BME 683

Polymers in Biomedical and Pharmaceutical Systems

BME 68300-001
CRN: 24990
Course credit hours: 3 credit
Lectures: Tuesdays and Thursdays: 4:30 p.m. – 7:20 p.m., January 9, 2024 – February 27, 2024
Lecture room: MJIS 1083
Course web page: http://kinampark.com/T-Polymers/#dir1

Instructors

Professor Kinam Park	(kpark@purdue.edu)	Office: MJIS 3070
Professor Andrew Otte	(aotte@purdue.edu)	Office: MJIS 2036

Course Description

This course provides background for understanding biomedical and pharmaceutical polymers, polymers used in our daily lives, and the foundation for in-depth study of various polymers.

Learning Outcomes

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

1. Understand the basics of polymer chemistry, polymer history, polymer properties, and applications in various products.
2. Improve their ability to collect and use new information related to polymers.
3. Enhance their ability to present their knowledge and opinions through debates and oral presentations.

Teaching Philosophy

Learning is an active process, and learning should not be passive, such as simply listening to lectures, making notes, and taking exams. The most effective learning is active participation, including asking questions, presenting opinions, and making suggestions. This course is designed to maximize students' participation in discussions, debates, and dialogues.

Learning Resources, Technology, & Texts

All lecture materials and references will be posted in PDF format for downloading.

Face-to-Face Office Hours

Instructors are available on-demand, and prearrangements on the meeting times are encouraged.

Assignments and Points

Students' learning will be assessed through a combination of participation in class discussions, weekly assignments, presentations, and the final report submitted at the end of the semester. Each student will select their topic for the report upon approval by the instructor (this is to avoid overlapping of the topics).

Assignments	Due	Points
Participation in class discussion	Throughout the semester	25
Homework assignments	Throughout the semester	25
Student Group Competition	Throughout the semester & Feb. 27, 2024	25
Group Report	March 1, 2024	25

- Participation in class discussion (25 points; ongoing). Students will be given participation points in each class for their active learning process, i.e., asking questions, engaging in discussions, and expressing their opinions.
- Homework assignments (25 points; ongoing). Students will be given weekly assignments and will present their findings in classes.
- Student Group Competition (25 points). Each team of students competes with other teams by solving problems and comparing answers. On February 27, 2024, each team will present their research on polymers to the class.
- Group Report (25 points). Students summarize their research on a particular topic on polymers in their final reports.

Missed or Late Work

If a student misses a class or an assignment, please get in touch with the instructor to discuss the best action to remedy the situation.

Grading Scale

This class is designed to let students learn through an active participation process and emphasizes building the foundation for self-learning in the future. Students will learn how to find, digest, and utilize new information in the future. Each student will evaluate their work as to what they have expected and accomplished. At the end of the semester, each student will meet with the instructor to discuss their achievements and decide the final grade.

Course Schedule

Lecture	Date	Lecture Contents
1	January 9	Introduction to polymers
2	January 11	History of polymers
3	January 16	Polymers in everyday life
4	January 18	Water and hydrogels
5	January 23	Research articles, proposals, and patents
6	January 25	Biodegradable polymers (Professor Otte)
7	January 30	Smart polymers (Professor Otte)
8	February 1	Pharmaceutical polymers (Professor Otte)
9	February 6	Polymers in biomaterials (Biomedical polymers)
10	February 8	Polymers in tissue engineering
11	February 13	Polymers in food and agriculture
12	February 15	Polymers in nanotechnology
13	February 20	Polymers in biotechnology
14	February 22	Plastic planet
15	February 27	Student Group Competition (A 30 min presentation & Report)

Attendance Policy
Students are expected to attend all classes. Sometimes, an unavoidable situation may occur to excuse from attending the class. In that situation, please consult with the instructor.

Academic Integrity
Academic integrity is one of the highest values that Purdue University holds. Individuals are encouraged to alert university officials to potential breaches of this value by either emailing or calling 765-494-8778. While the information may be submitted anonymously, the more information is provided, the more opportunity for the university to investigate the concern.

The 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."

Nondiscrimination Statement
Purdue University is committed to maintaining a community that recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach their potential. In pursuit of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life. Link to Purdue's nondiscrimination policy statement.

Students with Disabilities
Purdue University strives to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, you are welcome to let us know so we can discuss options. You are also encouraged to contact the Disability Resource Center at drc@purdue.edu or by phone 765-494-1247.

Emergency Preparation
In a significant campus emergency, course requirements, deadlines, and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the instructor's control. Relevant changes to this course will be posted on the course website or obtained by contacting the instructors or TAs via email or phone. You are expected to read your @purdue.edu email.

Mental Health Statement
- If you find yourself beginning to feel some stress, anxiety, or slightly overwhelmed, try WellTrack. Sign in and find information and tools at your fingertips, available to you at any time.
- If you need support and information about options and resources, please see the Office of the Dean of Students for drop-in hours (M-F, 8 a.m.- 5 p.m.).
- If you're struggling and need mental health services, Purdue University is committed to advancing the mental health and well-being of its students. If you or someone you know feels overwhelmed, depressed, or in need of mental health support, services are available. For help, such individuals should contact Counseling and Psychological Services (CAPS) at 765-494-6995

during and after hours, on weekends and holidays, or by going to the CAPS office on the second floor of the Purdue University Student Health Center (PUSH) during business hours.

Violent Behavior Policy

Purdue University is committed to providing a safe and secure campus environment for university community members. Purdue strives to create an educational environment for students and a work environment for employees that promotes educational and career goals, and violent behavior impedes such goals. Therefore, Violent Behavior is prohibited in or on any University Facility or while participating in any university activity.

Course Evaluation

Purdue uses an online course evaluation system. You will receive an official email from evaluation administrators with a link to the online evaluation site. You will have up to two weeks to complete this evaluation. During the last two weeks of the course, students will be provided with an opportunity to evaluate this course and your instructor. Your participation is an integral part of this course, and your feedback is vital to improving education at Purdue University. I strongly urge you to participate in the evaluation system.

Disclaimer

This syllabus is subject to change. If any change occurs, it will be announced in the class.