Syllabus

BIOL 5184–060 (80938)
Evolutionary Genetics Lab
Fall 2020

Meeting Times: All-online and self-paced (but with deadlines)
Location: All-online. Take the course wherever you are!
First Day of Class: Monday, August 24th
Last Day of Class: Friday, December 4th
Date to Withdraw Without Penalty (Census Date): Friday, September 4th

Please note that this course is all-online and has no face-to-face component.

Instructor:
Dr. Joshua Banta
Director, Center for Environment, Biodiversity, and Conservation
Associate Professor, Department of Biology
Office: Hudnall, Pirtle, Roosth Building (HPR) Room 129. NOTE: Since this is an all-online class, office hours will be held over the phone, not at my office.
Phone: (903) 565-5655
Email: jbanta@uttyler.edu
Office Hours: MWF 10:00 – 11:00 am or by appointment. NOTE: Since this is an all-online class, office hours will be held over the phone, not at my office. Simply call my phone number.

Course Description: This computer-based laboratory course is a companion to the Evolutionary Genetics lecture course. You need to take the lecture course concurrently in order to take the lab. The actual analyses we perform will depend on the interests of the class. Possibilities include analysis of molecular variance (AMOVA), Bayesian clustering analysis (also known as STRUCTURE), haplotype network analysis, and phylogenetic analysis (using both maximum likelihood and Bayesian methods, and actually making trees). Datasets may be single-gene sequences or genome-wide data.

Course Objectives (by the end of this course, you should be able to):

- Use various computer programs that may include R Studio, Arlequin, STRUCTURE, PhyML, RaxML, TCS, BEAST2, and various Python-based scripts/packages, for evolutionary genetic purposes.
- Explain how different computational analyses, which may include AMOVA, SAMOVA, Bayesian skyline plots, Bayesian cluster analysis, maximum likelihood phylogenetic analysis, and Bayesian coalescence phylogenetic analysis, are used in evolutionary genetics.
- Apply evolutionary genetic methods to your own data or other new datasets.
Required Materials:

- Access to a **laptop or desktop computer** on a regular basis.
  - It is not permitted to take this course using only your smartphone.
  - It is also not permitted to take this course using an iPad or other tablet device.
  - You must be able to access reliable, high-speed internet on your laptop or desktop computer on a regular basis, with generous data usage (no low data caps!).
  - If you do not have regular access to a laptop or desktop computer, the Biology Department has its own computer lab. It is located in the Biology, Education, and Psychology (BEP) building in room 139. It is available for your use on Mondays from 8:00AM – 10:50AM, and at other times when it is not in use. You may be asked to leave if you use it outside of Monday mornings and someone else has the room scheduled. I will not be present.
    - If the computer lab is locked, see Alan Lizarraga (BEP 134) for access.
    - Access may be disrupted if the university has to suspend in-person operations due to COVID-19.
    - No other computer labs are permitted for this laboratory course. Only BEP 139 has the right software installed.
- A reliable high-speed internet connection that you can access on a regular basis.
  - If you have a laptop but not reliable internet access, there will be WiFi available in some of the campus parking lots.
  - See above about the Biology Department computer lab, which is another option.
- Headphones or speakers that work on your laptop or desktop computer.
  - The speakers may be built into your device (internal), or you may need to add external headphones or speakers on your own.
  - The bottom line is that you will need some way to hear sound on your device that accompanies the videos you will watch.
  - I have a limited number of headphones I can lend to you if you need them (on a first-come, first-served basis until they run out).
- SanDisk Cruzer 128GB USB 2.0 Flash Drive
  - This drive will be provided to you at no cost.
    - I will ask you for an address to mail it to. It will be sent to you via overnight mail.
  - If you lose it, you will be responsible for replacing it with the exact same item, at your own expense. You can replace it here:
    - [https://www.amazon.com/gp/product/B00TKFCYP0/ref=ppx_yo_dt_b_search_asin_title?ie=UTF8&psc=1](https://www.amazon.com/gp/product/B00TKFCYP0/ref=ppx_yo_dt_b_search_asin_title?ie=UTF8&psc=1)
- If you are using your own computer, you must install the **free** software VirtualBox.
  - Visit [https://www.virtualbox.org/](https://www.virtualbox.org/)
  - Installation instructions can be found here:
    - Mac: [https://www.youtube.com/watch?v=1EvM-No4eQo&feature=emb_title](https://www.youtube.com/watch?v=1EvM-No4eQo&feature=emb_title)
    - Windows: [https://www.youtube.com/watch?v=63_kPIQUPp8&feature=emb_logo](https://www.youtube.com/watch?v=63_kPIQUPp8&feature=emb_logo)
  - The computers in the Biology Department computer lab (BEP 139) already have VirtualBox installed. See above for information about the computer lab.
• If you cannot access these materials, you **cannot** take this course. Changes to the assignment deadlines will **not** be made if you lack (even temporarily) access to these materials, except in some exceptional situations specifically related to COVID (see the COVID section below). Missing deadlines will result in zeros on the assignments and these zeros cannot be changed.

