Course Description

Integrating scientific, social, political and legal factors in fisheries management.

Overview

Fisheries are an important source of food and recreational opportunities, yet many are in poor shape due to overfishing and/or habitat degradation. Managing fisheries sustainably and restoring fisheries that have been degraded is a complex task that requires a broad set of competencies from fisheries professionals. The course aims to help students develop key competencies including knowledge of essential ecological, social, institutional, and economic dimensions of fisheries management; skills in fisheries systems analysis, interview and social survey techniques, resource assessment and modeling, institutional analysis, participatory planning and reflection-in-action; and a repertoire of case studies. The course also aims to foster motivation for problem solving in an interdisciplinary and participatory manner, critical thinking and innovation. Lectures will be used to outline key concepts and approaches, and laboratories and homework assignments will provide experience in applying key methods. Throughout the course, all students will develop a case study on a fishery of their choice, applying what they have learned, providing concrete examples for class discussions, and eventually providing an independent review and recommendations for the further management of the fishery. Graduate students will also conduct a project design practicum: a service-oriented project aimed at addressing a current fisheries management issue through innovative science and/or professional practice. This interdisciplinary course is intended for graduate or undergraduate students majoring in any subject relevant to fisheries management including fisheries/aquatic science, wildlife, resource economics, geography, and political science.

Course Objectives

FAS 6355c & FAS 4932

1) Appreciate the complex, multi-dimensional nature of fisheries management problems and the benefits of integrative-interdisciplinary approaches to addressing them
2) Understand key relevant concepts in the areas of fisheries ecology, stakeholder characteristics and behavior, governance systems, fisheries economics, and management
and planning processes
3) Gain practical skills in fisheries assessment, interview techniques, institutional analysis, economic analysis, and participatory planning.
4) Gain practical experience in analyzing fisheries management issues in a problem- and outcome-oriented, interdisciplinary manner.
5) Strengthen group work, communication, facilitation and reporting skills.

FAS 6355c only

6) Gain practical experience in designing a project aimed at addressing a current fisheries management issue through scientifically informed professional practice.

Teaching and learning approach

The course involves both, structured lectures and labs/homework assignments and more open-ended, student-driven learning. From you as a student, the course requires enthusiasm for grappling with complex and poorly defined real-world fisheries management issues (“messes”). Many students enjoy these challenges but some don’t. If you want to be told what to do at all times, are uncomfortable engaging with problems that don’t have a right or wrong answer, then this course may not be for you.

The course is available fully and only online for graduate students (FAS6355c) and in mixed-mode online and in-class format for undergraduate students (FAS4932). All students are expected to attend weekly discussion sessions (online for graduate students and on-campus for undergraduates) regularly.

Instructor
Dr. Kai Lorenzen (Professor), Fisheries and Aquatic Sciences, SFRC, 7922 71st Street, Gainesville, FL 32653. Phone 352-273 3646, Email: klorenzen@ufl.edu, Skype: kailorenzenuf
Office hours: by arrangement

Dr. Chelsey Crandall (PostDoc), Fisheries and Aquatic Sciences, SFRC, 7922 71st Street, Gainesville, FL 32653. Email: kicksea@ufl.edu
Office hours: by arrangement

Guest lecturers
Dr. Edward Camp, SFRC, UF (fisheries economics)
Dr. Nia Morales, FWC and SFRC, UF (quantitative social surveys)

Course delivery
The class is offered in “reverse classroom” mode. Lectures are available online and can be watched at anytime within the relevant module. Lectures are complemented with live discussion sessions and various classwork assignments. Discussion sessions are held online in Zoom (voice and video chat) for graduate students (FAS6355c) and on campus for undergraduate students (FAS4932). Discussion sessions are an essential part of the class and participation is required and graded.

All students must upload a personal introduction clip and an introduction clip about their case study fishery via the VoiceThread system. Students will also use voice thread to upload case study presentations.

All participants are encouraged to maintain contact and discuss questions throughout the course using a suitable means agreed upon at the start of class (e.g. Canvas chat room).

