Course Change Request

New Course Proposal

Date Submitted: 11/02/18 1:17 pm

Viewing: **BIOL 300 : BioDiversity**

Last edit: 11/02/18 1:17 pm

Changes proposed by: dpolayes

Are you completing this form on someone else's behalf?
No

Effective Term: Fall 2019

Subject Code: BIOL - Biology **Course Number:** 300

Bundled Courses:

Equivalent Courses: BIOL 303 - Animal Biology
BIOL 304 - Plant Biology

Catalog Title: BioDiversity

Banner Title: BioDiversity

Will section titles vary by semester? No

Credits: 4

Schedule Type: Lecture w/Lab

Hours of Lecture or Seminar per week: 3

Hours of Lab or Studio per week: 3

Repeatable: May be only taken once for credit, limited to 3 attempts (N3) **Max Allowable Credits:** 4

Default Grade Mode: Undergraduate Regular

Recommended Prerequisite(s):

Recommended Corequisite(s):

Required Prerequisite(s) / Corequisite(s) (Updates only): BIOL 213 (C) or BIOL U213 (T)

Registrar's Office Use Only - Required Prerequisite(s)/Corequisite(s):

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?

Registration Restrictions (Updates only):

Registrar's Office Use Only - Registration Restrictions:

Field(s) of Study:

Class(es):

Level(s):

Degree(s):

School(s):

Catalog Description: BIOL300 explores the fundamental principles governing organismal biology while introducing the three domains of life: the Archaea, the Bacteria, the Eukaryotes, plus viruses.

Justification:

In Workflow

1. **BIOL Undergraduate Representative**
2. **SC Curriculum Committee**
3. SC Associate Dean
4. Assoc Provost-Undergraduate
5. Registrar-Courses
6. Banner

Approval Path

1. 11/02/18 2:00 pm Larry Rockwood (lrockwoo): Approved for BIOL Undergraduate Representative

1. To ensure that the laboratory is taken in the same semester as the lecture.
2. Enrollment has risen to the point that the limitation on labs per day has been maxed out. Dropping the 1 hour recitation portion will allow an increase in lab sections per course day from 3 to 4 which will allow more labs per week at the desired class size.
3. Place the course number such that it is consistent with the recommended sequence of material for the core. Biology 310 will introduce all of the major Clades of organisms

Does this course cover material which crosses into another department?	No
Learning Outcomes:	
Attach Syllabus	BIOL 300 Lab Syllabus.pdf Biol 300 lecture Syllabus.pdf
Additional Attachments	
Staffing:	Use existing Biology professors
Relationship to Existing Programs:	Generally only taken by biology majors
Relationship to Existing Courses:	The course is to be changed to match other core courses which have a laboratory. The significant change is to combine the lecture and lab into a single course similar to other core courses. The laboratory portion of the course will become part of the overall course grade. The Recitation portion of Biology 330 will be dropped (consistent with the drop in total hours earned to 4).

Additional Comments:	Notes: BIOL 310 has replaced BIOL 303 and 304. Students who have taken BIOL 310 may not receive credit toward the major for BIOL 303 and/or BIOL 304
Reviewer Comments	

Key: 16133

BIOL 300 – BIODIVERSITY – LECTURE SYLLABUS & SCHEDULE Fall 2018

Meeting Time:
Location:
Instructor:
Office Location:
Office Hours:
Contact Information: Email: _____Office Phone:
Blackboard: The course will use Blackboard for posting announcements, grades, and all documents.

Required items
1. Life 11th edition. Sadava, D., D.M. Hillis, H.C. Heller, and S.D. Hacker. Sinauer Associates, Inc. Available in University Bookstore.

Goal: BIOL300 educates students about the morphological, anatomical and physiological innovations of the major lineages of living organisms: the Archaea, the Bacteria, and the Eukaryota. Organisms and biotic processes are presented roughly in the order of their appearance in geological history to provide context for their evolution and to explore the synergistic interactions of organismal diversity, structure and function with the abiotic Earth. The lab component of the course will meet once a week for 2 hours 45 min. Students must register for the lecture and lab simultaneously.

