Course Overview:
The primary objective of this course is to provide students with a basic understanding of fishery science. Knowledge and application of knowledge will be gained through classroom lectures, classroom activities, computer labs, and hands-on field experience with a broad array of research methods used in fishery science. Research methods will include not only field and laboratory techniques, but also data management and analyses, hypothesis formation and testing, and formulation of management practices for aquatic resources.

Fishery science encompasses a variety of scientific disciplines including physics, chemistry, and biology. By participating in this course, students will gain an understanding of:

1) the structure and function of aquatic habitats/systems,
2) limnological field sampling and laboratory processing techniques,
3) common fish field sampling and processing methods,
4) analysis and reporting of limnological and fishery data, and
5) many of the major issues facing Florida’s aquatic resources.

Instructors:
This course is team-taught to provide students the opportunity to benefit from the diverse experience of professionals who are working with water quality, habitat, and fish populations in natural systems. Instructors, along with their support staff and graduate students, are located off main campus at the School of Forest Resources and Conservation, Program of Fisheries and Aquatic Sciences (7922 NW 71st Street, Gainesville, FL 32653).

Instructors:  
Dr. Daniel E. Canfield, Jr. - Professor, Limnology  
Phone: 352-273-3620  
Email: DECan@ufl.edu

Dr. Chuck Cichra - Professor, Fish Ecology and Management  
Phone: 352-273-3621  
Email: CECichra@ufl.edu

Amanda Croteau – PhD Candidate, Coastal Ecology  
Email: ACroteau@ufl.edu

Office Hours:
Instructors are available for help before and after class, by phone and email, and by appointment. Students, encountering difficulties with course material or seeking additional information, are strongly encouraged to make an appointment. We want you to succeed in our course!

Course Website:
This course will be supported by a UF e-learning CANVAS website located at https://lss.at.ufl.edu/. It will include the course syllabus, PowerPoint presentations, recommended readings, handouts, course assignments, past and current lab data, presentation and paper guidelines, and other materials.

Schedule:  
Lecture:  
5th period (11:45 AM to 12:35 PM) on Tuesday and Thursday in 3096 McCarty B.

Laboratory:  
6-9th period (12:50 PM to 4:55 PM) on Thursday at Lake Alice, in our classroom (3096 McCarty B), CALS computer lab (3086 McCarty B), Norman Hall computer lab (Room 512), or at other designated locations.
**Recommended Textbooks:**
There are no required texts. A variety of handouts will be provided to you either as paper copies or electronically through our e-learning website. You may also find these useful:


Boyd, C. E. 1979. Water Quality in Warmwater Fish Ponds. Auburn University, Alabama Agricultural Experiment Station, Auburn, AL. 359 pp. (online $10 to $50 – newer edition is available)


**Grading:**

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<thead>
<tr>
<th>Component</th>
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<tbody>
<tr>
<td>First Exam</td>
<td>15%</td>
<td>Lake Alice Oral Presentation</td>
<td>10%</td>
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<td>Second Exam</td>
<td>15%</td>
<td>Lake Alice Research Paper</td>
<td>20%</td>
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<td>Final Exam</td>
<td>15%</td>
<td>Classroom / Lab Participation</td>
<td>5%</td>
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<td>Assignments</td>
<td>10%</td>
<td>Laboratory / Field Notebook</td>
<td>10%</td>
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A: 94-100%  A-: 90-93.9%  B+: 87-89.9%  B: 84-86.9%  B-: 80-83.9%  C+: 77-79.9%
C: 74-76.9%  C-: 70-73.9%  D+: 67-69.9%  D: 64-66.9%  D-: 60-63.9%  E: < 60%

[https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx](https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx)

**Exams and Assignments:**
The first and second exams are in-class exams consisting of a variety of short answer questions that cover only the first and second portions of the course. The final take-home exam is a cumulative essay exam. All exams will cover lecture, laboratory, and assignment materials. Review sessions may be held before the exams if students request a review prior to the exam.