E-learning and distance learning support

A Canvas site is available. Course material and interactive elements are organized as follows:

Announcements

• All important announcements are posted on the Canvas site and copied to your email.

Resources

• Access to resources such as lecture slides and key readings is via a Canvas web interface, organized by module/week. Lecture slides uploaded for sessions that have not yet been held are preliminary and are normally updated around the time a lecture is given (the course evolves constantly and so do the lectures!).

• Coursework assignments are posted under Assignments. Please turn in your coursework through the Assignments functionality. (We will accept assignments submitted by email, but only under exceptional circumstances).

• You will receive feedback and grades through the same channel.

VoiceThread

• Use VoiceThread to upload and view clips, presentations etc.

Chatroom

• Please use Canvas chat room to post questions and thoughts of general interest to the class.

• Post your questions for the discussion sessions here – by the previous day at the latest!
Updated 10/11/2019

Outline of topics, lectures/activities and recommended readings

<table>
<thead>
<tr>
<th>Topic</th>
<th>Lecture/activity</th>
<th>Recommended reading</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class introduction, problem definition and synthesis</strong></td>
<td>Introduction to the course: Course overview, student introductions. (KL)</td>
<td>Gutierrez et al. 2011; Hilborn 2007b; Post et al. 2002; Welcomme et al 2010; Worm et al. 2009; Anderson et al. 2015.</td>
</tr>
<tr>
<td></td>
<td>Discussion: Importance of fisheries, what do we expect from a ‘good’ fishery, how do fisheries measure up, what is the role of professionals in achieving good fisheries? (KL/CAC)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Course synthesis (KL/CAC)</td>
<td></td>
</tr>
<tr>
<td><strong>Fisheries systems</strong></td>
<td>Understanding fisheries systems and identifying options for improving outcomes (KL)</td>
<td>Degnbol &amp; McCay 2006; Garcia &amp; Charles 2007; Lorenzen 2008</td>
</tr>
<tr>
<td></td>
<td>Case study presentations and discussions (KL/CAC)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Natural sciences, social sciences, artistry and the practice of fisheries management (KL)</td>
<td>Schön 1983; Sarewitz 2004; Jentoft 2006</td>
</tr>
<tr>
<td><strong>Fisheries governance</strong></td>
<td>Fisheries governance (KL)</td>
<td>Sutinen 1999; Hilborn et al. 2005; Ostrom 2007; Branch 2009; Fujita et al. 2010; Gutierrez et al. 2011, NOAA 2007</td>
</tr>
<tr>
<td></td>
<td>Gulf Council SSC Meeting Class will attend via streaming or in person</td>
<td>Documents will be on the FTP server at <a href="http://www.gulfcouncil.org">www.gulfcouncil.org</a></td>
</tr>
<tr>
<td></td>
<td>Gulf Council Meeting Class will follow selected parts via streaming link</td>
<td>Documents will be on the FTP server at <a href="http://www.gulfcouncil.org">www.gulfcouncil.org</a></td>
</tr>
<tr>
<td></td>
<td>Florida FWC Meeting Class will follow selected parts via the Florida Cannel</td>
<td>Documents will be on <a href="http://www.myfwc.com">www.myfwc.com</a></td>
</tr>
<tr>
<td></td>
<td>Reforming fisheries management: change and processes</td>
<td>McCay (1989); Grimes (1996); Harris et al. (2007); Shelley (2012)</td>
</tr>
<tr>
<td><strong>Understanding and engaging stakeholders</strong></td>
<td>Stakeholders as individuals: values, attitudes, assets and drivers of behavior (KL)</td>
<td>Salas &amp; Gaertner 2004; Smith et al. 2005; Arlinghaus &amp; Mehner 2006; Hutt &amp;</td>
</tr>
</tbody>
</table>
### Updated 10/11/2019