**Grading:**
Quizzes, 10% of final grade when added together
Video recordings of yourself doing the labs, 40% of final grade when added together
Research paper, 50% of final grade
Total: 100%

90 – 100% = A  
80 – 89% = B  
70 – 79% = C  
60 – 69% = D  
< 60% = F
**Possible Topics** (subject to change)

Phylogenetics (Bayesian and frequentist approaches for single genes, concatenated genes, and genome-wide data)
Conversion of genetic data between different file formats
Models of nucleotide substitution in sequence data
Concatenation of different gene sequences
Haplotype network analysis
Professional data visualization
Analysis of molecular variance (AMOVA)
Spatial analysis of molecular variance (SAMOVA)
Bayesian cluster analysis (using STRUCTURE)
**Attendance and make-up policy:** “Attendance” in this all-online course means handing in multiple assignments, every week, by the deadlines, and “attendance,” in this sense, is mandatory. **No late work will be accepted.** Even though this course is entirely online and self-paced, there are strict deadlines to follow that require your regular participation. The deadlines are **not** flexible. You are expected to plan ahead and do your work ahead of time. You are expected to **not** wait until the last minute. Problems with your laptop/desktop or internet connection or Canvas, problems with scheduling for your job(s) or other classes, car problems, problems with child care, or personal or medical problems will not be accepted excuses for missing the deadlines. In general **no** excuses will be accepted, except under extraordinary circumstances at my sole discretion. Missing the deadlines means you will receive zeros on the missed assignments and these zeros cannot be changed. **There will be no make-up assignments or extensions.**

**Correspondence:** You are required to activate the email address that is listed for you on Canvas and to check it regularly. You must check this email address at a minimum every Monday, Wednesday, and Friday morning, for the entire duration of the semester, for any correspondence from me. You are also required to check the Canvas site for this course every Monday, Wednesday, and Friday morning as well, for the entire duration of the semester, for any announcements. You will be held responsible for any information, including deadlines, that I communicate to you via your email address listed on Canvas and/or through the announcements on the Canvas course site. The information could come from one or both places (email and/or Canvas announcements), so you must check BOTH places on the schedule indicated above.

**Due Dates and Deadlines:** You are required to have this course visible in your calendar on Canvas. To do so, make sure the box for the course has a check mark. You will be held responsible for all of the due dates and deadlines for this course that are indicated in your Canvas calendar.

**Quizzes:** The quizzes will be embedded into pre-recorded videos on Canvas. In other words, you will take the quizzes as you watch videos. The quiz questions will automatically pop up on your screen as you go along. The due dates of the quizzes will be indicated in your Canvas calendars. The videos with the embedded quizzes will be available at least one week before the due dates. The quizzes will tentatively be due every Friday evening throughout the entire semester.

