College of Arts and Sciences

Biology

EEBL 612 Syllabus

Section 600 (26391)
Open Source for Open Science Bootcamp
Fall 2025 - College Station

Course Information

This class is taught as a full day workshop across a single weekend: September 13th to September 14th in the ILSB auditorium.

Credit Hours: 1

Instructor Details

David Bapst
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Office: Halbouty 169
Phone: N/A
Office Hours
Tuesday/Thursday 9-10am
Preferred Contact Method
Please email me or message me via Canvas.

Course Description

The Open Source for Open Science workshop gives students exposure to command line programming in R; including principles of data import, vetting, processing, analysis, graphing and produce export. This multi-day event typically precedes Fall semesters.

Course Prerequisites

Prerequisite/Corequisite(s): Graduate classification or approval by instructor.

Special Course Designation

ACST | NTFD | OPEN

Course Learning Outcomes

Upon completion of this course, the learner will be able to:

-

Textbook and/or Resource Materials

This material Is: Optional
NO TEXTBOOK NEEDED

Grading Policy

Students who registered for credit will be expected to attend and participate in all sessions of the OSOS workshop, and use the programming skills they gain in the OSOS workshop in their other graduate courses and research. Students will email a reflective statement about their acquired programming skills and the impact they have made on their assignment work in the other courses, and their independent research projects. This reflective essay will be the only graded assignment for this one-credit class.

Late Work Policy

Work submitted by a student as makeup work for an excused absence is not considered late work and is exempt from the late work policy (Student Rule 7).

Not applicable. If the reflective essay is not turned in by the end of the semester, there won't be time for a late work submission.

Course Schedule

Day 1 - Saturday, September 13th

Table describing when and what modules are on the first day of the workshop.

Start	End	Module	Instructor
8:00a		Doors Open	
9:00a	10:15a	Introduction to R & Rstudio	Emmarie Alexander
10:30a	11:45a	Managing Data in R	Leonardo Collazos
1:00p	2:15p	Programming in R	Kyle Simpson
2:30p	3:45p	Base Graphics in R	Adekola Owoyemi
4:00p	5:20p	The Grammar of Graphics: ggplot2 in R	Elek Nagy

Day 2 - Sunday, September 14th

Table describing when and what modules are on the second day of the workshop.

Start	End	Module	Instructor
8:00a		Doors Open	
9:00a	10:15a	Introduction to Python	Trevor Millar
10:30a	11:45a	Python for Data Analysis	Dan Drennan

Start	End	Module	Instructor
1:00p	2:15p	Introduction to Bash and the Command-Line	Emmarie Alexander
2:30p	3:45p	Introduction to Statistical Analyses in R	Matthew Marano

Additional Course Information

A personal laptop computer with R, RStudio, and (possibly) some additional software is required for use during the workshop.

Participants will need to install R and RStudio on their personal computers. In addition, extra software packages, which add extra functionality will need to be installed as well for the more advanced sessions. Installation instructions for all required software is below.Additional data files and other electronic materials will be provided using public web links.

Installing R and RStudio on your Computer

R and RStudio are freely available software, and easily installed on Windows, macOS, and Linux computers. Below are instructions for installing these on your local desktop computer. If possible, I recommend an offline installation, so you can continue to use R and RStudio and become familiar with it regardless of whether you have internet connectivity, and beyond your time as an enrolled student.Currently, there is no easy way to install R on devices using mobile operating systems (Android, iOS, Chromebook), although you may be able to access it using a virtual online environment.

Windows Operating Systems

Install R by downloading and running this `.exe` file from CRAN:

Link to R Installation Files

Also, please install the RStudio IDE by visiting their website and downloading the installer file for your respective system:

Link to Rstudio Installation Files

Note that if you have separate user and admin accounts, you should run the installers as administrator (to do this, right-click on the `.exe` file and select "Run as administrator" instead of double-clicking). Otherwise problems may occur later, for example when installing R packages.