<table>
<thead>
<tr>
<th>Category</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning from strangers: Qualitative interview studies</td>
<td>Acheson 1982; Weiss 1994; Kuehn et al. 2006; Adkins 2010; Turner 2010; Guion et al. 2011</td>
</tr>
<tr>
<td>Quantitative social surveys (Nia Haynes Morales)</td>
<td>Dillman et al. 2009</td>
</tr>
<tr>
<td>Stakeholder engagement and workshop facilitation (CAC)</td>
<td>Tierny 2011</td>
</tr>
<tr>
<td><strong>Quantitative assessment of fisheries status and management options</strong></td>
<td>Fisheries assessment: Biomass dynamics models (KL)</td>
</tr>
<tr>
<td></td>
<td>Hilborn &amp; Walters 1992 (Ch. 8); Haddon 2001 (Ch. 10); Cooper 2006; Edwards et al. 2012</td>
</tr>
<tr>
<td></td>
<td>Fisheries assessment: Models and data (KL)</td>
</tr>
<tr>
<td></td>
<td>Hilborn &amp; Walters 1992 (Ch. 10); Haddon 2001 (Ch. 2, 11); Cooper 2006; Edwards et al. 2012</td>
</tr>
<tr>
<td></td>
<td>Economics of fisheries management (Ed Camp)</td>
</tr>
<tr>
<td></td>
<td>Milon et al. 1999; Conrad 1999 (Ch. 3); Whitmarsh 2011 (Ch. 2)</td>
</tr>
<tr>
<td><strong>Ecosystem, spatial and recreational fisheries management</strong></td>
<td>Ecosystem-based fisheries management (KL)</td>
</tr>
<tr>
<td></td>
<td>Francis et al. 2006; Hobday et al. 2011; Rice 2011</td>
</tr>
<tr>
<td></td>
<td>Spatial and place-based fisheries management (KL)</td>
</tr>
<tr>
<td></td>
<td>Fogarty &amp; Botsford 2007; Lorenzen et al. 2010</td>
</tr>
<tr>
<td></td>
<td>Managing recreational fisheries: do different principles apply? (KL)</td>
</tr>
<tr>
<td></td>
<td>Radomski 2001; Post et al. 2002; Arlinghaus et al. 2007; Johnston et al. 2014; TRCP 2014</td>
</tr>
</tbody>
</table>
Updated 10/11/2019

Assessment & Grading

Graduate

A variety of different assessment approaches will be used, with emphasis on evaluating understanding of key concepts, development of core skills, critical thinking, and creative problem solving. The different assessments and their weighting are:

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab reports (4)</td>
<td>20%</td>
</tr>
<tr>
<td>Case study presentation</td>
<td>20%</td>
</tr>
<tr>
<td>Fisheries project design practicum</td>
<td>20%</td>
</tr>
<tr>
<td>Participation in discussions</td>
<td>15%</td>
</tr>
<tr>
<td>Interim exam</td>
<td>25%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

Undergraduate

A variety of different assessment approaches will be used, with emphasis on evaluating understanding of key concepts, development of core skills, critical thinking, and creative problem solving. The different assessments and their weighting are:

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework exercises (4)</td>
<td>30%</td>
</tr>
<tr>
<td>Case study presentation</td>
<td>30%</td>
</tr>
<tr>
<td>Participation in discussions</td>
<td>15%</td>
</tr>
<tr>
<td>Interim exam</td>
<td>25%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

Grading information

Grades will be allocated as: A (93 - 100 %), A- (90 - 92 %), B+ (86 - 89 %), B (82 - 85 %), B- (78 - 81 %), C+ (74 - 77 %), C (67 - 73 %), C- (63 - 66 %), D+ (59 - 62 %), D (55 - 58 %), D- (51 - 54 %), E (< 50 %).

Click here for UF grading information for students: [http://www.registrar.ufl.edu/hubstudents.html](http://www.registrar.ufl.edu/hubstudents.html)

Coursework requirements

Introductory clips (all students)

All students are required to upload introductory clips about themselves and their case study to Voice Thread.
Lab reports (graduate) /homework assignments (undergraduate)

Lab sessions (graduate) and homework assignments (undergraduate) are designed to help students exercise key skills in fisheries assessment, interviewing, and bio-economic analysis. The graduate labs and undergraduate assignments cover similar ground and are due within 2 weeks of the assignment being given.

