SYLLABUS
ENR 4345
Methods in Aquatic Ecology
Fall 2021

COURSE OVERVIEW

Instructors
Instructor: Dr. Lauren M. Pintor
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Office Hours: By Appointment

Instructor: Krystal Pocock, MS
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Office Hours: By Appointment

TA: Michael Gilboy
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Office Hours: By Appointment

Course description
This course will introduce students to different methods and techniques used in the field of aquatic sciences. An equally important goal of this course will be to introduce students to methods in study design and data analysis and interpretation. Students should leave the class with a toolbox of knowledge and skills needed to study, monitor and manage biological, chemical and physical components of aquatic ecosystems.

This is a hybrid course that will utilize multiple platforms supported by The Ohio State University. The lab sessions will be in-person. The lectures and data analysis activities will be delivered using CarmenCanvas, OSU’s learning management system. CarmenCanvas (https://carmen.osu.edu/) will also be used to complete quizzes, exams, and other assignments. The lecture portion of the class will be asynchronous, self-paced, yet all course requirements must be completed during the semester of offering AND all assignments, quizzes, and exams must be completed by the due date shown on the syllabus to receive the opportunity for credit.
Course learning outcomes

By the end of this course, students should successfully be able to:

1) Use and critically evaluate methods and techniques used by aquatic scientists to study, monitor and manage aquatic ecosystems.

2) Design and execute research and monitoring studies in the field of aquatic sciences.

3) Develop skills in data management, data manipulation and visualization of data through graphs and tables.

4) Organize, analyze and interpret data and metrics collected on the physical, chemical and biological components of aquatic ecosystems using basic statistics and statistical programs.

COURSE MATERIALS AND TECHNOLOGIES

Textbooks

REQUIRED

- No textbook is required, but readings may be assigned throughout the course and will be available through Carmen. Readings will be announced both in class and on Carmen.

- Slides with either full or partial notes from lecture presentations will also be available on Carmen.

RECOMMENDED


Course technology
For help with your password, university e-mail, Carmen, or any other technology issues, questions, or requests, contact the OSU IT Service Desk. Standard support hours are available at [https://ocio.osu.edu/help/hours](https://ocio.osu.edu/help/hours), and support for urgent issues is available 24x7.

- **Self-Service and Chat support:** [http://ocio.osu.edu/selfservice](http://ocio.osu.edu/selfservice)
- **Phone:** 614-688-HELP (4357)
- **Email:** 8help@osu.edu
- **TDD:** 614-688-8743

**BASELINE TECHNICAL SKILLS NEEDED**

- Basic computer and web-browsing skills
- Navigating CarmenCanvas

**REQUIRED EQUIPMENT & SOFTWARE**

- Computer: current Mac (OS X) or PC (Windows 7+) with high-speed internet connection
- Zoom text, audio, and video chat
- **Microsoft Office 365:** All Ohio State students are now eligible for free Microsoft Office 365 ProPlus through Microsoft’s Student Advantage program. Full instructions for downloading and installation can be found [https://ocio.osu.edu/kb04733](https://ocio.osu.edu/kb04733).

- JMP Verisons 14-16. JMP is a software used for data analysis and is available for free through OSU’s OCIO Self Service page. It is available for both PC and Mac. [https://osuitsm.service-now.com/selfservice/](https://osuitsm.service-now.com/selfservice/)

**Carmen Access**

You will need to use BuckeyePass multi-factor authentication to access your courses in Carmen. To ensure that you are able to connect to Carmen at all times, it is recommended that you take the following steps:

- Register multiple devices in case something happens to your primary device. Visit the [BuckeyePass - Adding a Device](https://ocio.osu.edu/help/buckeye-pass-adding-device) help article for step-by-step instructions.
- Request passcodes to keep as a backup authentication option. When you see the Duo login screen on your computer, click “Enter a Passcode” and then click the “Text me new codes” button that appears. This will text you ten passcodes good for 365 days that can each be used once.
- Download the [Duo Mobile application](https://duo.com) to all of your registered devices for the ability to generate one-time codes in the event that you lose cell, data, or Wi-Fi service.
If none of these options will meet the needs of your situation, you can contact the IT Service Desk at 614-688-4357 (HELP) and the IT support staff will work out a solution with you.