Here is a a video tutorial of Installing R on Windows, courtesy of Software Carpentry:

Video Tutorial of Installing R on Windows

macOS Systems

Install R by going to CRAN and downloading, and running, this `.pkg` file:

Link to R Installation Files

Also, please install the RStudio IDE by visiting their website and downloading the installer file for macOS:

Link to Rstudio Installation Files

Here is a a video tutorial of Installing R on macOS, courtesy of Software Carpentry:

Video Tutorial of Installing R on macOS

Linux Systems

You can download the binary files for your distribution from CRAN:

Link to R Installation Files

Or you can use your package manager (e.g. for Debian/Ubuntu-based distributions run `sudo apt-get install r-base`, and for Fedora-based distributions run

`sudo dnf install R`).

Also, please install the RStudio IDE by visiting the Posit website, and downloading the installer file for your respective flavor of Linux:

Link to Rstudio Installation Files

Getting a Bash Shell on Your Computer

Bash is a commonly-used shell that gives you the power to do tasks more quickly. The following instructions are taken from the Software Carpentry module 'The Unix Shell'.

Windows Operating Systems

1. Download the Git for Windows installer.
2. Run the installer and follow the steps below:
    1. Click on "Next" four times (two times if you've previously installed Git). You don't need to change anything in the Information, location, components, and start menu screens.
    2. **From the dropdown menu, "Choosing the default editor used by Git", select "Use the Nano editor by default" (NOTE: you will need to scroll up to find it) and click on "Next".**
    3. On the page that says "Adjusting the name of the initial branch in new repositories", ensure that "Let Git decide" is selected. This will ensure the highest level of compatibility for our lessons.
    4. Ensure that "Git from the command line and also from 3rd-party software" is selected and click on "Next". (If you don't do this Git Bash will not work properly, requiring you to remove the Git Bash installation, re-run the installer and to select the "Git from the command line and also from 3rd-party software" option.)
    5. Select "Use bundled OpenSSH".

6. Ensure that "Use the native Windows Secure Channel Library" is selected and click on "Next".
7. Ensure that "Checkout Windows-style, commit Unix-style line endings" is selected and click on "Next".
8. **Ensure that "Use Windows' default console window" is selected and click on "Next".**
9. Ensure that "Default (fast-forward or merge) is selected and click "Next"
10. Ensure that "Git Credential Manager" is selected and click on "Next".
11. Ensure that "Enable file system caching" is selected and click on "Next".
12. Click on "Install".
13. Click on "Finish" or "Next".

3. If your "HOME" environment variable is not set (or you don't know what this is):
    1. Open command prompt (Open Start Menu then type `cmd` and press `Enter`)
    2. Type the following line into the command prompt window exactly as shown:
       ```
       setx HOME "%USERPROFILE%"
       ```
    3. Press `Enter`, you should see `SUCCESS: Specified value was saved.`
    4. Quit command prompt by typing `exit` then pressing `Enter`

This will provide you with both Git and Bash in the Git Bash program.

Video on Installing Git and Bash via the Git Bash program on a Windows Machine

macOS Systems

The default shell in Mac OS X Ventura and newer versions is Zsh, but Bash is available in all versions, so no need to install anything. You access Bash from the Terminal (found in `/Applications/Utilities`). See the Git installation video

tutorial for an example on how to open the Terminal. You may want to keep Terminal in your dock for this workshop.

To see if your default shell is Bash type `echo $SHELL` in Terminal and press the `Return` key. If the message printed does not end with '/bash' then your default is something else, you can change your current shell to Bash by typing `bash` and then pressing `Return`. To check your current shell type `echo $0` and press `Return`.

To change your default shell to Bash type `chsh -s /bin/bash` and press the `Return` key, then reboot for the change to take effect. To change your default back to Zsh, type `chsh -s /bin/zsh` , press the `Return` key and reboot. To check available shells, type `cat /etc/shells` .

Linux Systems

The default shell is usually Bash and there is usually no need to install anything.