There are **four** assignments and a lab/field notebook to be completed over the course of the semester:

1) **Paper Reviews** – Two past Lake Alice papers will be handed out during the first few weeks of the class. You will be asked to read them prior to our first computer lab, at which time, they will be discussed. You will then provide a written review of each paper, along with completing a score sheet for each paper, using the same score sheet used to score your Lake Alice paper. These will be due one week after Computer Lab 1 (Teams 3 & 4 - **Due Feb 16**<sup>th</sup>, Teams 1 & 2 - **Due Feb 23**<sup>rd</sup>)
2) **Lake Alice Paper Topics** – You will develop and turn in two possible topics for your Lake Alice paper, including your question (testable hypothesis) and what variables/data that you plan to use for your paper. **Due March 2nd**

3) **Lake Alice Paper Methods** – After deciding which topic you plan to address in your Lake Alice paper, you will submit the appropriate methods section for your paper. This should include both field and laboratory methods. **Due March 23rd**

4) **Computer Lab 2** – During this lab, you will use a provided dataset to manipulate the data, perform statistical analyses, and create graphs and tables. **Due March 23rd**

5) **Field notebook** – Each lab, students will need to make an entry in their field notebook. Entries should include the following: date, time, weather conditions, gear information (specifications, biases, intended use, etc.), sampling methods, and any other notes related to the lab. Also, include any handouts that you are given (for example during the data and water quality labs). Each student should have a minimum of 11 entries (1 per lab). **Due April 6th**

**Lake Alice Research Paper and Presentation:**
Each student will submit a written research paper that includes a testable hypothesis (question) and at least one water quality parameter and one fish parameter from Lake Alice. Students must use 2017 data; however, annual data for Lake Alice are available from 1992 to present, which are on our course website. Thereafter, a 10 to 12-minute oral presentation, using Power Point or similar presentation software, will be given to the course instructors and TAs.

**Attendance and Participation:**
Attendance is not regularly taken in the classroom. Participation is a part of your grade for the course and evaluated based on involvement in the classroom (i.e., asking and answering questions, attentiveness, involvement in discussion, etc.). Laboratory attendance is mandatory as your lab mates depend on you to be there. Please provide prior notification and/ or documentation if a laboratory must be missed. Attendance will be taken at every lab. Students are expected to show up on time at the lab and do their share of the field work.

**Lake Alice Laboratory:**
A field study of the Lake Alice ecosystem will be conducted by teams of students to determine the current status of the lake’s water quality and fish community. Students will receive training in select field and laboratory methods and given the opportunity to analyze and interpret real ecological data.

Working in teams, students will spend eight weeks in the field, spending each lab period doing a specific task. The tasks include:

- Water sampling and analysis
- Electrofishing and processing of fish (identifying, measuring, weighing, marking, and tagging)
- Recording and analyzing data

Other activities will include:

- Discussion of course content/your reasons for taking the course
- Freshwater aquatic invertebrate identification, biology and ecology
- Aquatic plant identification, biology, and ecology
- Fish anatomy, biology, and ecology
The laboratories on Lake Alice will include intensive field work. Each student should be prepared to 
attend and actively participate in each field exercise. Dress warmly for cold weather, bring rain gear and 
a set of dry clothes. The lab will only be cancelled if thunderstorms are eminent. In addition, you will be 
provided with a notebook for recording your personal field notes (i.e., the methods for the given field 
activity, weather conditions, etc.). Bring it to each lab. All data should be recorded in pencil.

General Policies:

Make-up Exams, Late Assignments, Missed Classes
The general policy for this course is no make-up exams or assignments will be accepted after their 
deadline. However, there are special circumstances that will be taken into consideration. In some cases, 
no loss of credit will occur. In other cases, partial credit will be lost (the amount dependent on the 
lateness of the assignment). Please make special arrangements by the ADD/DROP deadline if there are 
known conflicts. Make-up exams and late assignment submissions will be granted only in extraordinary 
circumstances and require official documentation, such as a doctor’s note. The same guidelines apply 
for a missed laboratory session.

