

NEW COURSE PROPOSAL GUIDELINES

- A. **NEW COURSE PROPOSAL FORM:** Use this for establishing a new undergraduate or graduate course as a program requirement or elective.
- B. **PROPOSAL SUBMISSION BY THE DEAN OR CHAIR TO PROVOST'S OFFICE:** Proposals originating from the academic unit are to be submitted electronically to the Provost Office/Executive Director of Academic Programs by the Dean or Chair on behalf of the department.
- C. **LETTERS OF SUPPORT FROM DEANS OF AFFECTED DEPARTMENTS:** If the Curriculum Committee requests these letters, attach them to the back of your proposal.
- D. **COURSE PROPOSAL SUBMISSION DATE:** Proposals may be submitted throughout the year, but *they must be received no later than November 15 if they require action for implementation for the following academic year.* Proposals received after the deadline may not be acted upon in time for implementation the next academic year.
- E. **CURRICULUM COMMITTEE MEETINGS:** The Curriculum Committee meets on the fourth Tuesday of each month.
- F. **2nd TUESDAY OF THE MONTH.** Proposals submitted to the Provost's Office/ on or before the second Tuesday of the month will be on that month's agenda. The last possible date to submit a new course proposal for the academic year is the 2nd Tuesday in January.

New Course Proposal

Prepare course proposal in accordance with the guidelines below and the format shown on the following pages.

COURSE PROPOSAL NUMBER: 24-25-08a

REVISION (label Revision #1, #2, etc.): Revision #1

SECTION 1: PROPOSAL INFORMATION

Name:	Jamie L. Miller, Ph.D.
Title:	Assistant Professor
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College:	College of Science & Technology
Department:	Natural Sciences
Program Level:	Undergraduate
Date Originally Submitted:	10/28/2024
Implementation Date Requested:	8/1/2025

APPROVAL

The Deans of the affected colleges must sign below to indicate their notification and departmental support of this new course proposal. Should this new course affect any other department or program in another college, a memo must be sent to the Dean of each college impacted and a copy of the letters(s) or email(s) of support must be included with this proposal.

By signing below, you are indicating your college and department(s)'s approval of this proposal.

College	Dean's Signature
Science & Technology	<i>Deb Henker</i>

ADDITIONAL COMMENTS:

New Course Proposal

SECTION 2: COURSE CATALOG INFORMATION

1. Course Subject Prefix and number (e.g., ENGL 1101): Course number/prefix combinations may be used only once, and <u>may not be recycled</u> ; please check with the Registrar's Office to get a list of available, valid course numbers.	BIOL 3398
2. Course Title: The title of the course as it will appear in the course catalog.	Immunology
3. Number of Credit Hours: Indicate the total number of credit hours for the course. If you are proposing a course with variable credit options, explain that here.	4
4. Repeatability (number of repeat credit hours): Students can repeat the course for credit.	N/A
5. Course Prerequisites: Include subject prefix and course number. List only immediate prerequisites (not prerequisites for other prerequisite courses).	BIOL 1106 CHEM 2200
6. Course Co-requisites: Include subject prefix and course number.	none
7. Course Cross-listings (e.g., PSYC 2230 and SOCY 2230)	none
8. Course Restrictions (e.g., Seniors only)	none
9. Grade Type: Indicate whether students will be assigned a standard A-F final grade, a Pass/Fail (P/F) grade, or No Grade (NG).	standard A-F final grade
10. Requirements: Will the course be a required or elective course? What course requirements will this course satisfy? Indicate specific major, minor, or College/Department requirement(s).	elective, biology major
11. Course Terms: In what semester(s) will the course be offered? (e.g., Fall only, Summer)	fall of odd numbered years (2025, 2027, etc)
12. Writing Intensive: Does this course fulfill the Writing Intensive major requirement?	No
13. Core Curriculum: Will the course be reviewed and considered as a University Core Curriculum course offering? If yes, you will need to submit a separate Core Curriculum application to the General Studies Committee.	No

SECTION 3: CURRICULUM-BASED RATIONALE

What is the reason for developing the proposed course? Explain how the course fits into the curriculum. For example, is it a required or elective course for any specific program (if so, which one)? Which students will be taking this course? If there are already similar courses offered, explain why the needs of the program cannot be satisfied by an existing course. The curriculum-based rationale should be brief and to the point.

Immunology is a recommended prerequisite for various graduate-level life science and medical-related programs, which many of our students plan to attend after completing their undergraduate degree(s). The course is offered as an elective to both biology majors and biology minors, as well as to anyone else across campus who may have an interest in the field and has completed the prerequisite course work.

