

Syllabus and Schedule

**Instructor:** Andrew Whiteley, Bioresearch Building (BRB) 004, [andrew.whiteley@umontana.edu](mailto:andrew.whiteley@umontana.edu)  
**TA:** Donovan Bell, [donovan.bell@umconnect.umt.edu](mailto:donovan.bell@umconnect.umt.edu)

**Office Hours:**

Whiteley: ([andrew.whiteley@umontana.edu](mailto:andrew.whiteley@umontana.edu)) Wednesday 2:00-4:00pm Bioresearch 004

Bell: by appointment ([donovan.bell@umconnect.umt.edu](mailto:donovan.bell@umconnect.umt.edu))

\*\*We are not always on email, please plan for a 24 hour delay.

**Meeting Time and Room:** To maximize the time we have for field activities, the schedule of this course will be a bit unusual. Here’s how it will work: For weeks with no field activities, lecture will be held on both Tuesday and Thursday from 12:30-1:50pm. You will attend the lab section you signed up for on those weeks from 2:00-3:50pm. For weeks with field activities you will only come to class on one day that week. The day you attend the field activity is determined by the lab you signed up for. If you signed up for lab on Tuesday, the activity will be from 12:30 – 3:50 pm on Tuesday. If you signed up for lab on Thursday, the activity will be from 12:30 – 3:50 pm on Thursday. This will allow longer sessions on the days that we do field activities, so that we have sufficient time to travel and do the activities.

This course structure means that the course will last 10 weeks instead of the full semester.

Here is the same information in table format:

Type of Week	Sessions to attend	Location	Weeks this applies to
First week of class	Lecture (12:30 – 1:50pm)	Chemistry 102	Week 1 (8/31, 9/2)
No field activity	Lecture (12:30 – 1:50pm Chemistry 102) Lab (2:00 – 3:50pm, they day you signed up for)	Chemistry 102 (lecture), Stone Hall 217 (lab)	Weeks 2 (9/7, 9/9), 6 (10/5, 10/7), 8 10/19, 10/21), 9 (10/26, 10/28), 10 (11/2, 11/4)
Field activity	Combined lecture and lab (12:30 – 3:50pm, only the day of your lab session)	TBA, usually outside Bioresearch to grab waders and head to vehicles	Weeks 3 (9/14, 9/16), 4 (9/21, 9/23), 5 (9/28, 9/30), 7(10/12, 10/14)
Final exam	Lecture (12:30 – 1:50)	Chemistry 102	Week 11 (11/9)

**Text Book & App:** *Fisheries Techniques, Third Edition*. Zale, Parrish, and Sutton, editors. (scanned copies of chapters will be available on Moodle)

Other useful items: (1) Holton, C.J. and H.E. Johnson. 2003. Field Guide to Montana Fishes. 3<sup>rd</sup> Edition. Montana Fish, Wildlife, and Parks Helena, MT. or online at <http://fieldguide.mt.gov/>  
(2) New Fishes of Montana (Fish MT) app for smart phones and tablets (download free)

**Class Resources:** We will be using Moodle for the class (WILD 291.01). Go there for readings, class data sets, assignments, and announcements.

**Readings:** See syllabus for the reading schedule. Read chapters and papers for examples, applications, generalizations, and principles. Questions based on **lecture, activities, and reading material** will appear on the weekly quizzes and final exam.

**Course Description:** This course will provide an overview of fisheries techniques as they are applied in Montana. Students will learn methods commonly used to assess stream habitats, how to capture and handle fishes, how to estimate fish ages, how to estimate abundance, and factors that influence fish distributions. Case studies will expose students to current issues faced by fisheries managers in Montana. Field trips will provide hands-on experience.

**Learning Outcomes:**

1. You will learn field techniques used for sampling fishes in Montana
2. You will understand and be able to measure habitat requirements of Montana fishes
3. You will become familiar with the types of data encountered by fisheries biologists and professionals
4. You will learn about fisheries management and conservation issues in a specific river drainage in western Montana (Clark Fork River)
5. You will learn about the fishes found in western Montana

**Readiness Quizzes:** For each class, except as noted due to field activities, we will begin with a short multiple-choice quiz. This quiz will cover the reading material(s) and is meant to demonstrate that you did the reading and you are ready to discuss and work on problems related to the reading during the class period. These quizzes will take the place of a mid-term exam.

**Final Project:** I will provide you with some data and ask you to answer questions and perform some analyses of those data to support your answers. The final project will be due at the end of the semester and will be in addition to the final exam. Expect to receive a data set, create several graphs, and interpret those graphs in the context of a fisheries issue managers currently face in the Clark Fork Basin.

**Class Policy:** Some of the field and lab projects will be done by teams of students so the resulting data are team or class property. Students are free to discuss results, **but all assignments must be prepared individually**. All written material, calculations and graphs to be handed in must be your own work (answers must be in your own words). All assignments must be submitted on time; penalties will be 5% of grade each day late unless other arrangements have been made.