GRADING AND FACULTY RESPONSE

How your grade is calculated

Your course grade will be evaluated on data analysis homework, short quizzes pre or post-lab activities, attendance and participation, and a final exam.

Data Analysis Homework

To develop skills in data management, data manipulation and analysis, you will participate in data analysis activities during class. Your progress and mastering of these skills will be assessed through written answers to activities. Problem sets will be comprised, but not limited to, summarizing, analyzing and graphing data collected during labs, reporting the results of statistical analyses and answering short synthesis questions. We will offer online, optional, open-lab sessions that you’re welcome to attend to get help with the homework. **Please note that if you do not attend the lab associated with the data analysis activity and do not have a documented excuse for missing the lab, you will still be able to complete assignment, but your final grade for the assignment will be dropped a full letter grade.** Homework will generally become available by Wednesday following Monday’s lab and will be due the following Tuesday evening.

Quizzes taken on CarmenCanvas

There will be online quizzes given before most of the laboratory periods. These will be short, timed quizzes (multiple choice, true/false questions or short answer). Pre-lab quizzes will assess your understanding of the lecture and reading material required to successful complete the lab. Post-lab quizzes will assess your understanding of the material presented during the labs. Pre-lab quizzes will be taken online and due before the start of Monday’s lab period. Quizzes are open-note, book and computer, but since this is a timed quiz it is recommended that you do NOT use them. Additionally, each student must complete the quiz on her or his own. You are NOT permitted to receive assistance from anyone else during the quiz. You are NOT permitted to take the quizzes as part of a group.

Final Exam
The final exam will be cumulative and will assess your recall, understanding and evaluation of field and laboratory methods covered during the class. The exam will include questions similar to those on the quizzes and will also include data analysis and interpretation activities similar to those performed as part of the data analysis activities. The final will be given CarmenCanvas. It will be open for approximately 24 hours and you can take the exam anytime during these 24 hours. You will be given ~60-100 minutes to complete the exam. If you fail to complete the exam on Carmen before it closes you will earn a grade of 0%. Each student must complete the exam on her or his own. You are NOT permitted to receive assistance from anyone else during the exam. You are NOT permitted to take the exams as part of a group. However, you are permitted to use notes, slides, textbook, journal articles, books, and Internet during the exam. But given the exam is timed, we do not recommend this.

There is **NO make-up exam** except for valid reasons (e.g., medical excuse). If you are sick, you must have a note signed by your medical doctor (i.e. a licensed physician) and dated the same day as the exam and excusing you from the class period. Otherwise, you will receive a zero on the exam. The instructor will determine if your excuse is valid. If you do **not** have a reasonable excuse for missing an exam then you will receive a zero for the exam.

**Participation & Attendance**

Participation and attendance will be graded based on your attendance and participation during the in-person labs, as well as the proportion of online activities you participate in. For example, you’ll notice some of the activities are “graded” based on whether you compete the assignment. Your participation grade will then in part be determined based on the proportion of these assignments you complete.

<table>
<thead>
<tr>
<th>ASSIGNMENT CATEGORY</th>
<th>POINTS</th>
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<tbody>
<tr>
<td>Pre-Lab Quizzes (10 total, 25 points each)</td>
<td>250</td>
</tr>
<tr>
<td>Data Analysis Homework (7 total, 100 points each)</td>
<td>700</td>
</tr>
<tr>
<td>Attendance &amp; Participation</td>
<td>50</td>
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<tr>
<td>Final Exam</td>
<td>125</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>1125</strong></td>
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</tbody>
</table>

*See course schedule, below, for due dates.*

**Late assignments**
The penalty for late assignments is 10% of the assignment total per day. We will not extend without a valid reason. There should be extenuating circumstances for missing a scheduled activity, quiz or exam. In these cases, early arrangements will need to be coordinated.

**IMPORTANT: You must contact the instructors PRIOR TO a planned conflict to make arrangements for modified deadlines. Otherwise, no arrangements will be made. If you are ill the day of an assignment/exam, you must reach out to the instructors with verification of your absence on the day of the missed deadline, otherwise no accommodations will be made. If you would like any clarification on this, don’t hesitate to reach out.

**Grading scale**

93–100: A  
90–92.9: A-  
87–89.9: B+  
83–86.9: B  
80–82.9: B-  
77–79.9: C+  
73–76.9: C  
70–72.9: C-  
67–69.9: D+  
60–66.9: D  
Below 60: E

**FACULTY FEEDBACK AND RESPONSE TIME**

I am providing the following list to give you an idea of our intended availability throughout the course. (Remember that you can call 614-688-HELP at any time if you have a technical problem.)