To see if your default shell is Bash type `echo $SHELL` in Terminal and press the `Return` key. If the message printed does not end with '/bash' then your default is something else, you can change your current shell to Bash by typing `bash` and then pressing `Return`. To check your current shell type `echo $0` and press `Return`.

To change your default shell to Bash type `chsh -s /bin/bash` and press the `Return` key, then reboot for the change to take effect. To change your default back to Zsh, type `chsh -s /bin/zsh` , press the `Return` key and reboot. To check available shells, type `cat /etc/shells` .

Workshop Pedagogy

Workshop Pedagogy

This workshop uses a pedagogical model borrowed from Software Carpentry. The main goal of this model is to maximize learner involvement in their own acquisition

of new skills, and allow the instructor to keep moving consistently forward with the lesson, while simultaneously not leaving any learner behind. There are a few elements that enable this. First, every participant will receive a pair of sticky notes of two colors, to use as a 'signaling flag'. Often, instructors can ask the classroom at large a question or to try to do a particular task, and then ask they put up one color post-it note (often green or blue, often 'put up' by being placed on a laptop screen) to signal when they have achieved a task, or to use the other flag (usually red or pink) to signal that they have encountered an issue they need help with. In general, a participant can always put up their red flag when they have trouble.

Waiting to take care of those 'red flags' is the workshop aides, or helpers, who will be waiting at the back or sides of the lecture hall. Helpers go assist learners, face-to-face, who raise those red flags (which admittedly sometimes involves gymnastics and a lot of whispering while the instructor teaches). It is fine if it turns out the issue was minor or trivial to solve; it is also entirely fine if the problem is extremely difficult and maybe impossible to solve. We will try to make it possible for participants to learn, and for the instructor to keep their lesson moving forward at a reasonable pace.

Code of Conduct for the Open Source for Open Science Workshop

We welcome all learners, no matter where you are from, your background, your training or expertise level. We ask learners to be respectful to all instructors and their fellow participants in the workshop.

To foster and protect this environment of mutual respect, the Open Source for Open Science workshop operates with an explicit code of conduct. Our code of conduct lays out what our expectations of behavior are, and these expectations are applied equally to the behavior of participants, helpers, instructors and all other associated individuals at this event. This code of conduct is in addition to and not in replacement of any code of conduct or guidelines for behavior mandated by Texas A&M University nor the academic units which sponsor the OSOS event.

Examples of Expected Good Behavior:

- Use welcoming language
- Be respectful of different viewpoints and experiences
- Gracefully accept constructive criticism
- Focus on what is best for the community
- Show courtesy and respect towards other community members

Examples of Unacceptable Behavior:

- Causing someone to fear for their safety, such as through stalking, following, or intimidation
- Violent threats or language directed against another person
- The display of sexual or violent images
- Unwelcome sexual attention
- Non-consensual or unwelcome physical contact
- Sustained disruption of talks, events or communications
- Insults or put downs
- Excessive swearing
- Incitement to violence, suicide, or self-harm
- Continuing to initiate interaction (including photography or recording) with someone after being asked to stop
- Publication of private communication without consent

Consequences of Unacceptable Behavior:

Participants who are asked to stop any inappropriate behavior are expected to comply immediately. If a participant engages in behavior that violates the Code of Conduct, the organizers may warn the offender or ask them to leave the event or platform. We reserve the right to expel any individual whose behavior runs afoul of common standards of decency, as outlined above. All violations of the code of conduct will be reported to the EEBL leadership.

Some of the text of this code of conduct is based on or inspired by The Carpentries Code of Conduct (licensed CC-BY).

Learning Resources

No printed materials are required, but a personal laptop computer with R, RStudio, and (possibly) some additional software is required for use during the workshop.

Participants will need to install R and RStudio on their personal computers. In addition, extra software packages, which add extra functionality will need to be installed as well for the more advanced sessions. Installation instructions for all required software is below. Additional data files and other electronic materials will be provided using public web links.