**Video recordings of yourself doing the labs:** You will be repeating the step-by-step videos I have made for you, so that you will get first-hand experience performing the computational analyses yourself. To prove that you have done the activities, you will be recording yourself doing them using the “Studio” function in Canvas. You will **not** need a webcam or microphone to do this, as you will only be capturing what’s on your screen. You will then turn in these recordings through Canvas. You must do the recording yourself and you cannot do it with others. You cannot hand in the same video as anyone else from this or previous year’s classes. The rules about copying that are described below will apply.

**Research paper:** The instructions will be posted on Canvas later in the semester. This paper and associated assignments will be worth 50% of your final grade. The paper will be due on Friday evening, December 4th and will be submitted through Canvas. Drafts of the entire paper or individual sections may be due earlier and count towards the overall research paper grade. Papers or assigned drafts that are not submitted through Canvas will not be counted and will receive zeros that cannot be changed. Instructions will be provided later. You will either be using your own data or I will be providing you with data. If I provide you with data, you will have no expectation of authorship on any future papers, conference proceedings, reports, or other works arising from that data, or arising from any analyses that are performed using that data.

**Copying:** You can discuss your assignments with your friends or classmates whenever you want and you can discuss anything you want. But **you**, alone, are expected to write everything that you submit, by yourself, and everything that you submit must be in your own words. It is not allowable to hand in something as a group, or for all members of a group to each hand in the same thing. **Any** copying whatsoever from others, whether they are part of your study group or not, is entirely **prohibited.** You are **not** allowed to pass around your submitted assignments or drafts to anyone else to look at, **for any reason,** and you are also not allowed to look at submitted assignments or drafts of anything written by anyone else. These prohibitions apply to any materials submitted by students in previous years’ classes as
well. These prohibitions also apply to any material from any source (newspaper, TV, website, professional journal, magazine, etc.) Simply putting everything in quotation marks does not get around any of these prohibitions, because quoting is not allowed either, no matter what the source is! If you hand in the same assignment as someone else, or if it is copied from someone else, even a little!, or if the assignment contains any quoting from any source, with or without quotation marks, you will receive a zero for the assignment and the person you copied from will receive a zero as well. I will not seek to determine who copied from whom; all persons with similar content will have the same penalty.

**Citations:** When writing your research paper, you will be consulting other sources. There will be strict rules about what other sources are allowed and how to cite these sources in your paper. The rules about copying will apply as well, and so will the penalties, and this includes the rules forbidding quoting, even with quotation marks. More detailed rules for the research paper will be provided later. Failure to follow the rules for citations will result in a zero for the final paper.

**Appeals:** If you think something was scored incorrectly, you will need to follow the following procedure:
- Write a few sentences explaining why you think you should have received a different score.
- Appeals will only be accepted through Canvas, and must be turned in no later than one week after the assignment was graded. Go to the course site and select “Modules” ➔ “Appeals.”
- Failure to follow these rules means that your appeal will not be considered.
- The only reasons I will give back points are if: (1) I made a math error; or (2) I decide that your answer was factually correct and followed all applicable rules indicated in the syllabus and elsewhere. By “factually correct,” I mean that your answer was really true about the world. Please also note that I, alone, will determine what is factually correct and what is not.
- The following are not valid reasons for getting points back: you feel that I explained something badly, you misunderstood what I was saying, or you feel that my PowerPoint slides or other materials were wrong or unclear.
- Please note that I cannot discuss anyone else’s scores with you because of privacy reasons, even if you say that you have their permission, and even if they say that I have their permission. I lack the legal expertise to allow someone to waive their privacy privileges, even if they want me to, and even if they have already shared their scores with others on their own.
- Appeals can result in a lower score, the same score, or a higher score than you originally received. Specifically note that I reserve the right to lower your score if I re-evaluate it and deem it appropriate.
- The rules about copying apply to appeals as well. See above.