**GRADING AND FEEDBACK**

For large weekly assignments, you can generally expect feedback within 7-10 days.

**EMAIL**

We will reply to emails within 24 hours on school days. All email communications should be made using your OSU address (i.e. name.#@buckeyemail.osu.edu). Please start the title of your email with "ENR 4345". This will help us to prioritize your email.
DISCUSSION BOARD

We will check and reply to messages in the discussion boards every 24 hours on school days.

ATTENDENCE & PARTICIPATION

Consistent, weekly participation and engagement with the material will help you to succeed in the class. The laboratory meetings will be composed primarily of field and lab activities related to the physical, chemical and biological sampling of aquatic ecosystems. Waders, boots or other wading shoes will be available for the field trips. However, if you prefer your own, please bring them with you. Please dress for outdoor fieldwork & possible inclement weather. Make sure to bring water into the field with you and wear sunscreen.

The lecture portion of the class will be entirely online and asynchronous. Your attendance and participation will be based on your online activity. The following is a brief summary of everyone’s expected participation:

• **Logging in: AT LEAST ONCE PER WEEK.** Be sure you are logging in to the course in CarmenCanvas each week. (During most weeks you will probably log in many times.)

• **Office hours (OPTIONAL):** If you would like to discuss an assignment or other course-related question with the instructor or TA, please contact them at the beginning of the week via email in order to schedule an appointment. Office hours will be held via Zoom.

• **Quizzes: ON CARMENCANVAS.** There will be multiple quizzes during the course. Quizzes are structured to test your comprehension and understanding of the lab material that you will be learning that week. They will also provide a lower stakes environment to apply course material that will be similar to that on the final exam (i.e. quizzes are worth fewer points than exams).

• **Open Lab for Data Analysis work: ON ZOOM (OPTIONAL).** We will offer optional, open lab sessions via Zoom for help with the data analysis homework. You’re welcome to join the session with a specific question but you’re also welcome to use those times to simply work on the homework and ask questions as they arise.

• **Final Exam: ON CARMENCANVAS.** The final will only be open for a 24-hour period, so please plan accordingly. It is structured to test your comprehension and ability to apply course material.

Discussion and communication guidelines
The following are expectations for how we should communicate as a class. Above all, please remember to be respectful, professional and thoughtful.

- **Writing style**: While there is no need to participate in class discussions as if you were writing a formal paper, you should remember to write using good grammar, spelling, and punctuation. Informality (including an occasional emoticon) is fine for non-academic topics.

- **Tone and civility**: Let's maintain a supportive learning community where everyone feels safe and where people can disagree amicably. Remember that sarcasm doesn't always come across online.

- **Citing your sources**: When we have academic discussions, please cite your sources to back up what you say. (For the textbook or other course materials, list at least the title and page numbers. For online sources, include a link.)

- **Backing up your work**: Consider composing your academic posts in a word processor (e.g. Microsoft Word), where you can save your work, and then copying into the Carmen discussion.

**E-mail Etiquette**

Below I have included guidelines from Bloomsbury’s guide on email etiquette that you should follow when drafting your e-mail. I will not respond to e-mails that I consider inappropriate.

**DO**

- Include a descriptive statement in the subject line.
- Use proper salutations when beginning an e-mail.
- Be concise in the body of the e-mail, use complete sentences and proper grammar.
- Use an appropriate closure at the end of each e-mail followed by your first and last name.
- If replying to an e-mail, reference the original e-mail and its content.
- Be selective of your choice of words. Emotions are difficult to convey in text and without the benefit of facial expressions your sentiment can be lost in the words you choose to write.

**DON’T**

- Use all capital letters; this conveys a tone of ANGER.
- Use e-mail as a format to criticize other individuals.
- Ask for your grade via e-mail. Grades will not be discussed by e-mail. If you need to discuss a graded item make an appointment to do so in my office.
- E-mail to inquire when grades will be posted. We will work toward submitting grades promptly, however, recognize that grading assignments and exams requires considerable time to ensure uniformity and fairness.
• Send an e-mail out of frustration or anger. Learn to save the e-mail as a draft and review at a later time when emotions are not directing the content.