University Policies

This section outlines the university-level policies that must be included in each course syllabus. The TAMU Faculty Senate established the wording of these policies.

Attendance Policy

The university views class attendance and participation as an individual student responsibility. Students are expected to attend class and to complete all assignments.

Please refer to Student Rule 7 in its entirety for information about excused absences, including definitions, and related documentation and timelines.

Makeup Work Policy

Students will be excused from attending class on the day of a graded activity or when attendance contributes to a student's grade, for the reasons stated in Student Rule 7, or other reason deemed appropriate by the instructor.

Please refer to Student Rule 7 in its entirety for information about makeup work, including definitions, and related documentation and timelines.

Absences related to Title IX of the Education Amendments of 1972 may necessitate a period of more than 30 days for make-up work, and the timeframe for make-up work should be agreed upon by the student and instructor" (Student Rule 7, Section 7.4.1).

"The instructor is under no obligation to provide an opportunity for the student to make up work missed because of an unexcused absence" (Student Rule 7, Section 7.4.2).

Students who request an excused absence are expected to uphold the Aggie Honor Code and Student Conduct Code. (See Student Rule 24.)

Academic Integrity Statement and Policy

"An Aggie does not lie, cheat or steal, or tolerate those who do."

"Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor request it, may be sufficient grounds to initiate an academic misconduct case" (Section 20.1.2.3, Student Rule 20).

You can learn more about the Aggie Honor System Office Rules and Procedures, academic integrity, and your rights and responsibilities at aggiehonor.tamu.edu.

Notice of Nondiscrimination

Texas A&M University is committed to providing safe and non-discriminatory learning, living, and work environments for all members of the University community. The University provides equal opportunity to all employees, students, applicants for employment or admission, and the public, regardless of race, color, sex (including pregnancy and related conditions), religion, national origin, age, disability, genetic information, or veteran status.

Texas A&M University will promptly, thoroughly, and fairly investigate and resolve all complaints of discrimination, harassment (including sexual harassment), complicity, and related retaliation based on a protected class in accordance with System Regulation 08.01.01, University Rule 08.01.01.M1, Standard Administrative Procedure (SAP) 08.01.01.M1.01, and applicable federal and state laws. In accordance with Title IX and its implementing regulations, Texas A&M does not discriminate on the basis of sex in any educational program or activity, including admissions and employment.

The following person has been designated to handle inquiries and complaints regarding the non-discrimination policies: Jennifer M. Smith, TAMU Associate VP & Title IX Coordinator at YMCA Ste 108, College Station, TX 77843, 979-458-8407, or email civilrights@tamu.edu. For other reporting options, visit the U.S. Department of Education Office for Civil Rights Complaint Assessment System to locate the address and phone number of the office that serves your area, or call 1-800-421-3481.

Civil Rights, Free Speech, and Title IX Policies

Texas A&M University is committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws prohibit discrimination and harassment based on an individual's race, color, sex, (including pregnancy and related conditions), religion, national origin, age, disability, genetic information, veteran status, or any other legally protected characteristic. This includes forms of sex-based violence, such as sexual assault, sexual harassment, sexual exploitation, dating/domestic violence, and stalking.

Students can report discrimination/harassment, access supportive resources, or learn more about their options for resolving complaints on the University's Civil Rights & Title IX webpage.

Students should be aware that all university employees (except medical or mental health providers) are mandatory reporters, which means that if they observe, experience or become aware of an incident that they reasonably believe to be discrimination/harassment alleged to have been committed by or against a person who was a student or employee at the time of the incident, the employee must report the incident to the university.

Americans with Disabilities Act (ADA) Policy

Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact the Disability Resources office on your campus (resources listed below). Disabilities may include, but are not limited to, attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability-related needs with Disability Resources and their instructors as soon as possible.

