BIOL 4306-001 Bioinformatics Lecture  
Fall 2020

Meeting time: Mon, Wed, and Fri 8:00 – 8:55 AM  
Meeting classroom: HPR 00252

Instructor: Matthew Greenwold, Ph.D., Assistant Professor of Biology  
Office: HPR 117  
Virtual Office Hours: Thursday 9:00 AM – 12:00 PM (via ZOOM) or by appointment.  
Email: mgreenwold@uttyler.edu  
Phone: 903.566.6303

Course Description: Covers principles and methods of analyzing large biological datasets with emphasis on genomes, including use of a computer to answer questions in biology.

Prerequisite: BIOL 1306/1106 and BIOL 1307/1107. Corequisite: BIOL 4106

COVID-19: This course will meet in person in a room that has been assessed for the maximum capacity to observe social distancing. You will be assigned a seat, which will allow us to maintain social distancing. Please read the university guidelines below on COVID-19 precautions in the classroom and laboratory.

If you want to meet face-to-face with me outside the classroom, please email me to set up an appointment. A face mask is required, and social distancing must be maintained during the meeting.

Course Learning Objectives: By the end of the course, students should be able to:

- Navigate and find molecular data on public depositories  
- Differentiate the main theories of molecular evolution  
- Differentiate and execute global and local alignments of molecular data  
- Select the best fitting substitution model  
- Differentiate the major phylogenetic methods  
- Understand the steps for assembling genomes from next-generation sequencing data

Required Course Materials: A 1.0 GB memory stick. No required textbook.

Grading: Your grade will be based on four exams and a final exam. They will each be worth 20% of your grade.

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<tr>
<th>Grading Percentage</th>
<th>Grade</th>
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<tbody>
<tr>
<td>90-100%</td>
<td>A</td>
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<tr>
<td>80-90%</td>
<td>B</td>
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<tr>
<td>70-79%</td>
<td>C</td>
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Exams: There will be four semester exams that will take place **Wednesday Sept 9th**, **Monday Sept 28th**, **Monday Oct. 19th**, and **Nov. 9th**. You will have the entire class period to finish the exam. They will be mostly short answer/essay but may also include true/false and multiple-choice questions.

Final Exam: The final exam will be cumulative and consist of multiple-choice questions. It will be administered ONLINE through Canvas using ProctorU to ensure academic integrity. Please see the statement below for more information on ProctorU.

Attendance: Attendance is mandatory. I am required to provide attendance data for Financial Aid, midterm, and final grades submissions; therefore, it is critical that you attend our class meetings. If you cannot attend for reasons of Illness or other acceptable situations, please contact me to determine the best course of action.

<table>
<thead>
<tr>
<th>Week of</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug. 24th</td>
<td>Introduction to course / Review of molecular biology</td>
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<tr>
<td>Aug. 31st</td>
<td>Molecular biology cont.</td>
</tr>
<tr>
<td>Sept. 7th</td>
<td>Public databases – (Exam 1 – Wednesday, Sept. 9th)</td>
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<tr>
<td>Sept. 14th</td>
<td>Global alignment</td>
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<tr>
<td>Sept. 21st</td>
<td>Local alignment</td>
</tr>
<tr>
<td>Sept. 28th</td>
<td>BLAST – (Exam 2 – Monday)</td>
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<tr>
<td>Oct. 5th</td>
<td>Substitution models</td>
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<tr>
<td>Oct. 12th</td>
<td>Theories of molecular evolution</td>
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<tr>
<td>Oct. 19th</td>
<td>Phylogenetics – (Exam 3 – Monday)</td>
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<tr>
<td>Oct. 26th</td>
<td>Phylogenetics</td>
</tr>
<tr>
<td>Nov. 2nd</td>
<td>Genomes</td>
</tr>
<tr>
<td>Nov. 9th</td>
<td>Genomes – (Exam 4 – Monday)</td>
</tr>
<tr>
<td>Nov. 16th</td>
<td>Genomes</td>
</tr>
<tr>
<td>Nov. 23rd</td>
<td><em>No Classes – Thanksgiving Holiday</em></td>
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<tr>
<td>Nov. 30th</td>
<td>Online – Genomes cont.</td>
</tr>
<tr>
<td>Dec. 9th</td>
<td>Final Exam – 8:00 AM – 10:00 AM</td>
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</table>

Last day to drop with a “W” is September 4th.

According to the UT Tyler Handbook of Operating Procedures: "The information contained in the course syllabus, other than the grading criteria and absence and make-up policies, may be subject to change with reasonable advance notice as long as the change is without prejudice to the students."

**Important COVID-19 Information for Classrooms and Laboratories**
Students are required to wear face masks covering their nose and mouth, and follow social distancing guidelines, at all times in public settings (including classrooms and laboratories), as specified by Procedures for Fall 2020 Return to Normal Operations. The UT Tyler community of Patriots views adoption of these practices consistent with its Honor Code and a sign of good citizenship and respectful care of fellow classmates, faculty, and staff.