Schedule of Lectures:

Week of	Subject	Reading – Chapter or pages (pp)
Aug 27	**4600 Ma** Introduction and the Time Line, Abiotic Earth and Origin of Life, Phylogenetics	Pp 2-12, ch 21,24 pp151-154
Sept 3	**No Class Labor Day Holiday**	
Sept 5	**3500 Ma** Prokaryotes- Bacteria and Archea	Ch 25, pp 82-88
Sept 10	**3500 Ma** Prokaryotes- Bacteria and Archea	
Sept 17	**3000 Ma** Life with Oxygen and the Evolution of Unicellular Eukaryotes	Ch 26
Sept 24	Protists	Ch 26
Oct 1	**2700 Ma** Multicellularity and its Implications (Size, Specialization, Tissues, Systems, Signaling, Homeostasis and Sex)	pp 824-829, 719-722,1023-1026, 1044-1045, Ch 55
Oct 9	**Monday Classes Meet Tuesday**	
Oct 10	**Exam 1**	
Oct 12	**2000-430 Ma** Invasion of the terrestrial environment - Plants	Ch 27,28,33,34
Oct 15	**360 Ma** Plant adaptation	Ch 38
Oct 22	**130 Ma** Angiosperms and animal-plant coevolution;	Ch 37
Oct 29	**560 Ma** Fungi and nutrient cycling	Ch 29 pp 1237-1240
Nov 9	**Exam 2**	
Nov 5	**580 Ma** Early diversification of Animals	Ch. 30, 31
Nov 12	**363 Ma** Invasion of the terrestrial environment - Animals:	Ch 32
Nov 19	Amniotes, Reproduction, Development and Evolution	Ch 19,43

Nov 21-25	**No Class Thanksgiving Recess Begins**	
Nov 26	Animal nutrition and transport	
Dec 3	**110 Ma** Mammals, humans and the future of biodiversity	Pp 1229-1237
December 17 10:30-1315 Final Exam		

Last day to drop with no tuition penalty – September 9

Grading:
Your grade will be determined by your performance on three exams.

Exam 1	100 points
Exam 2	100 points
Final Exam	150 points
Total	350 points

No extra credit work is offered in this class.

Grade Equilibration: Lecture exam averages may be lower than the typical 75%. If the average TOTAL score is below 75%, points will be added to all scores to make the average total score 75%. Then **a 10-point grading scale will be used to assign grades**. Plus and minus grades may be used at the discretion of the instructor and depending on the grade distribution. **During the semester, students should pay close attention to where their exam scores lie *relative to the mean of the class*, as this is the best indicator of above- or below-average performance.** GPA requirements of the Biology major mean that C- grades cannot be given in this class.

A 10-point grading scale will be used to assign grades (90-100=A; 80-89=B; 70-79=C; 60-69=D, below 60=F . Student exam averages in my courses are generally lower than the typical 75% (65-70%) because my exams are challenging. If the average for any exam is below 75 then points will be added to scores to bring the average up to 75.

The lecture grade will be 75% of your grade. The lab component of the course will contribute 25%. See the lab syllabus for the points earned for the lab assignments.

Attendance/Behavior:
Please attend every lecture – this is my best advice to students wanting to do well in the course. There are topics which will be covered which are not in your textbook. Be on time for class. It is discourteous and distracting to others when you come in late. Further you may miss important announcements made at the beginning of class. If you do not attend class you are still responsible for any announcements made in class (such as changes in exam dates etc.). You may need to be aware of such information before the next class. Therefore, be sure to check with someone about what was covered in the class you missed, before the next class. (***Note: it is unacceptable to have a cell phone go off in class-turn off all audio signals before class)***.

LECTURE EXAMINATION POLICIES

You will need one SCANTRON form (SC882-E) available in bookstore and a number 2 pencil for all examinations.

Cell phones smart watches and any other electronic devices may not be out or used during any exam.

A. ARRIVING LATE TO AN EXAM - If you are late to an exam and **ONE (OR MORE)** student(s) has finished the exam and left the room, *you will not be allowed to take the exam* (NO EXCUSES OR EXCEPTIONS). Also,

IDs may be checked before exams are collected. Make certain you bring your GMU ID to class (or your exam will not be accepted). Assigned seating may be used during exams

B. MAKE UP EXAMS - Students who unavoidably miss an exam due to illness or due to family or other emergency may take a makeup exam **provided that they notify the lecture instructor within 24 hours of the exam**. Notify Dr. Birchard directly by email or leave a voice mail on his phone. The makeup exam will be given at one time only, immediately after the final exam. The makeup exam covers material only from exams 1, 2. Only one exam may be made up.

C. EXAM DATE and TIME: Exam date and times during the semester will not be altered unless the university closes or by mutual agreement. The final exam will **only** be offered at the date and time given on the syllabus.

