



Share and Learns:
Building the Best BME Intro Course

10/20/2021 - 1:00 pm



Leads

- Tanya Nocera, PhD
- Alexis Ortiz-Rosario, PhD
- Rachel Childers, PhD



THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Share and Learns - Overview

- Research “Brown Bag” Meetings on BME Education
- Goal: foster collaborations on research topics
- Let’s come together as a community!
 - BEEC disclaimer: Your idea is yours! Please be respectful of everyone’s ideas. BEEC does not claim ownership of your ideas.
 - The request: any ideas you generate is yours to keep working on. If 6 months after this conference, you have no interest in pursuing it, please consider allowing others to think about it.

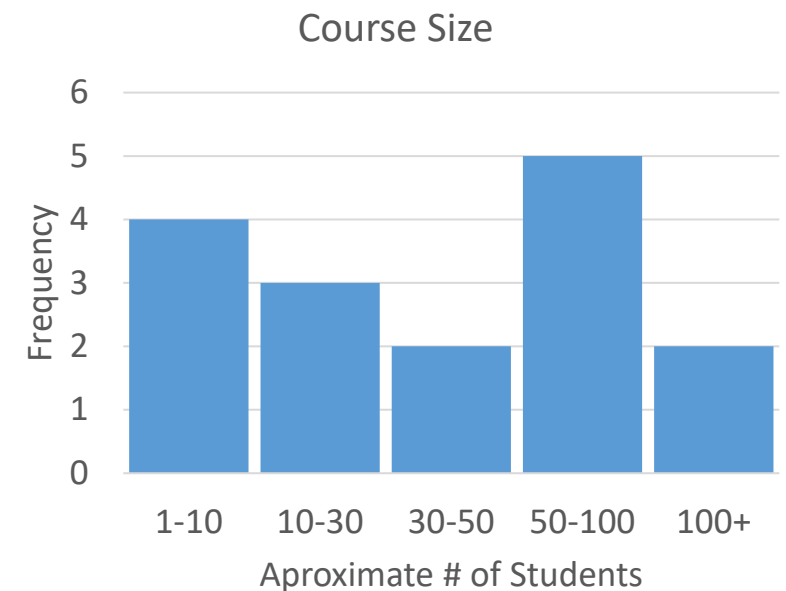
Agenda

- Our Share & Learn Goals: "Building the Best BME Intro Course" (10 minutes)
 - Survey Summary
- Breakout Room 1: What are you glad your BME Intro course teaches or what do you wish it taught? Record on Jamboard. (15 minutes)
- Report Out (5 minutes)
- Breakout Room 2: Share your favorite Intro-level BME assignment, summarize on Jamboard. (15 minutes)
- Report out (5 minutes)
- Questions/Open Discussion

Survey Summary

Survey Summary: Curriculum Year & Textbooks

- 19 respondents (thanks!)
- 75% Intro BME course in 1st year, 25% in 2nd year.
- Textbooks
 - 50% No textbook required
 - ~17% - Medical Device Design and Regulation (DeMarco)
 - ~8% each:
 - Introduction to Biomedical Engineering (Douglas Christensen)
 - Introduction to Biomedical Engineering (Enderle)
 - Bioengineering Fundamentals (Saterbak)
 - Human Physiology (Fox) & Medical Physiology (Boron & Boulpaep)