Students who are feeling ill or experiencing symptoms such as sneezing, coughing, or a higher than normal temperature will be excused from class and should stay at home and may join the class remotely. Students who have difficulty adhering to the Covid-19 safety policies for health reasons are also encouraged to join the class remotely. Students needing additional accommodations may contact the Office of Student Accessibility and Resources at University Center 3150, or call (903) 566-7079 or email saroffice@uttyler.edu.

**ProctorU**

The final exam in this course will be proctored using ProctorU. Beyond the cost of initial equipment needed (e.g. a camera for your computer), there will not be any additional cost for proctoring. You will need to create a ProctorU account and install the ProctorU extension before attempting any assessment.

To create a ProctorU account, follow the ProctorU tool within Canvas. Please make sure you are using the current version of Chrome or Firefox and download the ProctorU extension available at [http://bit.ly/proctoruchrome](http://bit.ly/proctoruchrome) or [https://www.proctoru.com/firefox](https://www.proctoru.com/firefox).

In order to use ProctorU, you will need the following:

- High-speed Internet connection
- Webcam (internal or external)
- Windows, Mac, or Chrome Operating System
- Up-to-date Chrome or Firefox browser and ProctorU extension installed
- Valid photo ID
- Quiet environment to take your assessment

**Requirements:**

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<thead>
<tr>
<th>Type</th>
<th>Minimum</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Web Camera</td>
<td>640×480 resolution</td>
<td>1280×720 resolution</td>
</tr>
<tr>
<td>PC Users</td>
<td>Windows Vista</td>
<td>Windows 10 (10 S is not supported)</td>
</tr>
<tr>
<td>Mac Users</td>
<td>OS X 10.5 or higher</td>
<td>OS X 10.13 High Sierra</td>
</tr>
<tr>
<td>Internet Download Speed</td>
<td>.768 Mbps</td>
<td>1.5 Mbps</td>
</tr>
<tr>
<td>Internet Upload Speed</td>
<td>.348 Mbps</td>
<td>1 Mbps</td>
</tr>
<tr>
<td>RAM</td>
<td>1024 MB</td>
<td>2 GB</td>
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<tr>
<td>Ports</td>
<td>1935, 843, 80, 443, 61613, UDP/TCP</td>
<td>1935, 843, 80, 443, 61613, UDP/TCP</td>
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You can visit the Test Taker Resource Page for additional information at [https://bit.ly/ProctorMe](https://bit.ly/ProctorMe) or the UT Tyler office of Digital Learning at [https://www.uttyler.edu/digital-learning/proctoru-resources/](https://www.uttyler.edu/digital-learning/proctoru-resources/) for links to information videos and a computer system check.

**Recording of Class Sessions**
Class sessions may be recorded by the instructor for use by students enrolled in this course. Recordings that contain personally identifiable information or other information subject to FERPA shall not be shared with individuals not enrolled in this course unless appropriate consent is obtained from all relevant students. Class recordings are reserved only for the use of students enrolled in the course and only for educational purposes. Course recordings should not be shared outside of the course in any form without express permission.

**UT Tyler Honor Code**
Every member of the UT Tyler community joins together to embrace: Honor and integrity that will not allow me to lie, cheat, or steals, nor to accept the actions of those who do.

**UT Tyler Resources for Students**
- UT Tyler Writing Center (903.565.5995), writingcenter@uttyler.edu
- UT Tyler Tutoring Center (903.565.5964), tutoring@uttyler.edu
- The Mathematics Learning Center, RBN 4021, this is the open access computer lab for math students, with tutors on duty to assist students who are enrolled in early-career courses.
- UT Tyler Counseling Center (903.566.7254)

**Students Rights and Responsibilities**
To know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please follow this link: [http://www.uttyler.edu/wellness/rightsresponsibilities.php](http://www.uttyler.edu/wellness/rightsresponsibilities.php)

**Campus Carry**
We respect the right and privacy of students 21 and over who are duly licensed to carry concealed weapons in this class. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available at [http://www.uttyler.edu/about/campus-carry/index.php](http://www.uttyler.edu/about/campus-carry/index.php)

**UT Tyler a Tobacco-Free University**
All forms of tobacco will not be permitted on the UT Tyler main campus, branch campuses, and any property owned by UT Tyler. This applies to all members of the University community, including students, faculty, staff, University affiliates, contractors, and visitors.

Forms of tobacco not permitted include cigarettes, cigars, pipes, water pipes (hookah), bidis, kreteks, electronic cigarettes, smokeless tobacco, snuff, chewing tobacco, and all other tobacco products.
There are several cessation programs available to students looking to quit smoking, including counseling, quitlines, and group support. For more information on cessation programs please visit www.uttyler.edu/tobacco-free.