D. CORRECTIONS ON EXAM SCORES - If errors are made in scoring exams, notify the instructor within one week of the day the exam was returned. After one week, corrections will not be considered.

E. EXAM LOGISTICS - If a class is canceled for any reason in which an exam is scheduled, the exam will be given in the next regularly scheduled class. If the class meeting **immediately prior** to an exam date (e.g., a Tuesday when the exam is scheduled for Thursday of the same week) is canceled so that material to be covered on the exam is not finished in lecture, then the exam will be delayed one class meeting.

F. Honor Code **(**http://honorcode.gmu.edu/). It is expected that all students will abide by the GMU Honor code. If you feel you do not understand these expectations, you should discuss them with your Instructor.

Blackboard
The course will use the Blackboard system for posting course announcements and for grade information. Please be sure your settings in Blackboard automatically forward a copy of messages to the email account you typically monitor so that you remain fully informed.

Files of Previous Exams
The lecture BB site has a folder containing files of previous exams given in the lecture. These are provided ONLY because various student organizations maintain test banks of exams from courses and, in fairness, we believe all students should have access to these. They are not a part of the course, and most do not cover the same material that is covered in the course. The instructor will not discuss them in class or provide answers by email. If students wish to check answers to test questions, they can do so during office hours.

GMU Email Accounts
Students must use their Mason email accounts—either the existing "MEMO" system or a new "MASONLIVE" account to receive important University information, including messages related to this class. See http://masonlive.gmu.edu for more information. I may only communicate official email through a mason account.

Academic Accommodations for Students with Disabilities
If you are a student with a disability and you need academic accommodations, please see the instructor and contact the Office of Disability Services (ODS) at 993-2474. All academic accommodations must be arranged through the ODS. http://ods.gmu.edu

Other Useful Campus Resources:
Writing Center: A114 Robinson Hall; (703) 993-1200; http://writingcenter.gmu.edu
Learning Services: SUB I, Room 3129; (703) 993-2999; http://caps.gmu.edu/learningservices
University Libraries: "Ask a Librarian"; http://library.gmu.edu/mudge/IM/IMRef.html
Counseling and Psychological Services (CAPS): (703) 993-2380; http://caps.gmu.edu

BIOL 300 – BIODIVERSITY – LAB SYLLABUS & SCHEDULE

Location: Exploratory Hall 2512 for all sections
Blackboard: The course will use Blackboard for posting announcements, scores, and all documents unique to the lab and recitation. Some documents will vary from section to section and will be maintained by the instructors at their individual sites. Student-uploaded documents for lab and recitation should be sent to the lab/recitation sites. Scores from graded work will also be maintained by lab instructors at their Blackboard sites.

Required items:

1. Life 11th edition. Sadava, D., D.M. Hillis, H.C. Heller, and M.R. Berenbaum. Sinauer Associates, Inc; available in University Bookstore. If purchasing a paperbound volume, you will need primarily volume 2:
   Volume 1: The Cell and Heredity (Chapters 1-20)
   Volume 2: Evolution, Diversity, and Ecology (Chapters 1, 21-33, 54-59)
   Volume 3: Plants and Animals (Chapters 1, 34-53)
2. A Photographic Atlas for the Biology Laboratory. 7th edition. Van De Graff & Crawley. Morton Publishing Company; available in University Bookstore.
3. BIOL 300 Laboratory Manual for Biodiversity. Academic Year 2015-2016. Andrea Weeks. Hayden McNeil, Plymouth, MI.
4. A laptop computer meeting the minimal specifications of the Biology Program.

LAB GRADING

Lab Quizzes	200 points (10/11 at 20 pts), 40%
Prelabs	65 points (13 at 5 pts, all due), 13%
Digital Images	25 points (5/5 at 5 pts), 5%
Group data analyses (3)	60 points (3 at 20 pts)
Practical exams	100 points (2/2 at 50 pts),
Total	450 points

- No extra credit work is offered in this class.
- A 10-point grading scale will be used to assign grades (90-100=A; 80-89=B; 70-79=C; 60-69=D, below 60=F).
- All George Mason University students have agreed to abide by the letter and the spirit of the Honor Code. You can find a copy of the **University Honor Code** at http://oai.gmu.edu/honor-code/. Violations are reported to the Honor Committee for review.
- Lab scores will be maintained by your instructor on the Blackboard gradebook. You should routinely check your scores in Blackboard to make sure they are correct. See you instructor immediately if scores are not posted or posted incorrectly. **You have two weeks to contact your instructor about any issues following the return of graded work. After two weeks, the scores cannot be changed.**