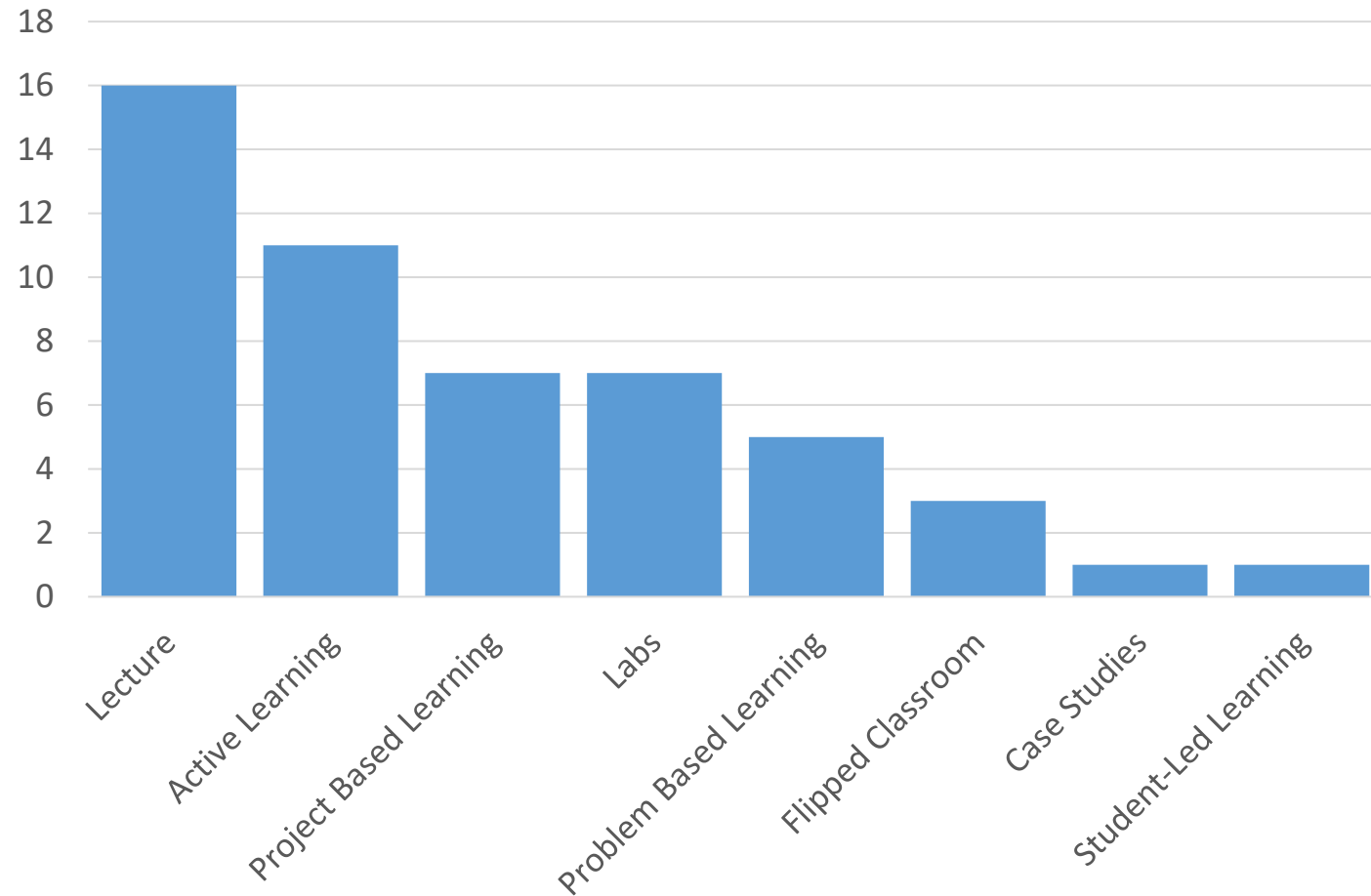


Skill and Topic Frequencies

Skills	Freq
Teamwork	8
Design	7
Oral/Written Communication	7
Problem Solving	7
Programming	5
Excel	4
CAD	4
Problem Needs Identification	4
Microscopy	3
Conservation Approach	3
FDA regulations	3
Analog Circuits	2
Lab Wet Skills	1
3D Printing	1
Mathematical Modeling	1
Digital Circuits	0

Topics	Freq
Design	8
Ethics	6
Regulatory	6
Biomaterials	4
Instrumentation/Circuits	4
Cardiovascular Engr	4
Device Technologies	4
Research Inquiry	4
Biomechanics	3
Bioimaging	3
Tissue Engineering	3
Biotransport/Conservation	2
Drug Delivery	2
Signals & Systems	1
Biomanufacturing	1
Neural Engineering	1
Orthopaedic & Rehabilitati	1

Frequency of Teaching Methods Used



ABET Outcomes Addressed

(1) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering,	13.33%
(2) an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social,	17.78%
(3) an ability to communicate effectively with a range of	15.56%
(4) an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global,	15.56%
(5) an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	13.33%
(6) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use	6.67%
(7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.	17.78%

(a) Applying principles of engineering, biology, human physiology, chemistry, calculus-based physics, mathematics (through differential equations) and statistics;	34.78%
(b) Solving bio/biomedical engineering problems, including those associated with the interaction between living and non-living systems;	30.43%
(c) Analyzing, modeling, designing, and realizing bio/biomedical engineering devices, systems, components, or processes; and	17.39%
(d) Making measurements on and interpreting data from living systems.	17.39%

Breakouts

Jamboard

Please use this link:

https://jamboard.google.com/d/1PYMiGBLbA-JhW1_U64rH5K0PCo9ggA28-6OPAZmUiL0/edit?usp=sharing