Five lab/assignment reports are required:

1) Fisheries assessment: biomass dynamics modeling
2) Quantitative social surveys
3) Qualitative interviews
4) Bio-economic modeling

Reports should concisely address the questions posed in the assignments in writing, supported by pertinent figures and/or tables. It is not necessary to provide introductory material or describe methods, though knowledge and understanding of both should be evident in the presentation and interpretation of results. Lab reports will normally be around 3-5 pages in length.

Grading criteria: The report answers all questions posed in the assignment in a clear and concise manner. Text is supported by key figures and/or tables, all of which are appropriately labeled, described in a legend and referenced in the text. Interpretation of results shows good understanding of the underlying concepts and methods.

Integrative fisheries case study (all students)

All students will develop an integrative case study on a fishery or a fisheries-related natural resource of their choice. The aim of the case study is to conduct and present an integrative-interdisciplinary analysis of the outcomes of a fishery, the factors that led to these outcomes, options for improving management (or sustaining positive outcomes), and generic lessons that can be learned from the case study. Taken together, the case studies will become part of the student’s ‘repertoire’.

In the spirit of reflective practice, students will develop the case study in multiple steps interspersed with feedback and reflection.

1) Identification of case study topic
2) Completion of an information checklist summarizing key information on all attributes of the case study and information sources
3) Instructor feedback
4) Initial case study presentation (VoiceThread)
5) Peer and instructor feedback
Final case study presentation (VoiceThread)

Grading criteria: The presentations provide a clear, integrative and concise assessment of the fishery, possible management responses, and any generic lessons that can be learned from this specific case. Statements are appropriately supported by reference to publications, information from stakeholders, or personal observations. The presentation shows ability to synthesize and critically evaluate information.

Problem-based project design practicum (graduate students only)

In the practicum, students design a project aimed at addressing a real, current fisheries management problem through innovative professional practice. Where appropriate, students are encouraged to select problems related to their research or professional practice and to design projects they may subsequently implement as part of these activities. Students also have the option of obtaining credit for implementing their projects as part of a special study following the class.

Project design involves:
- a clear analysis of the management problem
- a realistic appreciation of what the proposed project will contribute to addressing the problem and over what time scale
- a set of well-designed, scientifically and professionally sound, and fully developed and pre-tested project activities
- an assessment of resources required to implement the project (budget, personnel, etc.)

Project design will normally require students to interact with stakeholders in order to aid problem analysis, design of activities, and pre-testing of specific tools such as survey instruments. Proposed project activities may include e.g. interview studies or social surveys, modeling studies involving interaction with stakeholders, conducting stakeholder workshops, or development of educational materials. All proposed activities must be grounded in sound science and professional practice and defined and pre-tested to the extent that they are ready to be implemented.

The project design practicum is conducted in five steps:
1. Drafting of a pre-proposal
2. Peer and instructor review of pre-proposals
3. Development of the main proposal including consultation with stakeholders, pre-testing of activities etc.
4. Peer and instructor review of pre-proposals
5. Submission of final proposal.

The pre-proposal should be about 3 pages in length and include: (a) background; (b) problem definition; (c) aims and objectives; (d) project activities; (e) timeline; (f) outputs (g) intended
Updated 10/11/2019

contributions of the project to addressing the problem identified. The full proposal should follow the same format and be about 10 pages in length, plus appendices.

Grading criteria: the management problem is clearly identified; the project activity is clearly described, of appropriate scope, and designed to a high standard.

Interim exam

A take-home interim exam will be held in week 12. The exam will consist of a mix of short-answer and essay questions.

Online discussions (graduate students only)

Online discussions are held weekly for all graduate students (on-campus and distance). The meetings are synchronous voice meetings with occasional screen sharing and can be accessed through canvas or telephone (without screen sharing). The purpose of the meetings is to discuss the topics covered in lectures, lab assignments and any other issues or questions that may arise in the course of the class.