SECTION 4: COURSE SYLLABUS

Attach the course syllabus or at minimum the following course components:

Catalog Course Description: Include a course catalog description written in complete sentences that will be published in the university catalog. The word length for a catalog description should be less than 80 words. Do not include any prerequisites, corequisites or any other restrictions in the description.

BIOL 3398 is a four-credit immunology course that provides students with an overview of the human immune system. Students are introduced to the cellular and molecular mechanisms of immune cells, their associated tissues, and the interplay of the innate and adaptive immune cell responses in monitoring and responding to self vs non-self. The immune system's roles in conditions such as inflammation, hypersensitivity, autoimmune diseases, transplantation, and cancer are also explored as well as methodology related to immunological investigation, and how they work together to protect the human body from "non-self". The involvement of the immune system in autoimmune disease, hypersensitivity, cancer and vaccinations are discussed as well as methodology related to immunological study.

Course Learning Outcomes: These should be stated in terms of what new knowledge and/or skills students should be able to demonstrate upon successful completion of the course. Present course learning outcomes as a bulleted list predicated with "Upon successful completion of this course, students should be able to..."

Upon successful completion of BIOL 3398, student should be able to:

- **Demonstrate a basic knowledge of immunological processes at a cellular and molecular level.**
- **Compare and contrast the key mechanisms and cellular players of innate and adaptive immunity and how they relate.**

- Distinguish between the immunological basis of inflammation, hypersensitivity, autoimmune diseases, transplantation, and cancer.
- Demonstrate proficiency in describing, planning, and performing common methodology employed in immunological investigation.

Assessment: Describe generally how students' achievement of the course learning outcomes will be assessed.

Assignment and assessment weighting for overall course grade will be comprised of approximately 75% for lecture and 25% for lab-related activities and assessments.

Lecture assignments include construction of pictorial models of immunological concepts, such as immune cells, pathway/mechanism depictions, etc. Students evaluate (in written and/or oral discussion) various immunology-related topics (classical and new discovery-related) in both primary journal articles as well as popular press reviews. Chapter and/or unit assessments occur by written examination, which includes formats such as multiple choice, true/false, fill in the blank, ordering, short answer, and essay questions. Assessments are designed to evaluate the student's basic knowledge, as well as ability to describe, compare and contrast various elements and phenomenon of the human immune system.

Laboratory assignments include completion of various laboratory exercises (both wet lab and virtual/simulation labs) to increase student experience with and comprehension, application, and analysis of immunological-based laboratory methodology. This includes the identification and differentiation of immune cell populations and their alteration in various immunological states as well as the evaluation of immune cell pathways and effector functions, primarily through immunological assay and protein detection. Assessments for laboratory exercises occur through guided activities and the completion of an associated lab report that assesses the comprehension, application, and analysis of experiments and collected data. Evaluation also occurs on the ability of students to synthesize an experiment of their own to answer immunological-based questions.

Course Outline: Attach a course content outline consisting of at least two levels.

Lecture:

- Elements of the immune system and their roles in defense
 - Defenses facing invading pathogens
 - Hematopoietic Stem Cells and maturation lineages
- Innate immunity: the immediate response to infection
 - Physical and chemical barriers
 - Immune cells
 - Inflammation
- Adaptive immunity: the delayed response to infection
 - Development of B lymphocytes
 - Antibody structure and generation of B lymphocytes diversity
 - Development of T lymphocytes
 - Antigen recognition by T lymphocytes
- Coevolution of innate and adaptive immunity

- Interdependence of innate and adaptive immunity
- Feedback mechanisms between innate and adaptive immunity
- Pathogen evasion
- Overreaction of the immune system
 - Hypersensitivity
 - Type I hypersensitivity reactions
 - Type II hypersensitivity reactions
 - Type III hypersensitivity reactions
 - Type IV hypersensitivity reactions
 - Autoimmunity
 - General and specific effector mechanisms of autoimmune diseases
 - Transplantation
 - Genetics of HLA typing/matching
 - Immune suppression
- Manipulation of the immune system
 - Vaccination
 - Principles
 - Challenges
 - Cancer and its interaction with the immune system
 - Recognition by immune system
 - Immunotherapeutics

Laboratory activities:

- Blood cell differentiation
- Flow cytometry (possibly multi-week depending on schedule)
- T cell specificity determination
- Antibody generation
- Immunofluorescence microscopy
- T cell activation assays
- SDS-PAGE
- Western Blotting
- Enzyme-Linked Immunosorbent Assay (ELISA) (possibly multi-week depending on schedule)
- Blood typing
- Hypersensitivity reactions
- Immunological applications for human health