

Purdue University
Weldon School of Biomedical Engineering

BME 556: Introduction to Clinical Medicine
(3 credits, two 1.5 hour classes each week)

Instructor:

Charles F. Babbs, MD, PhD
MJIS 1021G
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Office Hours: by arrangement, please E-mail

Assistant: Cindy Ferguson, fergusoc@purdue.edu

Class meeting time: Tuesdays, Thursdays 12:00 p.m. – 1:15 p.m.

Meeting Place: MJIS 1001 and online

Objectives:

(1) To introduce students to the physiology and medicine underlying major human diseases likely to become research targets in biomedical engineering and medical device development and to encourage students to upgrade research target selection to projects that promise to improve patient care, with a major emphasis on pathophysiology and disease mechanisms. The information and intellectual approach offered will help students recognize needs for engineering solutions to current challenges in medicine.

(2) To preview the intellectual content of medical school, including rigor and level of detail, for students considering medicine or medical research as a career, emphasizing the key “11-points” necessary for practical understanding of any disease: definition of the condition, causes, functional abnormalities, structural abnormalities, early signs, history and physical findings, differential diagnosis, special studies (lab, imaging, etc.), treatment strategy, specific steps of treatment, and follow up, as well as current clinical needs for innovation and research opportunities for the future.

Focus: topics and body systems not covered in BME 256, including infectious diseases, cardiopulmonary diseases, hematology-oncology, and gastrointestinal diseases.

Prerequisites: Junior, senior, or graduate standing, BME 256 or equivalent course in systems physiology.

Background of instructor: Charles F. Babbs, MD, PhD, combined > 35 years of teaching, research and industrial experience in medicine, applied physiology, and biomedical engineering.

Course climate:

The instructor supports Purdue's commitment to diversity, and welcome individuals of all ages, backgrounds, citizenships, disabilities, education, ethnicities, family statuses, genders, gender identities, geographical locations, languages, military experience, political views, races, religions, sexual orientations, socioeconomic statuses, and work experiences.

Course requirements and assignments:

- Lectures and whole class discussion
- Reading and Web study
- Exams (3 unit examinations plus one final)

Textbooks and Web sources:

National Library of Medicine medical encyclopedia online:

www.nlm.nih.gov/medlineplus/encyclopedia

Free medical dictionary online:

<https://medical-dictionary.thefreedictionary.com/>

Harvard Medical School Patient Education Center: www.patienteducationcenter.org

Boron WF and Boulpaep EL, Medical Physiology, Elsevier Sanders, 2012 edition available online through Purdue Libraries.

Grade composition (subject to change with notice):

- 3 take home, open-book online section exams, 50 points each
- Final take home, open-book online exam: 50 points GI, 50 points comprehensive

Grading scale:

90-100% A

80-90% B

70-80% C

60-70% D

0--60% F

Make-up exams:

Given at the discretion of the instructor; format may be different from regular exams. Advance notice, when possible, is highly recommended. Students must adhere to Purdue policy as outlined: http://www.purdue.edu/usp/acad_policies/attendance.shtml

Attendance policy:

Students are expected to be present for every meeting of the class. Lecture material is unique. Only the instructor can excuse a student from a course requirement or responsibility. When conflicts or absences can be anticipated, such as for many University sponsored activities and religious observations, the student should inform the instructor of the situation as far in advance as possible. For unanticipated or emergency absences when advance notification to an instructor is not possible, the student should contact the instructor as soon as possible by email.

Policy on academic honesty:

Purdue honor pledge. “As a boilermaker pursuing academic excellence, I pledge to be honest and true in all that I do. Accountable together - we are Purdue.”

The commitment of the acts of cheating, lying, stealing, and deceit in any of their diverse forms (such as the use of ghostwritten papers, the use of substitutes for taking examinations, the use of illegal cribs, plagiarism, and copying during examinations) is dishonest and must not be tolerated. Moreover, knowingly to aid and abet, directly or indirectly, other parties in committing dishonest acts is in itself dishonest. Note that although exams are open book, online exams, they are individual exams, intended to assess knowledge of each individual student; collaboration on exams is not allowed and is considered cheating.

If an individual behaves in any other manner that is unprofessional or unethical during the semester, the course instructor(s) reserves the right to fail the student for that as well. For more information, see the Purdue University Student Conduct Code at: <http://www.purdue.edu/odos/adminstration/codeconduct.htm>.