**Grade Replacement/Forgiveness and Census Date Policies**

Students repeating a course for grade forgiveness (grade replacement) must file a Grade Replacement Contract with the Enrollment Services Center (ADM 230) on or before the Census Date of the semester in which the course will be repeated. Grade Replacement Contracts are available in the Enrollment Services Center or at http://www.uttyler.edu/registrar. Each semester’s Census Date can be found on the Contract itself, on the Academic Calendar, or in the information pamphlets published each semester by the Office of the Registrar.

Failure to file a Grade Replacement Contract will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates are eligible to exercise grade replacement for only three course repeats during their career at UT Tyler; graduates are eligible for two grade replacements. Full policy details are printed on each Grade Replacement Contract.

The Census Date is the deadline for many forms and enrollment actions of which students need to be aware. These include:

- Submitting Grade Replacement Contracts, Transient Forms, requests to withhold directory information, approvals for taking courses as Audit, Pass/Fail or Credit/No Credit.
- Receiving 100% refunds for partial withdrawals. (There is no refund for these after the Census Date)
- Schedule adjustments (section changes, adding a new class, dropping without a “W” grade)
- Being reinstated or re-enrolled in classes after being dropped for non-payment
- Completing the process for tuition exemptions or waivers through Financial Aid

**State-Mandated Course Drop Policy**

Texas law prohibits a student who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the census date (See Academic Calendar for the specific date).

Exceptions to the 6-drop rule may be found in the catalog. Petitions for exemptions must be submitted to the Enrollment Services Center and must be accompanied by documentation of the extenuating circumstance. Please contact the Enrollment Services Center if you have any questions.

**Disability/Accessibility Services**

In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA) and the ADA Amendments Act (ADAAA) the University of Texas at Tyler offers accommodations to students with learning, physical and/or psychological disabilities. If you have
a disability, including a non-visible diagnosis such as a learning disorder, chronic illness, TBI, PTSD, ADHD, or you have a history of modifications or accommodations in a previous educational environment, you are encouraged to visit https://hood.accessiblelearning.com/UTTyler and fill out the New Student application. The Student Accessibility and Resources (SAR) office will contact you when your application has been submitted and an appointment with Cynthia Lowery, Assistant Director of Student Services/ADA Coordinator. For more information, including filling out an application for services, please visit the SAR webpage at http://www.utt Tyler.edu/disabilityservices, the SAR office located in the University Center, # 3150 or call 903.566.7079.

**Student Absence due to Religious Observance**
Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences by the second class meeting of the semester.

**Student Absence for University-Sponsored Events and Activities**
If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time the instructor will set a date and time when make-up assignments will be completed.

**Social Security and FERPA Statement**
It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically.

**Emergency Exits and Evacuation**
Everyone is required to exit the building when a fire alarm goes off. Follow your instructor’s directions regarding the appropriate exit. If you require assistance during an evacuation, inform your instructor in the first week of class. Do not re-enter the building unless given permission by University Police, Fire department, or Fire Prevention Services.

**Student Standards of Academic Conduct**
Disciplinary proceedings may be initiated against any student who engages in scholastic dishonesty, including, but not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

i. “Cheating” includes, but is not limited to:
- copying from another student’s test paper;
- using, during a test, materials not authorized by the person giving the test;
- failure to comply with instructions given by the person administering the test;
- possession during a test of materials which are not authorized by the person giving the test, such as class notes or specifically designed “crib notes”. The presence of textbooks
constitutes a violation if they have been specifically prohibited by the person administering the test;

- using, buying, stealing, transporting, or soliciting in whole or part the contents of an unadministered test, test key, homework solution, or computer program;
- collaborating with or seeking aid from another student during a test or other assignment without authority;
- discussing the contents of an examination with another student who will take the examination;
- divulging the contents of an examination, for the purpose of preserving questions for use by another, when the instructors has designated that the examination is not to be removed from the examination room or not to be returned or to be kept by the student;
- substituting for another person, or permitting another person to substitute for oneself to take a course, a test, or any course-related assignment;
- paying or offering money or other valuable thing to, or coercing another person to obtain an unadministered test, test key, homework solution, or computer program or information about an unadministered test, test key, home solution or computer program;
- falsifying research data, laboratory reports, and/or other academic work offered for credit;
- taking, keeping, misplacing, or damaging the property of The University of Texas at Tyler, or of another, if the student knows or reasonably should know that an unfair academic advantage would be gained by such conduct; and
- misrepresenting facts, including providing false grades or resumes, for the purpose of obtaining an academic or financial benefit or injuring another student academically or financially.

ii. “Plagiarism” includes, but is not limited to, the appropriation, buying, receiving as a gift, or obtaining by any means another’s work and the submission of it as one’s own academic work offered for credit.

iii. “Collusion” includes, but is not limited to, the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any section of the rules on scholastic dishonesty.

iv. All written work that is submitted will be subject to review by plagiarism software.