

UMBC UGC Instructions for Change in Existing Course Form (Revised 4/2016)

Course number & title: Enter the current course number and title of the course at the top of the page.

Date submitted: The date that the form will be submitted to the UGC.

Effective date: The semester that the change will be effective, if approved.

Contact information: Provide the contact information of the Chair or UPD of the department housing the course. If the course is not housed in a department or program, then provide the same information for the head of the appropriate academic unit. (See UGC Procedures.) If another faculty member should also be contacted for questions about the request and be notified about UGC actions on the request, include that person's contact information on the second line.

Course information: Provide all of the current information for this course. Check the "change" column for aspects of the course that will be changed by this proposal and provide the specific changes. Unchanged fields may be left blank under the "proposed" column. *Note: all 300- and 400-level courses must have prerequisites or recommended preparation.*

Course number: For cross-listed courses, provide all the numbers for the course.

Transcript title: Limited to 30 characters, including spaces. Leave the current transcript title blank if this is not known.

Recommended Course Preparation: *Please note that all 300 and 400 level courses should have either recommended course preparation(s) or prerequisite(s) and that 100 or 200 level courses may have them.*

Here fill in what previous course(s) a student should have taken to succeed in the course. These recommendations will NOT be enforced by the registration system. Please explain your choices in the "rationale" (discussed below).

Prerequisite: *Please note that all 300 and 400 level courses should have either recommended course preparation(s) or prerequisite(s)* Here fill in course(s) students need to have taken before they enroll in this course. These prerequisites will be enforced through the registration system. Please explain your choices in the "rationale" (discussed below).

NOTE: Please use the words "AND" and "OR", along with parentheses as appropriate, in the lists of prerequisites and recommended preparation so that the requirements specified will be interpreted unambiguously.

NOTE: Unless otherwise indicated, a prerequisite is assumed to be passed with a "D" or better.

of credits: To determine the appropriate number of credits to assign to a course please refer to the [UMBC Credit Hour Policy](#) which articulates the standards for assignment and application of credit hours to all courses and programs of study at UMBC regardless of degree level, teaching and learning formats, and mode of instruction.

Maximum total credits: This should be equal to the number of credits for courses that cannot be repeated for credit. For courses that may be repeated for credit, enter the maximum total number of credits a student can receive from this course. E.g., enter 6 credits for a 3 credit course that may be taken a second time for credit, but not for a third time. Please note that this does NOT refer to how many times a class may be retaken for a higher grade.

Grading method(s): Please review the [grading methods document](#) (this link can be found on the UGC forms page) before selecting a grading option. Please do not select all three grading options by default.

Current catalog description: Provide the course description as it appears in the current undergraduate catalog or since the last UGC-approved change.

Proposed catalog description: If this proposal involves a change in the course description, provide the exact wording of the course description as it will appear in the next undergraduate catalog. Course descriptions should be a) no longer than 75 words, b) stated in complete sentences, and c) avoid reference to specific details that may not always pertain (e.g., dates, events, etc.). Leave blank if this proposal does not change the course description. Course descriptions should not repeat information about prerequisites (which are always listed alongside the course description).

Rationale including a pedagogical justification to any changes in course level: Provide a brief explanation for the need for the proposed changes.

Cross-listed courses: Requests to change cross-listed courses must be accompanied by letters of support via email from all involved department chairs. Proposals for the addition of a cross-listing to an existing course must include as a part of the rationale the specific reason why cross-listing is appropriate. Email from all involved department chairs is also required when cross-listing is removed and when a cross-listed course is discontinued. Please note that Special Topics cannot be cross-listed.

Note: the UGC form is a Microsoft Word form. You should be able to enter most of the information by tabbing through the fields. The document is protected. In the rare case that you need to unprotect the document, use the password 'ugcform'. Beware that you will lose all the data entered in the form's fields if you unlock and lock the document.

UMBC UGC Change in Existing Course: BIOL 375 – General Microbiology

Date Submitted: 9/28/2019

Proposed Effective Date: Fall 2020

| | Name | Email | Phone | Dept |
|-------------------|------------------|--|-------|------|
| Dept Chair or UPD | Philip Farabaugh | farabaug@umbc.edu | 53018 | BIOL |
| Other Contact | David Eisenmann | eisenman@umbc.edu | 52256 | BIOL |
| Other Contact | Nichole Zang Do | Zang.do@umbc.edu | 58071 | BIOL |

