King Fahd University of Petroleum & Minerals
College of Chemicals and Materials, Bioengineering Department
BIOE 201: Biology for Engineers (3-0-3)
Syllabus - Term 25A

Catalog Course Description: Introduction to biology, chemical basis of life, biomolecules, cell structure and function, cell metabolism and energy transfer, DNA structure, replication, transcription and translation, cell division (mitosis and meiosis), patterns in inherited trait, human inheritance, biotechnology, bacteria, virus, fungi, plant biology, and animal diversity.
Course Prerequisite: CHEM 101 **Co-requisite:** BIOE 202

Textbook: Biology: Concepts and Applications. Cecir Starr, Chirstine Evers and Lisa Starr, CENGAGE Learning, USA, 2015, 9th Edition

Instructors:

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- Dr. Moataz Dowaidar /B7-R125-1 / Phone: 8019 / moataz.dowaidar@kfupm.edu.sa

Office Hours: Dr. Faizan Khan UTR 10:00 A.M.-11:00 A.M and/or by appointment.
Dr. Irshad Ahmed UTR 11:00 A.M.-12:00 P.M and/or by appointment
Dr. Moataz Dowaidar UTR 11:00 A.M.-12:00 P.M and/or by appointment

Course Topics

Week#	Ch.	Topic
1	1	Introduction to Biology
2	2	Life's Chemical Basis
3	3	Molecules of Life
4	4	Cell Structure
5	5	Ground Rules of Metabolism
6	6	Photosynthesis
7	7	Releasing Chemical Energy
8	8	DNA Structure and Function
9	9-10	From DNA to Protein and Control of Gene Expression
10	11-12	How Cells Reproduce (Mitosis and Meiosis)
11	13	Observing Patterns in Inherited Traits
12	14	Human Inheritance
13	15	Biotechnology
14	19, 22	Bacteria, Viruses and Fungi
15	21, 23, 24	Plant and Animal Biology

The Grading Policy:

Classwork	**30%**	
Attendance	**3%**	
Assignments	**12%**	
Quizzes	**15%**	
Major Exam I	**20%**	**(Date: Oct. 1, 2025)**
Major Exam II	**20%**	**(Date: Nov. 12, 2025)**
Final Exam	**30%**	**(TBA by the registrar)**

Course Learning Outcomes:

1. Explain the chemical and cellular basis of life—linking molecules of life, cell structure, and core metabolic rules to fundamental cell functions.
2. Analyze and compare photosynthesis and cellular respiration (including ATP yield estimates) and race information flow from DNA to RNA to protein, incorporating control of gene expression.
3. Model cell reproduction, solve inheritance problems, and characterize bacteria, viruses, and fungi by life cycles and key traits, while comparing core features of plant and animal biology.
4. Acquire, synthesize, and apply new biotechnology concepts and tools from credible sources analyze scenarios, justify methodological choices, and predict outcomes.
5. Demonstrate a lifelong-learning mindset in biotechnology by planning, tracking, and reflecting on learning; adapting strategies based on feedback; and acknowledging sources appropriately.

Important Notes:

- The students are encouraged to use any AI tool provided they highlight the parts written by such a tool and can answer any questions about it. A proper citation for the exact name and version of the tool should be given.
- Each student must be vigilant about academic integrity at all times.
- Only official excuses obtained from the Deanship of Students Affairs are accepted.
- If a student reaches more than 20% of unexcused absence, a DN grade will be issued.
- For every unexcused absence, absent will be recorded.
- Excuses for officially authorized absences must be presented no later than one week following the resumption of class attendance.
- No makeup will be accommodated for missed quizzes or exams.
- Late submissions will be penalized at the rate of **10%** of the total mark every day after the deadline.
- A student caught cheating in any of the assignments will get ZERO in all assignments, and other proper action will be taken that may eventually lead to the transfer of the student to student affairs.
- The instructor reserves the right to modify the course outline and policies mentioned in this syllabus at any time during the semester.
- Refer to the registrar website for the academic calendar and important deadlines: https://registrar.kfupm.edu.sa/academic-calendar/current-semester/