**Missing Class:** If you need to miss a class, please get notes from another student, perform the readings, review the notes and then come into office hours with questions regarding the material. If you need to

miss a field lab, please let me know in advance so we can attempt to accommodate your request. You will be held accountable for your absences through class attendance. Your attendance will contribute to your classroom participation score.

**Final Grade:**

Readiness quizzes 20%

Lab activities 30%

Final exam 20%

Final project 20%

Attendance and Participation 10%

**Field Lab Transportation:** Field activities are planned to be a relatively short drive up the Blackfoot River. They are approximately 30 min. by car from campus. The following rules will be applied to travel in the class vehicles:

1. Face masks required in all shared vehicles.
2. If running heat or air conditioning, recirculating vehicle air should be disabled.
3. All occupants of shared vehicles should travel in the same vehicle for the duration of the trip. In cases where driver fatigue occurs, wipe down high touch areas in both seating areas with appropriate disinfectant before switching drivers.

Students are allowed to drive their own vehicles to any field trip, but need to communicate with the instructor at least 48 hours prior to the day of the field trip. Students are welcome to, but not required to drive to field learning sites. Students who drive their own vehicles will not be reimbursed for mileage and are covered only by their own auto insurance. If students choose to drive together (car pool), please note the driver is liable for not only themselves but also the passenger (as with any private vehicle). If you have a passenger in your vehicle, we recommend that you follow the same safety recommendations for UM group travel (points 1-3 immediately above).

If we see a rise in UM COVID-19 cases, we might need to reschedule field labs to locations that are closer to campus.

**Statement on safety related to COVID-19:**

Mask use is required, regardless of vaccine status, in all UM classrooms and academic laboratories, including computer labs. If some of the field labs involve close proximity outdoors (within 6 feet), mask use is highly recommended. If a student requires a COVID-related accommodation in order to safely attend, they should be referred to the [Office of Disability Equity](#) (ODE) (formerly Disability Services for Students; for more information on ODE, see below). ODE will work with the student and their advisor on a case-by-case basis. Here are the COVID-19 related class policies in bullet form:

- Mask use is required within the classroom or laboratory.
- If you feel sick and/or are exhibiting COVID-19 symptoms, please don't come to class and contact the Curry Health Center at (406) 243-4330.
- If you are required to isolate or quarantine, you will receive support in the class to ensure continued academic progress. Contact me, the instructor, to arrange this additional support

- UM recommends students get the COVID-19 vaccine. Please direct your questions or concerns about vaccines to Curry Health Center.
- Where social distancing (maintaining consistent 6 feet between individuals) is not possible, specific seating arrangements will be used to support contact tracing efforts.
- Class attendance and seating will be recorded to support contact tracing efforts.
- Drinking liquids and eating food is discouraged within the classroom.
- Again, mask use is required in vehicles when traveling to field sites as part of class/fieldwork.
- Please note that if we have class sessions that are being held in person and via Zoom, that the class session will be recorded.

If you feel uncomfortable with any proposed class activity, especially if we see a rise in UM cases, please reach out to discuss your concerns with the course instructors. Again, this is a novel and ever-changing landscape so mutual respect, honest and early communication, and flexibility is needed for us to have a successful semester.

**Academic Honesty:** All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code. If students are caught cheating or plagiarizing on an assignment, they will get a zero for the assignment. If students are caught cheating on more than one assignment or on an exam, they will fail the course.

Final is Tuesday November 9<sup>th</sup> from 12:30 to 1:50 in Chemistry 102. **NO EARLY EXAMS WILL BE GIVEN**

**Procedures/policies accommodating disabilities:**

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and the Office for Disability Equity (ODE). If you anticipate or experience barriers based on disability, please contact the ODE at: (406) 243-2243, [ode@umontana.edu](mailto:ode@umontana.edu), or visit [www.umt.edu/disability](http://www.umt.edu/disability) for more information. Retroactive accommodation requests will not be honored, so please, do not delay. As your instructor, I will work with you and the ODE to implement an effective accommodation, and you are welcome to contact me privately if you wish.

**Grading policy:**

Final letter grades will be assigned as follows:

A = ≥ 92%	A- = 89-91%	
B+ = 87-88%	B = 82-86%	B- = 79-81%
C+ = 77-78%	C = 72-76%	C- = 69-71%
D + = 67-68%	D = 63-66%	D = 60-63%
F = <60%		

**Registration, adding, and dropping classes:**

Please see the registrar's website (<https://www.umt.edu/registrar/calendar/autumn-2021.php>) for important dates restricting opportunities to drop a course for the Autumn 2021 semester.