Grade Equilibration: Lab score averages are usually not lower than the typical 75%. However, if they are below 75%, points will be added to all scores to make the average total score 75%. Then **a 10-point grading scale will be used to assign grades**. Plus and minus grades may be used at the discretion of the instructor and depending on the grade distribution. **During the semester, students should pay close attention to where their lab scores lie *relative to the mean of the class*, as this is the best indicator of above- or below-average performance.** Because of the GPA requirements of the Biology major, C- grades are not given in this class. Since there are many instructors in lab and recitation, an evaluation is done of laboratory and recitation grades by the instructor at the end of the term. If there are significant differences in average scores among sections, an adjustment will be made to ensure everyone's performance is assessed and accounted for equally among lab and recitation sections.

Goal and objectives of lab: The goal of lab is to provide students with a thorough introduction to organismal biology. Its objectives include engaging students in active investigation of all major branches of life, training students to conduct biological experiments, and giving students the opportunity to practice reasoning scientifically. Towards this end, most labs have an experimental component and organismal survey activities. In the experimental portions, students will work with model organisms to explore biological structures or functions, to practice essential skills or techniques, and/or to investigate the suite of synapomorphies for the clade to which the model organism belongs.

Schedule of Lecture/Recitation/Labs:

Week of:	**Lab/ Activities**
Jan 23	Phylogeny construction activity/writeup (recitation score) Lab 1: Prokaryotes Prelab 1 due
Jan 30	Quiz: phylogenetics and prokaryotes Lab 2: Protists Prelab 2 due
Feb 6	Quiz: protists Lab 3: Photosynthetic protists (set up Ceratopteris) Prelab 3 due Physarum data analysis
Feb 13	Quiz: photosynthetic protists Lab 4: Green plants: Increasing scale and efficiency Prelab 4 due Digital image 1 due
Feb 20	Quiz: land plants 1 Lab 5: Land plants: plant-water relations worksheet

	Prelab 5 due Ceratopteris data analysis
Feb 27	Quiz: water relations Lab 6: Land plants: photosynthetic adaptations Prelab 6 due Digital image 2 due
Mar 6	Lab 7: Land plants: seed plants Prelab 7 due Quiz: leaves and photosynthesis
Mar 13	**SPRING BREAK, NO LAB**
Mar 20	**Lab Practical 1 (Labs 1-7)** (material from photosynthetic adaptations and leaf anatomy lab included on practical) Lab 8: Fungi Prelab 8 due Pilobolus data collection
Mar 27	Quiz: fungi Lab 9: Animals: development and tissues Prelab 9 due Pilobolus data analysis Digital image 3 due
Apr 3	Quiz: animal development and lower animals Lab 10: Animals—Lophotrochozoans Prelab 10 due
Apr 10	Quiz: Lophotrochozoans Lab 11: Arthropods Prelab 11 due Digital image 4 due
Apr 17	Quiz: Arthropods Lab 12: Vertebrate homologies I Prelab 12 due
Apr 24	Quiz: fish dissection Lab 13: Vertebrate homologies II Prelab 13 due Digital image 5 due
May 1	**Lab Practical 2 (Labs 8-13)**

Last drop date:
Selective withdrawal period

LAB POLICIES

Quizzes/worksheets/data analyses: Lab quizzes will begin given at the start of lab, covering the material assigned for lab on the previous day. You can best prepare for this by using the pre-lab and lab manual as a guide and doing all assigned exercises thoroughly. There will also usually be a brief introduction to each lab presented by the instructor, and this will cover material that may be on the quiz. In lieu of (or in addition to) a quiz in some cases, students will hand in a completed worksheet activity at the end of the lab period or at the beginning of the following lab. These will vary and will be described in detail for each lab.

During certain sessions, you will analyze raw experimental data that were collected by you and your classmates. You will be taught how to use MS Excel formulas to conduct summary statistical analyses and simple statistical tests during recitation and will complete the analyses and a brief, written interpretation in class or at home. **A laptop computer during these recitation days is essential, and you will not be permitted to participate in the session if you fail to bring one**.

Digital images: Instructions for collecting digital images are available in Appendix A of the Laboratory Manual. Students will submit labeled digital images they collect over the course of lab in a MS Word document called a "Digital Image Collection". Students will submit several of these during the semester containing images assigned by the instructor. These assignments will be described in detail in lab by your instructor. Students should work on these collections throughout the semester as an efficient way to study for lab quizzes, since images will often be used for quiz and practical questions. YOU CAN WORK IN TEAMS TO COLLECT RAW IMAGES, BUT COMPLETED FORMATTED IMAGES (LABELS, DESCRIPTIONS, DISCUSSION, ETC.) MUST BE YOUR OWN INDIVIDUAL WORK. Any duplicated formatted images will receive a score of zero.