**Turnitin:** All assignments and appeals that you hand in will be checked for copying using a program called Turnitin™. This software checks the internet as well as every other student’s work who has ever taken this course or any other course. It also checks against any papers that are secretly traded or sold over the internet. The bottom line is that if you copy someone else’s or somewhere else’s writing, even a little, the software will catch you and it will give me the names of the other persons and/or the other copied sources.

**COVID:** Illnesses involving yourself and/or others will generally not be considered excuses for missing the deadlines to turn in assignments, in which case you will receive zeros on those assignments and those zeros cannot be changed. This is because I expect you to do the work ahead of time and not to save it for the last minute. However, if you are unable to meet the requirements for the course specifically because of some specific disruptions related to COVID, I may give you a grade of “incomplete” for the course, at my discretion. For this to be possible, you will need to discuss the situation with me as soon as you can.

If I allow it, then the procedure will be as follows:
- When conditions improve, you will be able to continue making progress in the course, on your own, until you have completed all of the required assignments.
• You will have until December 2021 to finish the incomplete assignments.
• If you do not finish the assignments by that point, your “incomplete” grade for the course will be changed to the grade you earned up to that point, with zeros factoring into your grade for everything else that is left unfinished, and you will no longer be given the opportunity to finish the rest of the work or to change your course grade beyond that point.

The only COVID-related disruptions I may consider are:
• You or someone you care for gets COVID (and let’s all wish this doesn’t happen!!!), and this renders you unable to keep up with the course.
  ○ In this case, I will require a doctor’s note that references the date of your positive COVID test or diagnosis and/or the date of the positive COVID test or diagnosis of the person you are caring for.
• COVID disrupts your access to consistent, reliable, high-speed internet and/or to consistent, regular usage of an internet-enabled laptop or desktop computer on which to access high-speed internet.

Privacy: Students do not have the right to be “anonymous” whether classes are in person or online, or for all-online classes. All discussion will take place within Canvas, and your names will be displayed.
**Grade grubbing:** Grade grubbing will not be tolerated. I have quoted some relevant passages below about grade grubbing. They come from an excellent website that I recommend you read:

https://www.math.uh.edu/~tomforde/GradeGrubbing.html

Grade Grubbing (also called "grade begging" or "grade lawyering") is the act of a student going to a professor and asking for a grade to be raised for no legitimate reason. Often the student argues that they feel their work was "not graded fairly", or they made only a small mistake and should get more points, or they knew what they were doing even though they gave the wrong answer. Grade grubbing often involves asking for detailed justification of why certain points were taken off, questioning subjective aspects of grading (e.g., Why is this problem worth 5 points and this one worth 7 points?), and wearing down the professor by arguing, begging, and pleading until they finally relent and increase the student's grade.

…In addition, grade grubbing presents a very negative image of you: it indicates that you do not care about learning the material, and that all that matters to you is your grade in the class, even if you get that grade unfairly or when you do not deserve it.

Grade grubbing greatly affects the way your professors view you and the way they will treat you in the future. If you challenge your grade without a good reason, you will probably not be remembered fondly when you ask that professor for a recommendation...

…If an obvious error has been made in grading, such as points added incorrectly or a clearly correct answer was inadvertently marked wrong, then by all means talk to the professor and they will likely change your grade immediately. Likewise, if you don't understand why you lost points, or want clarification (not justification) of the grading, most professors are happy to talk with you. **And, if you want to discuss the material, learn what you did wrong, or discuss how to do better on future work, most professors will probably be thrilled to speak to you about this.**

However, if you are going to approach a professor who has spent their life studying, teaching, and doing research on a particular topic, and then argue that their decision of how to grade or award points should be changed to what you say it should be, then you better be prepared with a strong and convincing argument.

Source: https://www.math.uh.edu/~tomforde/GradeGrubbing.html
**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.

**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.
UNIVERSITY POLICIES AND ADDITIONAL INFORMATION THAT MUST APPEAR IN EACH COURSE SYLLABUS

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 steal, nor to accept the actions of those who do.

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

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

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.uttyler.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

Revised 05/19
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 instructor 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.

**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)