Emergency statement:

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances.

Campus Emergency Response Procedures:

- Fire Alarm – Evacuate the building using the exits on the east side of RM 1087 or 1083 MJIS. Only gather personal items if it does not jeopardize your safety. Assist those who need help, if possible. Proceed to the front lawn of the Burton Morgan Building. Report to a course instructor your name before leaving the emergency assembly area.
- All hazards warning (examples of hazards: tornado (severe weather)/hazardous materials release/civil unrest/directed by police personnel) – When you hear the all hazards alarm immediately seek shelter. Continue to a safe location (typically the lowest level of the building in an area without windows).
- To report an emergency, call 911. To obtain updates regarding an ongoing emergency, sign up for Purdue Alert text messages, view www.purdue.edu/ea.

- There are nearly 300 Emergency Telephones outdoors across campus and in parking garages that connect directly to the PUPD. If you feel threatened or need help, push the button and you will be connected immediately.
- If we hear a fire alarm during class we will immediately suspend class, evacuate the building, and proceed outdoors. Do not use the elevator.
- If we are notified during class of a Shelter in Place requirement for a tornado warning, we will suspend class and shelter in the basement.
- If we are notified during class of a Shelter in Place requirement for a hazardous materials release, or a civil disturbance, including a shooting or other use of weapons, we will suspend class and shelter in the classroom, shutting the door and turning off the lights.
- Please review the Emergency Preparedness website for additional information.
http://www.purdue.edu/ehps/emergency_preparedness/index.html

Adaptive programs statement:

Students with disabilities must be registered with Adaptive Programs in the Office of the Dean of Students before classroom accommodations can be provided. If you are eligible for academic accommodations because you have a documented disability that will impact your work in this class, please schedule an appointment with the instructor as soon as possible to discuss your needs.

(Please continue on next page.)

Tentative calendar for BME 556, Fall 2023

Date	Topic
Mon Aug 21	Fall semester begins
	Infectious diseases
Tues Aug 22	Course introduction and Rocky Mountain Spotted Fever
Thurs Aug 24	Systemic staphylococcal infections
Tues Aug 29	Malaria
Thurs Aug 31	Influenza
Tues Sept 5	Infectious diarrhea (cholera and others)
Thurs Sept 7	Hepatitis
Tues Sept 12	Meningitis
Thurs Sept 14	In class review
Fri Sept 15 to Sun Sept 17	Online Exam 1 (covers infectious diseases) Fri Sept 15, 8 a.m. to Sun Sept 17, 11:59 p.m. US Eastern
	Cardiopulmonary diseases
Tues Sept 19	Heart failure
Thurs Sept 21	Pulmonary hypertension
Tues Sept 26	Atrial septal defects
Thurs Sept 28	Respiratory distress syndrome of the newborn
Tues Oct 3	Pneumonias
Thurs Oct 5	Skin cancer: basal cell, squamous cell, melanomas
Fri Oct 6 to Sun Oct 8	Online Exam 2 (covers cardiopulmonary diseases) Fri Oct 6, 8 a.m. to Sun Oct 8, 11:59 p.m. US Eastern time
	Cancer
Tues Oct 10	NO CLASS October Break
Thurs Oct 12	Lymphomas
Tues Oct 17	Cancer of the kidney
Thurs Oct 19	Breast cancer
Tues Oct 24	Cervical cancer
Thurs Oct 26	Fibroids
Fri Oct 27 to Sun Oct 29	Online Exam 3 (covers cancer) Fri Oct 27, 8 a.m. to Sun Oct 29, 11:59 p.m. US Eastern time
	Gastrointestinal diseases
Thurs Oct 31	Esophageal disease
Thurs Nov 2	Peptic ulcer disease
Tues Nov 7	Cancer of the stomach
Thurs Nov 9	Ulcerative colitis
Tues Nov 14	Cancer of the colon
Thurs Nov 16	Liver physiology
Tues Nov 21	Chronic liver disease
Dec 11-16	Final exam week (Grades due Tues Dec 20) Online Final Exam (covers all topics) Wed Dec 13, 8 a.m. to Sun Dec 17, 11:59 p.m. US Eastern time