Academic Honesty
UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida 
community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by 
abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the 
following pledge is either required or implied: “On my honor, I have neither given nor received 
unauthorized aid in doing this assignment.”

The Honor Code ( http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/ ) specifies a 
number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are 
obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you 
have any questions or concerns, please consult with the instructor or TAs in this class.

Software
All faculty, staff and students of the university are required and expected to obey the laws and legal 
agreements governing software use. Failure to do so can lead to monetary damages and/or criminal 
penalties for the individual violator. Because such violations are also against university policies and rules, 
disciplinary action will be taken as appropriate.

Services for Students with Disabilities
The UF Counseling and Wellness Center coordinates the needed accommodations of students with 
disabilities. This includes registering disabilities, recommending academic accommodations within the 
classroom, accessing special adaptive computer equipment, providing interpretation services and 
mediating faculty-student disability related issues. Contact information for the Counseling and Wellness 
**FAS4305C Course Schedule (2017)**

Order of lectures, near end of course, may change depending on guest lecture schedules

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture Topics</th>
<th>Laboratory – Thursdays (1:00 – 4:55pm)</th>
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<tbody>
<tr>
<td>1.</td>
<td>Jan 5</td>
<td>Introduction/Scientific method</td>
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<td></td>
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<td>Syllabus, Schedule, Lake Alice Overview</td>
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<td>Lab Organization, Teams, Rotations, Photos,</td>
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<td></td>
<td></td>
<td>Lab Methods, Notebook, Paper Guidelines</td>
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<td>2.</td>
<td>Jan 10, 12</td>
<td>What makes a quality lake?</td>
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<td>Morphometry</td>
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<td>3.</td>
<td>Jan 17, 19</td>
<td>Properties of water</td>
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<td>Geology, water chemistry</td>
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<td>4.</td>
<td>Jan 24, 26</td>
<td>Water chemistry</td>
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<td>Limiting environmental factors</td>
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<td>5.</td>
<td>Jan 31, Feb 2</td>
<td>Nutrients, productivity</td>
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<td></td>
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<td>Eutrophication / management</td>
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<td>6.</td>
<td>Feb 7, 9</td>
<td>Sampling fish</td>
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<td></td>
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<td>Marking and tagging</td>
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<td>7.</td>
<td>Feb 14, 16</td>
<td>Estimating fish abundance</td>
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<td>Exam I</td>
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<td>8.</td>
<td>Feb 21, 23</td>
<td>Petersen estimates / assumptions</td>
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<td>Age and growth of fish (Geoff Smith)</td>
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<td>9.</td>
<td>Feb 28, Mar 2</td>
<td>Fish condition factors</td>
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<td>Springs</td>
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<td>10.</td>
<td>Mar 7, 9</td>
<td>Spring Break</td>
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<tr>
<td>11.</td>
<td>Mar 14, 16</td>
<td>Lakes</td>
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<td>Lakes</td>
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<td>12.</td>
<td>Mar 21, 23</td>
<td>Rivers</td>
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<td>Estuaries</td>
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<tr>
<td>13.</td>
<td>Mar 28, 30</td>
<td>Estuaries</td>
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<td>Fish diseases / parasites (Ruth Francis-Floyd)</td>
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<td>14.</td>
<td>Apr 4, 6</td>
<td>Topic????????</td>
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<td>Exam II</td>
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<tr>
<td>15.</td>
<td>Apr 11, 13</td>
<td>Pond management</td>
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<td>Fisheries Management</td>
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<td>16.</td>
<td>Apr 18, 20</td>
<td>“Silver and Gold”</td>
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<td>Final take-home exam given out</td>
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<td>17.</td>
<td>April 25</td>
<td>Final Exam (turn in at 1 PM) in our classroom - 3096 McCarty B. Your exam can also be turned in early at Fisheries or with Amy Abernethy, in the SFRC Graduate Program Office [Room 120 Newins-Ziegler Hall], or e-mailed as a PDF file to Dr. Cichra. Let Dr. Cichra know where/how you turned in your final exam.</td>
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