OTHER COURSE POLICIES

Academic integrity policy

OHIO STATE’S ACADEMIC INTEGRITY POLICY

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the University’s Code of Student Conduct, and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the University’s Code of Student Conduct and this syllabus may constitute “Academic Misconduct.”

The Ohio State University’s Code of Student Conduct (Section 3335-23-04) defines academic misconduct as: “Any activity that tends to compromise the academic integrity of the University, or subvert the educational process.” Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the University’s Code of Student Conduct is never considered an “excuse” for academic misconduct, so I recommend that you review the Code of Student Conduct and, specifically, the sections dealing with academic misconduct.

If we suspect that a student has committed academic misconduct in this course, we are obligated by University Rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the University’s Code of Student Conduct (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact us.

Other sources of information on academic misconduct (integrity) to which you can refer include:

• The Committee on Academic Misconduct web pages (COAM Home)
• Ten Suggestions for Preserving Academic Integrity (Ten Suggestions)
• *Eight Cardinal Rules of Academic Integrity* ([www.northwestern.edu/uacc/8cards.htm](http://www.northwestern.edu/uacc/8cards.htm))

**Copyright disclaimer**

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.

**Statement on title IX**

The Ohio State University is committed to building and maintaining a community to reflect diversity and to improve opportunities for all. All Buckeyes have the right to be free from harassment, discrimination, and sexual misconduct. Ohio State does not discriminate on the basis of age, ancestry, color, disability, ethnicity, gender, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, pregnancy (childbirth, false pregnancy, termination of pregnancy, or recovery therefrom), race, religion, sex, sexual orientation, or protected veteran status, or any other bases under the law, in its activities, academic programs, admission, and employment. Members of the university community also have the right to be free from all forms of sexual misconduct: sexual harassment, sexual assault, relationship violence, stalking, and sexual exploitation.

To report harassment, discrimination, sexual misconduct, or retaliation and/or seek confidential and non-confidential resources and supportive measures, contact the Office of Institutional Equity:

1. Online reporting form at equity.osu.edu,
2. Call 614-247-5838 or TTY 614-688-8605,
3. Or Email [equity@osu.edu](mailto:equity@osu.edu)

The university is committed to stopping sexual misconduct, preventing its recurrence, eliminating any hostile environment, and remediying its discriminatory effects. All university employees have reporting responsibilities to the Office of Institutional Equity to ensure the university can take appropriate action:

• All university employees, except those exempted by legal privilege of confidentiality or expressly identified as a confidential reporter, have an obligation to report incidents of sexual assault immediately.
The following employees have an obligation to report all other forms of sexual misconduct as soon as practicable but at most within five workdays of becoming aware of such information: 1. Any human resource professional (HRP); 2. Anyone who supervises faculty, staff, students, or volunteers; 3. Chair/director; and 4. Faculty member.

This course adheres to The Principles of Community adopted by the College of Food, Agricultural, and Environmental Sciences. These principles are located on the Carmen site for this course; and can also be found at https://go.osu.edu/principlesofcommunity. For additional information on Diversity, Equity, and Inclusion in CFAES, contact the CFAES Office for Diversity, Equity, and Inclusion (https://equityandinclusion.cfaes.ohio-state.edu/). If you have been a victim of or a witness to a bias incident, you can report it online and anonymously (if you choose) at https://studentlife.osu.edu/bias/report-a-bias-incident.aspx.

Counseling & Consultation Services/Mental Health

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life Counseling and Consultation Services (CCS) by visiting ccs.osu.edu or calling (614) 292-5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on-call counselor when CCS is closed at (614) 292-5766 and 24 hour emergency help is also available through the 24/7 National Prevention Hotline at 1-(800)-273-TALK or at suicidepreventionlifeline.org.

David Wirt, wirt.9@osu.edu, is the CFAES embedded mental health counselor. He is available for new consultations and to establish routine care. To schedule with David, please call 614-292-5766. Students should mention their affiliation with CFAES when setting up a phone screening.