COURSE INFORMATION: (please provide all information in the “current” column, and only the information changing in the “proposed” column)

| change | | current | proposed |
|-------------------------------------|---|---|---|
| <input checked="" type="checkbox"/> | Course Number(s) | BIOL 275 | BIOL 375 |
| <input checked="" type="checkbox"/> | Formal Title | Microbiology | General Microbiology |
| <input checked="" type="checkbox"/> | Transcript Title (≤30c) | Microbiology | General Microbiology |
| <input type="checkbox"/> | Recommended Course Preparation | | |
| <input checked="" type="checkbox"/> | Prerequisite NOTE: Unless otherwise indicated, a prerequisite is assumed to be passed with a “D” or better. | Students must have completed BIOL 100 or BIOL 100H or BIOL 101 or BIOL 141 or BIOL 141H with a grade of “C” or better. | Students must have completed BIOL 302 and BIOL 303 with a grade of “C” or better. |
| <input type="checkbox"/> | # of Credits Must adhere to the UMBC Credit Hour Policy | 3.0 | |
| <input type="checkbox"/> | Repeatable? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| <input type="checkbox"/> | Max. Total Credits | 3.0 | Max. Total Credits: This should be equal to the number of credits for courses that cannot be repeated for credit. For courses that may be repeated for credit, enter the maximum total number of credits a student can receive from this course. E.g., enter 6 credits for a 3 credit course that may be taken a second time for credit, but not for a third time. Please note that this does NOT refer to how many times a class may be retaken for a higher grade. |
| <input checked="" type="checkbox"/> | Grading Method(s) | <input checked="" type="checkbox"/> Reg (A-F) <input checked="" type="checkbox"/> Audit <input checked="" type="checkbox"/> Pass-Fail | <input checked="" type="checkbox"/> Reg (A-F) <input type="checkbox"/> Audit <input type="checkbox"/> Pass-Fail |

CURRENT CATALOG DESCRIPTION:

Introductory course describing the fundamental properties of micro-organisms and viruses and their relationships to other life forms. Topics include the structure and function of bacteria, mode of action of antibiotics, genetics of bacteria and the role of bacteria in disease. The structure, replication and pathology of viruses are discussed, including the response of hosts to viral infection and the fundamental concepts of the immune response.

PROPOSED CATALOG DESCRIPTION (Approximately 75 words in length. Please use full sentences): leave blank if no changes are being proposed to the catalog description. NOTE: information about prerequisites should NOT appear in the catalog description.)

This course describes the fundamental properties of microorganisms and viruses, and their relationships with an emphasis on structure, function, nutrition, metabolism, genetics, and ecology. The course also covers the role of microbes in disease, the environment, biotechnology and genetic engineering. The structure, replication and pathology of viruses are discussed, including the response of hosts to viral infection, the fundamental concepts of the immune response, and epidemiology.

RATIONALE FOR CHANGE:

In recent years, our department has noticed an increase in pre-allied health students (pre-nursing, pre-physical therapy, etc.) who are required to take microbiology for their intended professional school, but do not necessarily require a majors-level microbiology course. BIOL 275, on its own, does not meet the needs of both student groups: biology majors and pre-allied health students. Because of this, our department would like to move from one course (BIOL 275 Microbiology) taken by both majors and non-majors, to two separate courses. The existing BIOL 275 course will be renumbered to BIOL 375 and will be intended for biology majors, while the new course BIOL 273 will be intended for UMBC's pre-allied health student population.

We propose changing the major-level microbiology to a 300-level. BIOL 275 was historically a service course taught to pre-allied health students. When our department revised its curriculum in 2010, we began allowing BIOL BA and BS students to use BIOL 275 as an elective course for the major. BIOL 275 was the only single 200-level course that biology majors could use for their electives (with the exception of our two-semester anatomy and physiology course sequence for BIOL BA majors). By offering microbiology at the 300-level, we bring this course into line with our other 300-level elective courses. This renumbering reflects that topics can be covered more in depth, at a level appropriate for BIOL majors who have finished our four-semester core course sequence (which the pre-allied health majors usually have not). This 273/375 numbering is similar to how other 4-year universities order their health-related and major-related microbiology courses. Our naming of the course is also intended to parallel other institutions that have a similar microbiology organization. BIOL 375 will continued to be acceptable as an elective, while BIOL 273 will NOT be usable as an elective for the BIOL majors.

The BIOL 302 and BIOL 303 pre-requisites are set in place to ensure students have foundational knowledge in the biology core courses before continuing on to the 300-level (these are the prerequisites for all of our other 300 level elective courses). In the last five springs, students who took BIOL 303 (our BIOL major "capstone course") before BIOL 275 had a DFW rate of 12%. Students who did not take BIOL 303 at UMBC before taking 275 had a DFW rate of 34%. The new pre-requisites will help facilitate student success as they move forward in the major.