To request academic accommodations, contact the designated ADA office based on your location:

- Texas A&M University, College of Nursing, College of Dentistry, Irma Lerma Rangel College of Pharmacy College Station, College of Medicine, School of Public Health, Institute of Biosciences and Technology, EnMed Program, Bush School in Washington DC, Mays Business School – CityCentre, TAMU Engineering Academies, Texas A&M University Higher Education Center at McAllen and Texas A&M University at Galveston should contact Disability Resources at (979) 845-1637 or disability@tamu.edu.
- Texas A&M University School of Law should contact the Office of Student Affairs at (817) 212-4111 or law-disability@law.tamu.edu to request accommodations.

- Irma Lerma Rangel College of Pharmacy in Kingsville should contact the Disability Resource Center at Texas A&M University-Kingsville at (361) 593-3024 or drc.center@tamuk.edu to request accommodations.
- Texas A&M University College of Veterinary Medicine & Biomedical Sciences in Canyon should contact the Office of Student Accessibility at West Texas A&M University – Canyon at (806) 651-2335 or osa@wtamu.edu.

If you are experiencing difficulties with your approved accommodations, contact the office responsible for approving your accommodations or the Texas A&M ADA Coordinator Julie Kuder at ADA.Coordinator@tamu.edu or (979) 458-8407.

Pregnancy Accommodations

Texas A&M provides reasonable accommodations to students due to pregnancy and/or related conditions, such as childbirth, recovery, and lactation. Students should contact the University's Pregnancy Coordinator as soon as they become aware of the need for accommodation. Depending on the circumstances, accommodations could include extended time to complete assignments or exams, changes in course sequence, or modifications to the physical classroom environment.

Texas A&M will also allow a voluntary leave of absence, ensure the availability of lactation space, and maintain grievance procedures to provide for the prompt and equitable resolution of complaints of sex discrimination. For information regarding pregnancy accommodations, email TIX.Pregnancy@tamu.edu.

Statement on Mental Health and Wellness

Texas A&M University recognizes that mental health and wellness are critical factors influencing a student's academic success and overall wellbeing. Students are encouraged to engage in healthy self-care practices by utilizing the resources and services available through University Health Services. The TELUS Health Student Support app provides access to professional counseling in multiple languages anytime, anywhere by phone or chat, and the 988 Suicide & Crisis Lifeline offers 24-hour emergency support at 988 or 988lifeline.org.

Texas A&M College Station

Students needing a listening ear can contact University Health Services at 979.458.4584. Call 911 or visit your nearest emergency room if you are currently experiencing a life-threatening situation or if your safety is at risk. 24-hour emergency help is also available through the 988 Suicide & Crisis Lifeline (988) or at 988lifeline.org.

Statement on the Family Educational Rights and Privacy Act (FERPA)

FERPA is a federal law designed to protect the privacy of educational records by limiting access to these records, to establish the right of students to inspect and review their educational records, and to provide guidelines for the correction of inaccurate and misleading data through informal and formal hearings.

Currently enrolled students wishing to withhold any or all directory information items can do so within howdy.tamu.edu using the Directory Information Witholding Form. The complete FERPA Notice to Students and the student records policy is available on the Office of the Registrar webpage.

Items that can never be identified as public information are a student's social security number, citizenship, gender, grades, GPR, or class schedule. All efforts will be made in this class to protect your privacy and to ensure confidential treatment of information associated with or generated by your participation in the class.

Directory items include name, UIN, local address, permanent address, email address, local telephone number, permanent telephone number, dates of attendance, program of study (college, major, campus), classification, previous institutions attended, degrees, honors and awards received, participation in officially recognized activities and sports, medical residence location, and medical residence specialization.

Free Speech and Civil Discourse

Texas A&M recognizes that the pursuit of truth through open and robust discourse is critical to academic inquiry. However, as a community of scholars, the university has an aspirational expectation that such discourse will be conducted in accordance with Aggie Core Values. In this “marketplace of ideas,” we encourage civil dialogue creating an environment that allows individuals to express their ideas and to have their ideas challenged in respectful and responsible ways. Students can learn more about Freedom of Expression and Free Speech on the University's website about the First Amendment.