET-EAC Criterion 3 Outcomes

Course Contribution		College Outcome
**	a	An ability to apply knowledge of mathematics, science, and engineering.
***	b	An ability to design and conduct experiments, as well as to analyze and interpret data.
**	c	An ability to design a system, component, or process to meet desired needs.
***	d	An ability to function on multi-disciplinary teams.
***	e	An ability to identify, formulate, and solve engineering problems.
*	f	An understanding of professional and ethical responsibility.
**	g	An ability to communicate effectively.
*	h	The broad education necessary to understand the impact of engineering solutions in a global and societal context.
*	i	A recognition of the need for, and an ability to engage in life-long learning.
**	j	A knowledge of contemporary issues.
***	k	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

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