The course will be offered once per academic year in the spring. The course (which is non-repeatable) is designed with the standard A-F grading scale, with appropriate emphasis on team and in-class work, problem sets, and presentations. Biology majors must pass their courses with a grade of "C" or better, so only the standard grading scale is offered to avoid confusion.

See below for course syllabus.

OTHER NOTES/REQUESTS:

BIOL 275 will no longer be offered. To help ease the transition, especially in terms of transfer credits, we will ask that BIOL 375 be made equivalent to BIOL 275 in the SA Catalog. Making these courses equivalent will help as current majors and transfer students move on to complete their degree requirements.

Existing Microbiology courses at community colleges will be re-evaluated to determine if they are more similar to the new BIOL 273 or to BIOL 375 for the purposes of equivalency.

BIOL 375 – GENERAL MICROBIOLOGY
Spring Syllabus

CLASS TIME/LOCATION: TUE/THU 11:30 a.m. -12:45 p.m. Lecture Hall 2 (Meyerhoff Chem 030)

INSTRUCTOR:

Dr. Kathleen Cusick
kcusick@umbc.edu
BS 324
410-455-5621

OFFICE HOURS: Tues 1-2pm

UNDERGRADUATE TEACHING ASSISTANT(S):

TBD

COURSE DESCRIPTION: *Welcome to Biology 375; General Microbiology Lecture!* This course describes the fundamental properties of microorganisms and viruses, and their relationships with an emphasis on structure, function, nutrition, metabolism, genetics, and ecology. The course also covers the role of microbes in disease, the environment, biotechnology and genetic engineering. The structure, replication and pathology of viruses are discussed, including the response of hosts to viral infection, the fundamental concepts of the immune response, and epidemiology.

REQUIRED TEXTBOOK: *Nester's Microbiology: A Human Perspective*, 9th ed. By Anderson Salm and Allen. McGraw-Hill, 2019.

NOTE: This course is participating in the Course Materials Initiative (CMI).

- **eTextbook:** Through the CMI, all students receive immediate access to an electronic version of the required textbook (e-textbook), *Nester's Microbiology* 9th edition by Anderson et al, via the **VitalSource Bookshelf tool in Blackboard**. The charge for electronic access to the book is billed through your tuition and fees statement at UMBC. You do not need to go to the bookstore or get a special code to access the book. You will have access to the e-book for three full years (from the beginning of the semester). Make sure to download the VitalSource App for offline use. Please make sure to access your materials by February 11th.
- **Publisher Integration:** As well as having automatic access to an electronic version of the required textbook, CMI also gives you access to **Connect**. **Make sure to access Connect prior to February 11th.**
- **Opting Out of CMI:** Your participation in the CMI is completely optional. You may opt out of the program and receive a full refund by completing CMI Consent for Removal Form ([bookstore.umbc.edu/StoreFiles/9-SchoolFiles/9-pdf/9-Consent for CMI Removal Form.pdf](http://bookstore.umbc.edu/StoreFiles/9-SchoolFiles/9-pdf/9-Consent%20for%20CMI%20Removal%20Form.pdf)) and submitting it in person to the Bookstore Textbook Managers desk by February 8th. Please visit the CMI webpage, <http://bookstore.umbc.edu/cmi>, for more information.

BLACKBOARD: All relevant information, communication and material for the course will be posted to the class Blackboard site. The Blackboard Discussion Board resource will be used throughout the semester and Blackboard

will also be used to make course announcements, to administer quizzes, and to give you resources other than the lecture and textbook. Announcements will be emailed from Blackboard for which you will be responsible. Make sure your UMBC email address is working and that you check it frequently!

COURSE LEARNING OBJECTIVES: With the successful completion of this course, students will be able to:

- Outline the historical origins of microbiology including its interrelationship with the theory of biogenesis and germ theory of disease.
- Identify the major groups of microorganisms according to their taxonomic classification and describe their main characteristics.
- Compare and contrast prokaryotic and eukaryotic cells in terms of their structure, replication of DNA, and flow of genetic information within the cell.
- Relate how the biological features of a particular microbe enable it to cause disease.
- Describe general patterns of regulation of gene expression, recombination of genetic information, and exchange of genetic information.
- Identify the physical and chemical factors that influence growth of microorganisms.
- Explain common physical and chemical methods used to inactivate or limit growth of microorganisms, including antimicrobial therapies.
- Summarize the modes of transmission of disease including pathogenic mechanisms used by microbes to invade and damage the host.
- Describe the nonspecific and specific immune defenses of the host against microbial infection.
- Link the topical scientific issues of the day to the material covered in lecture.