Safe & Healthy Buckeyes

Health and safety requirements: All students, faculty and staff are required to comply with and stay up to date on all university safety and health guidance (https://safeandhealthy.osu.edu), which includes wearing a face mask in any indoor space and maintaining a safe physical distance at all times. Non-compliance will result in a warning first, and disciplinary actions will be taken for repeated offenses.”
As of Aug. 2, 2021, all students, faculty and staff are required to wear masks in classrooms and other shared indoor spaces, regardless of their vaccination status. These include common areas, conference rooms, shared office spaces, hallways, buses and shared vehicles on all Ohio State campuses. Individuals should not eat in classrooms. Individuals can take an occasional drink, but should take masks off only as necessary.

Masks continue to be required outdoors for unvaccinated individuals when they cannot maintain physical distancing. Vaccinated people are not required to mask outdoors.

Read more on the Personal Safety Practices page. See: https://safeandhealthy.osu.edu/ for additional guidelines and resources; as well as for any updates from the university regarding changes in policy and procedure.

ACCESSIBILITY ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Requesting accommodations

The university strives to make all learning experiences as accessible as possible. In light of the current pandemic, students seeking to request COVID-related accommodations may do so through the university's request process, managed by Student Life Disability Services. If you anticipate or experience academic barriers based on your disability (including mental health, chronic, or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

Go to http://ods.osu.edu for more information.
**COURSE SCHEDULE (SUBJECT TO CHANGE)**

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>In-Person Lab Topic</th>
<th>Asynchronous Data Analysis Activity</th>
<th>Asynchronous Next Week’s Lab Preparation</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>30-Aug</td>
<td>Course Introduction &amp; Study Design</td>
<td>Study Design</td>
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<tr>
<td>2</td>
<td>6-Sep</td>
<td>No Lab/Labor Day</td>
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<td>Lab 1: Lecture &amp; Pre-lab Quiz</td>
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<tr>
<td>3</td>
<td>13-Sep</td>
<td>Lab 1: Fish Abundance</td>
<td>Removal Estimation of N, CPUE, Density</td>
<td>Lab 2: Lecture &amp; Pre-lab Quiz</td>
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<tr>
<td>4</td>
<td>20-Sep</td>
<td>Lab 2: Fish Diversity</td>
<td>Pivot tables &amp; Index of Biotic Integrity</td>
<td>Lab 3: Lecture &amp; Pre-lab Quiz</td>
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<tr>
<td>5</td>
<td>27-Sep</td>
<td>Lab 3: Macroinvertebrate Diversity</td>
<td>Invertebrate Community Index</td>
<td>Lab 4: Lecture &amp; Pre-lab Quiz</td>
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<td>6</td>
<td>4-Oct</td>
<td>Lab 4: Marking/Tagging</td>
<td>Capture-Mark-Recapture Estimate of N</td>
<td>Lab 5: Lecture &amp; Pre-lab Quiz</td>
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<td>7</td>
<td>11-Oct</td>
<td>Lab 5: Algal Biomass, Part 1</td>
<td>Fall Break</td>
<td>Fall Break</td>
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<tr>
<td>8</td>
<td>18-Oct</td>
<td>Lab 5: Algal Biomass, Part 2</td>
<td>Correlations</td>
<td>Lab 6: Lecture &amp; Pre-lab Quiz</td>
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<td>9</td>
<td>25-Oct</td>
<td>Lab 6: Turbidity &amp; Total Suspended Solids</td>
<td>Correlations, Regressions</td>
<td>Lab 7: Lecture &amp; Pre-lab Quiz</td>
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<td>10</td>
<td>1-Nov</td>
<td>Lab 7: Fish Age &amp; Growth</td>
<td>Length-Frequency Histograms</td>
<td>Lab 8: Lecture &amp; Pre-lab Quiz</td>
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<td>11</td>
<td>8-Nov</td>
<td>Lab 8: Stream Velocity &amp; Discharge</td>
<td>Estimates of Stream Discharge</td>
<td>Lab 9: Lecture &amp; Pre-lab Quiz</td>
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<tr>
<td>12</td>
<td>15-Nov</td>
<td>Lab 9: Phosphorous</td>
<td>T-tests &amp; ANOVAs</td>
<td>Lab 10: Lecture &amp; Pre-lab Quiz</td>
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<tr>
<td>13</td>
<td>22-Nov</td>
<td>Lab 10: Nitrogen</td>
<td>T-tests &amp; ANOVAs</td>
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<td>14</td>
<td>29-Nov</td>
<td>TBD/Rain Date</td>
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<tr>
<td>15</td>
<td>6-Dec</td>
<td>Final Exam Review</td>
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