## Lecture Schedule (subject to change)

Date	Lecture Topic and Readings
<b>Week 1</b> 8/31, 9/2 lecture	Introduction <i>Fishes of Clark Fork River Basin, MTFishes (Fishes of Montana) app</i> Montana Fisheries Case studies: broad concerns, patterns, issues, <b>Activities:</b> <i>Fishes of Clark Fork River (pick a species, do a short write up and report to your lab section on 9/7 or 9/9)</i>
8/31,9/2 lab	No lab this week
<b>Week 2</b> 9/7, 9/9 lecture	Lectures: Conducting Fisheries Investigations, Data Management <b>Readings:</b> <i>Fisheries Techniques 3 (FT3), Chapters 1 and 2 (Sections 2.1 and 2.2 p. 15-20 only).</i>
9/7, 9/9 lab	<b>Activities:</b> <i>FWP data sheets, FishMT database exploration for Gold Creek.</i>
<b>Week3</b> 9/14, 9/16	<b>Field Activity Week:</b> Kicknetting on Clark Fork River (upstream end of Jacob's Island) <i>Meet at campus side of footbridge</i> <b>Readings:</b> <i>FT3, Care, Handling, and Examination of Sampled Organisms Chapter 5; 5.1 – 5.2.4 , 5.5.3 - 5.5.6.</i>
<b>Week 4</b> 9/21, 9/23	<b>Field Activity:</b> Snorkeling Gold Creek <i>Meet in between Health Sciences and Bioresearch Building</i> <b>Readings:</b> <i>FT3, Chapter 17; 17.2.1, 17.3.2.4, 17.4, and 17.5 (focus on snorkeling and stream survey parts of these sections).</i> <b>Assignment:</b> <i>Describe 3 observations from your time snorkeling or viewing fish underwater, each observation should be a short paragraph, due by 9/30 @ 5pm on Moodle</i>
<b>Week 5</b> 9/28, 9/30	<b>Field Activity Week:</b> Electrofishing Ashby Creek <i>Meet in between Health Sciences and Bioresearch Building</i>
<b>Week 6</b> 10/5, 10/7 lecture	Habitat, Electrofishing <b>Reading for Habitat:</b> <i>FT3, Chapter 4 (focus on rivers and streams, not portions on lakes and reservoirs) for Tuesday 10/5</i> <b>Reading for Efishing:</b> <i>FT3, Chapter 8 (focus on rivers and streams, backpack units: 8.1, 8.2.1-8.2.2, 8.3, 8.4.3, 8.5 - 8.6. For Thursday 10/7</i>
10/5, 10/7 lab	<i>Prepare for habitat assessment field activity: Supplemental reading for in lab (not part of quiz): Archer, E. K. et al. 2018. PacFish InFish Biological Opinion (PIBO) Monitoring Program. Effectiveness Monitoring Sampling methods for Stream Channel Attributes. US Forest Service.</i> <b>Form Teams:</b> <i>present your habitat measurement protocol to the lab section, provide list of equipment you need in the field on 10/12 or 10/14</i>
<b>Week 7</b>	<b>Field Activity:</b> Habitat Assessments of Ashby Creek

- 10/12, 10/14 *Teams be ready to execute your protocol*  
*Meet in between Health Sciences and Bioresearch Building*
- Week 8** Fish Tagging
- 10/19, 10/21 Abundance Estimation  
 lecture Present summary of habitat data to class on 10/21  
**Readings for Fish Tagging:** FT3 Chapter 11 pp 521 – 530 (through section 11.3.3); PIT tags, radio tags, acoustic tags: FT3 Chapter 18 pp 825 - 838 (18.3.1 – 18.3.2.6)  
**Reading for Abundance Estimation:** Part of Chapter 11: pp530 – 542 (sections 11.4.1 - 11.4.4, boxes 11.1 through 11.4 excluding 11.3)
- 10/19, 10/21 **Activities:** Work with electrofishing data, R-based depletion activity, Capture-Mark-  
 lab Recapture
- Week 9** Length, Weight, and Associated Indices, Age and Growth
- 10/26, 10/28 **Reading for Length, Weight, and Associated Indices:** FT3, Chapter 14 pp 637-656 (up to  
 lecture but not including 14.5.2)  
**Reading Age and Growth:** FT3, Chapter 15 pp 677-714 (up to but not including 15.4.3.4)
- 10/26, 10/28 **Activities:** Analysis of length data (length-frequency histograms), analysis of otoliths/scales  
 lab (sockeye scale activity)
- Week 10** *Safety: Skills, Attitudes, Facts, and Equipment (11/2), Review for final (11/4)*
- 11/2, 11/4 **Guest lecture:** Whitewater Rescue Institute (WRI)  
 lecture Reading: FT3, Chapter 3
- 11/2, 11/4 Activity: *Data from kicknetting (data for way back in week 3), GPS skills*  
 lab
- Week 11** *Final Exam on Tuesday 11/9, will cover lectures, lab concepts, and readings from the entire*  
 11/9 *semester.*