WHAT YOU SHOULD ALREADY KNOW: The concepts and information presented in this course should be readily comprehensible since you have fulfilled the pre-requisite as stated in the UMBC catalog (BIOL 141 or equivalent) and you are expected to be familiar with the following terms and concepts:

- Atoms, molecules, and elements
- Chemical bonds: Covalent bond, ionic bond, hydrogen bond; pH
- Hydrophobic and hydrophilic interactions, polar and non-polar compounds
- Organic Macromolecules- Structure and Function
- Carbohydrates
- Lipids
- Proteins: Amino acids; primary, secondary, tertiary, and quaternary structure
- Nucleic acids: DNA, RNA (mRNA, tRNA, rRNA)
- Membrane structure: Lipid bilayer, membrane proteins, and fluid mosaic model
- Respiration and photosynthesis
- Enzymes
- Gene expression and Central Dogma: replication, transcription, and translation

Note: If you have trouble with this information, you must learn it on your own (see Ch. 2 in your textbook for a review); otherwise, it is strongly recommended that you drop the class and return when you have learned these basic concepts.

COURSE INFORMATION AND EXPECTATIONS: The tentative lecture schedule and reading assignments are provided below. You are urged to attend each lecture and to read the assigned material. You will not succeed in the course without doing both.

READING ASSIGNMENTS: The textbook chosen (*Nester's Microbiology: A Human Perspective by Anderson et al, 2019*) is an excellent one. You are urged to keep up with your reading since it complements and reinforces lecture material. A good guideline is to do 2.5 hours of out-of-class work for each lecture hour. No kidding! You will gain

much more insight if you've done the reading **before** the lecture pertaining to that material. Use the textbook's index and glossary liberally. Additional reading assignments may be assigned in class or through Blackboard.

LECTURES: Take good notes. **PowerPoint slides used during lecture will merely highlight and outline what is being said, and should not be considered the only information learned.** Slides will be made available on Blackboard for downloading and printing prior to each lecture. The use of a laptop or tablet during lecture is not recommended. You are not expected to be a sponge, absorbing lecture material and squeezing it out during the exams. To do well, you will need to understand the concepts and to be able to think critically. Ask questions during lecture. If you miss lecture, do not rely solely on lecture slides to cover the missed material. Obtain notes from a classmate, contact your TA, or make an appointment to visit during my office hours if you need clarification.

CELL PHONE POLICY: **The use of a phone during lecture is not permitted.** Please turn cell phones off or set to *silent* during lecture. They are disruptive to us and to your fellow students.

GRADING: Your grade will depend upon your performance on three exams and a comprehensive final exam, as well as your performance on quizzes and class participation. The final exam will be cumulative, to include material covered on Exams I-IV.

| | |
|---------------------|---------------------------------|
| Exam I | 20% |
| Exam II | 20% |
| Exam III | 20% |
| Exam IV | 10% (taken with the Final Exam) |
| Quizzes | 10% |
| Class Participation | 5% |
| <u>Final Exam</u> | <u>15%</u> |
| TOTAL | 100% |

Grades for this course will be determined using the following scale:

| | |
|-----------|-----|
| ≥90% | = A |
| 80%-89.9% | = B |
| 70%-79.9% | = C |
| 60%-69.9% | = D |
| ≤ 59.9% | = F |

Note: If your grade falls within the ranges listed above, you are ASSURED of that letter grade. Depending on class performance at the end of the semester, this range may be adjusted. In other words, if the course average is lower than the middle C range (i.e. 75%), the ranges will be adjusted to reflect that.

EXAMINATIONS: Exams are scheduled well in advance (see the schedule). Everyone is expected to take them as scheduled! If you become ill or a family emergency arises, let me know **BEFORE** the exam. Contact me or, if necessary, leave a message with the Biology Department secretary (410-455-2261). Make-up exams will be given only with a valid written excuse. Scores will be posted in the online grade book in the course Blackboard page.

QUIZZES: You will be expected to take online quizzes on Blackboard on the assigned reading material **before** the material is covered in class. Once the due date for a quiz has passed, you may take it but you will not receive a score. **Your lowest QUIZ score will be dropped.**

PARTICIPATION:

Students will work in groups or alone on an exercise pertinent to that week's lecture topic. Exercises are turned in for recording participation and reviewed together in class. Clicker questions may also be used in place of in-class exercises.

GET YOUR QUESTIONS ANSWERED: I will be available to answer questions during office hours (see Blackboard for details). However, you are strongly encouraged to utilize these resources first: 1. Your Teaching Assistants and/or 2. Post your question on the Discussion Board Forum on Blackboard.