On-campus discussions (undergraduate students only)

On-campus discussions are held weekly for undergraduate students. The purpose of the meetings is to discuss the topics covered in lectures, homework assignments and any other issues or questions that may arise in the course of the class.
**Updated 10/11/2019**

**Schedule**

*Note: details of the schedule may change in response to external circumstances or pedagogical needs of the course. Always check Canvas for the most current version.*

<table>
<thead>
<tr>
<th>Week (starting)</th>
<th>Lectures</th>
<th>Lab/homework</th>
<th>Integrative case study</th>
<th>Design practicum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (8/19)</td>
<td>Course introduction</td>
<td>Introductory clip</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 (8/26)</td>
<td>Fisheries systems</td>
<td></td>
<td></td>
<td>Topic</td>
</tr>
<tr>
<td></td>
<td>Fisheries governance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 (9/02)</td>
<td>(Hurricane break)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 (9/11)</td>
<td>Stakeholders as individuals</td>
<td>Interview studies</td>
<td>Assignment Interviewing</td>
<td></td>
</tr>
<tr>
<td>5 (9/16)</td>
<td><em>Gulf Council SSC 9/17-18</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 (9/23)</td>
<td>Fisheries conflicts</td>
<td>Communication strategies</td>
<td>Information checklist</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 (9/30)</td>
<td><em>FWC Commission 10/2-3</em> (no discussion meetings)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 (10/07)</td>
<td>Social surveys</td>
<td></td>
<td>Assignment Social surveys (10/8-10-24)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stakeholder engagement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 (10/14)</td>
<td>Case study presentations</td>
<td></td>
<td>Presentation (due 10/18)</td>
<td>Topic (due 10/17)</td>
</tr>
<tr>
<td></td>
<td><em>Gulf Council 10/21-24</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 (10/28)</td>
<td>Interim exam</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(open 10/25-11/1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 (11/04)</td>
<td>Fisheries economics</td>
<td></td>
<td>Assignment Economics (11/04-11/21)</td>
<td>Pre-proposal (due 11/9)</td>
</tr>
<tr>
<td></td>
<td>Recreational fisheries</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13 (11/12)</td>
<td>Ecosystem-based manage.</td>
<td></td>
<td></td>
<td>Peer feedback on pre-prop.</td>
</tr>
<tr>
<td></td>
<td>Spatial/place-based m.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 (11/18)</td>
<td>Reforming management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 (11/25)</td>
<td>Natural and social sciences (no discussion meetings)</td>
<td></td>
<td></td>
<td>Draft full proposal (due 11/26)</td>
</tr>
<tr>
<td>16 (12/02)</td>
<td>Class synthesis</td>
<td></td>
<td>Final presentation (due 12/05)</td>
<td>Peer feedback on prop.</td>
</tr>
<tr>
<td>17 (12/10)</td>
<td></td>
<td></td>
<td>Final proposal (due 12/12)</td>
<td></td>
</tr>
</tbody>
</table>
Academic honesty

All students are required to abide by the Academic Honesty Guidelines which have been accepted by the University of Florida: (http://www.dso.ufl.edu/judicial/procedures/honestybrochure.html). Failure to comply strictly to these guidelines can result in failure of the course.

UF Counseling Services

Resources are available on-campus for students having personal problems or lacking clear career and academic goals which interfere with their academic performance. These resources include:
1. University Counseling Center, 301 Peabody Hall, 392-1575, personal and career counseling;
2. Student Mental Health, Student Health Care Center, 392-1171, personal counseling;
3. Sexual Assault Recovery Services (SARS), Student Health Care Center, 392-1161, sexual assault counseling; and
4. Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling.

Accommodations for Students with Disabilities

Students requesting classroom or laboratory accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

Textbooks

There are no required text books, but students may refer to the following for many aspects of the course:


Key readings


Updated 10/11/2019


Updated 10/11/2019