Lab practicals: You will take two lab practicals during the semester, each covering the material from 6 labs. These are exams that test student knowledge of materials seen in lab and recitation. They will be made up of stations with microscopes, images or other visual materials about which questions will be asked. Students will have a limited amount of time at each station to answer the questions, and all exams will be collected at the end. The practicals are scheduled to take no more than one hour during the session, the time normally devoted to recitation activities. No recitation activities are scheduled on the day of practicals. The lab instructor will go over the format and expectations for practicals in class.

Attendance: Attendance within your registered laboratory/recitation section is required. If you cannot attend your registered section for a specific week, you may be able to attend another session **temporarily**, but this must be approved **in writing** (email commonly) by the course coordinator and the two lab/recitation instructors involved. **Switching sections is not permitted**. There are **no make-up labs**.

Late work policy: Assignments may not be turned in late.

Blackboard: Your laboratory section-specific Blackboard site will be used to *upload* electronic Digital Image Collections assignments, to post grades for lab and to post section-specific announcements. You should routinely check your scores in Blackboard to make sure they are correct. See you instructor immediately if scores are not posted or posted incorrectly. **You have two weeks to contact your instructor about any issues following the return of graded work. After two weeks, the scores cannot be changed.**

Academic expectations for students in laboratory: Learning in a cooperative environment such as BIOL 330 Laboratory should be stimulating, demanding, and fair. Below are our expectations for students in BIOL 330 Laboratory. This set of expectations is intended to maximize exchange of ideas in an atmosphere of mutual respect while preserving individual ownership of ideas and written words in the best sense of the **University Honor Code (**http://honorcode.gmu.edu/). If you feel you do not understand these expectations, you should discuss them with your Instructor.

- Students are expected to work cooperatively with other members of the laboratory and show respect for the ideas and contributions of other people.
- The lab manual will indicate when students should conduct experiments, share data or materials as part of a pair or a group. We encourage outside study groups, but Pre-lab assignments, Worksheets, Digital Image Collections *must be written individually and not copied from anyone else*. IF THIS IS NOT CLEAR, ASK THE INSTRUCTOR. IDENTICAL ASSIGNMENTS WILL EACH RECEIVE A GRADE OF ZERO.

Quizzes/assignments: Your instructor will give in-class quizzes or make assignments based on the reading or analyses you are doing during the semester. These may be take-home or in-class assignments; they may also be group activities. For group activities, such as group writing assignments, all group members are expected to participate. If the group members feel that someone has not participated fully in producing the product required by the assignment, that person will not be included as an author and will receive no credit for it.

Attendance: Attendance within your registered lab/recitation section is required. If you miss recitation for any reason, you are marked as absent. If you cannot attend your registered section for a specific day, you may be able to attend another session temporarily, but this must be approved **in writing** (email commonly) by the course coordinator and the two lab/recitation instructors involved. **Switching sections is not permitted**.

Late work policy: All assignments must be turned in at the due date. If a student misses lab, certain assignments can be turned in after the lab (pre-labs, images and worksheets). However, all work done in lab (recitations, quizzes, practicals) must be completed in lab.

Blackboard: Your recitation section-specific Blackboard site will be used to upload documents (if required), to post grades for recitation and to post section-specific announcements. Recitation readings will be maintained on the Blackboard site for each lab/recitation section. You should routinely check your scores in Blackboard to make sure they are correct. See you instructor immediately if scores are not posted or posted incorrectly. **You have two weeks to contact your instructor about any issues following the return of graded work. After two weeks, the scores cannot be changed.**

A laptop computer with a USB drive is required for laboratory/recitation, PC preferred.
Students will be using USB-connected digital microscope cameras that are controlled by PC-only software. Students will work in pairs. A limited number of desktop PC computers are also available in lab. In recitation, statistical analyses of data will be conducted during class. Minimal hardware specifications: The Biology Program now requires all Biology Majors to own a laptop with the following minimal specifications: Processor: 2.3 GHz dual processors, Memory: 2 GB, Hard Drive Capacity 150 GB, Network Capacity: Built-in 10/100 Fast Ethernet LAN (with RJ-45 connector). Minimal software Requirements: Microsoft Office and Excel.