The course Blackboard site will be used to make course announcements and provide you with resources other than the lecture and textbook. Your login ID and password are your username and password on the UMBC web pages. I encourage you to post your questions as well as to post answers to other students' questions on the Blackboard Discussion Board. Be advised: I may post questions periodically. You just might see some of these on exams. I may email announcements from Blackboard for which you will be responsible. Make sure your UMBC email address is working and that you check it frequently.

ACADEMIC INTEGRITY: Information on the UMBC policy on academic integrity can be found at: <https://oue.umbc.edu/ai/>. From the UMBC Handbook: "By enrolling in this course, each student assumes the responsibilities of an active participant in UMBC's scholarly community in which everyone's academic work and behavior are held to the highest standards of honesty. Cheating, fabrication, plagiarism, and helping others to commit these acts are all forms of academic dishonesty, and they are wrong. Academic misconduct could result in disciplinary action that may include, but is not limited to, suspension or dismissal. To read the full Student Academic Conduct Policy, consult the UMBC Student Handbook, the Faculty Handbook, or the UMBC Policies section of the UMBC Directory".

Academic integrity is taken seriously and any academic dishonesty will not be tolerated. Anyone charged with academic misconduct (as defined below) in any aspect of the course that is graded (exams, quizzes, assignments, etc.) will be reported to the UMBC Academic Conduct Committee, and, at minimum, receive a grade of zero for that exam or assignment and a letter grade deduction in the course. Academic misconduct means cheating, fabrication, facilitating academic misconduct, plagiarism, or dishonesty by an undergraduate student.

See the UMBC Undergraduate Student Academic Conduct Policy with this link:

<https://oue.umbc.edu/files/2015/09/ACC2011.pdf>

STUDENTS WITH DISABILITIES: UMBC is committed to eliminating discriminatory obstacles that may disadvantage students based on disability. The Office of Student Disability Services (SDS) is the UMBC department designated to coordinate accommodations that would allow for students to have equal access and inclusion in all courses, programs, and activities at the University. If you have a documented disability and would like to request academic accommodations, please refer to the SDS website at sds.umbc.edu for registration information and to begin the process, or alternatively you may visit the SDS office in person in the Math/Psychology Building, Room 212. You may also contact them through email at disAbility@umbc.edu or phone at (410) 455-2459.

If you require accommodations for this class, please make an appointment to meet with the instructor to discuss your SDS-approved accommodations. Students who wish to utilize accommodations for exams, such as extended test time, must schedule to take all exams at SDS at the same time as the scheduled exam.

| DATE | TOPIC | READING |
|--------|---------------------------------------|-------------|
| Jan 29 | Introduction/History and Nomenclature | Ch. 1, 10.1 |

| | | |
|-----------------------------------|--|------------|
| Jan 31 | Microscopy and Staining | Ch. 3 |
| Feb 5 | Cell Structure and Function | Ch. 3 |
| Feb 7 | Enzymes | Ch. 6.2 |
| Feb 12 | Metabolism | Ch. 6 |
| Feb 14 | Metabolism | Ch. 6 |
| Feb 19 | Metabolism | Ch. 6 |
| Feb 21 | Prokaryotic Growth | Ch. 4 |
| Feb 26 | EXAM 1 | |
| Feb 28 | Control of Prokaryotic Growth | Ch. 5 |
| Mar 5 | Central Dogma | Ch. 7 |
| Mar 7 | Bacterial Genetics | Ch. 8 |
| Mar 12 | Bacterial Genetics | Ch. 8 |
| Mar 14 | Bacterial Genetics | Ch. 8 |
| March 17 – 24 SPRING BREAK | | |
| Mar 26 | Biotechnology | Ch. 9 |
| Mar 28 | Characterizing and Classifying Prokaryotes | Ch. 10 |
| Apr 2 | EXAM 2 | |
| Apr 4 | Microbial Ecology/Environmental Microbiology | Ch. 28, 30 |
| Apr 9 | Viruses | Ch. 13 |
| Apr 11 | Viruses | Ch. 13 |
| Apr 16 | Viruses | Ch. 13 |
| Apr 18 | Innate Immunity | Ch. 14 |
| Apr 23 | Adaptive Immunity | Ch. 15 |
| Apr 25 | Adaptive Immunity/Immunity and Vaccination | Ch. 15, 18 |
| Apr 30 | EXAM 3 | |
| May 2 | Host-Microbe Interactions | Ch. 16 |
| May 7 | Epidemiology | Ch. 19 |
| May 9 | Antimicrobial Medications | Ch. 20 |
| May 14 | Antimicrobial Medications | Ch. 20 |
| May 16 | EXAM 4 & FINAL EXAM | |