Spring 2002 Syllabus

FISH/BIOLOG 427 Ichthyology

Contact Information

Instructor
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Class lectures
MWF, 10:30 to 11:30 am
Location: Irving II 138A
Make office appointments after class.

Laboratory
W, 2:00 to 5:00 pm
Location: Bunnell 409
Make office appointments during or after lab.

Recommended (not mandatory) textbooks


Note: these textbooks, and other resource books / materials, are on reserve in Biosciences Library in Arctic Health Building.

- primary literature journals in this library are main source for individual written papers and oral presentations.
- also, consultation and discussion with instructor and teaching assistant.
Spring 2002 Grade Breakdown and Grade Determination

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Grading Outline I

Grade Breakdown
Lecture = 3 credits (75% of total grade)
Laboratory = 1 credit (25% of total grade)

Assignments and Examinations:
two written exams (45% of total grade):

- W course = 'written intensive'. Writing forms majority of course examination and grading, as per UAF criteria for written component.
  1. lecture exam (30% of total grade).
  2. lab exam (15% of total grade).

two written papers (30% of total grade):

- W course = written intensive. Two written papers meet UAF written component criteria. Both written papers are part of lecture grade.
  3. written paper one (10% of total grade).
  - individual detailed critique and examination of a specific primary literature paper and its citations.
  4. written paper two (20% of total grade).
  - individual general critique and synthesis of a subject area, species, or topic through broader review of several primary literature papers.
  - each written paper two must be independent, yet also be a coherent component of an overall group focus or theme topic collectively decided upon and organized by the class.
  - basically, each individual written paper two and oral presentation two should be composed of different aspects (eg. species or topics) within an overall group subject (see oral presentation and group seminar headings below).

two individual oral presentations, second given within overall group/class format (10% of total grade):

- O course = 'oral communication intensive'. Two individual oral presentations meet individual component of UAF criteria for oral communication component. Both individual oral presentations are part of lecture grade.
  5. oral presentation one (4% of total grade).
  - individual oral presentation based on written paper one.
  6. oral presentation two (6% of total grade).
  - individual oral presentation based on written paper two, but within an overall group (class) seminar.
  - each individual written paper two and oral presentation two must be independent, yet also be a coherent component, of an overall group focus or theme topic collectively decided upon and organized by the class.
  - basically, each individual written paper two and oral presentation two should be composed of different aspects (eg. species or topics) within an overall group subject (see written papers heading above and group seminar heading below).

one group seminar development, organization, and operation (5% of total grade):
• O course = 'oral communication intensive'. The group seminar organization of oral presentations meets group oral communication component of UAF criteria. The group seminar is part of the lecture grade.
  7. group seminar (5% of total grade).
  —individual oral presentation two of written paper two occurs within an overall group (class) seminar.
  —individual written paper and oral presentation two must be independent, yet also be a coherent component, of an overall group focus or theme collectively decided upon and organized by the class (see written paper and oral presentation headings above).
  —basically, each individual paper two and presentation two should be composed of different aspects (eg. species / topics) within an overall group subject.

in-lab written assignments (10% of total grade):

• W course = 'written intensive'. Writing forms majority of course examination and grading, as per UAF criteria for written component. The in-lab assignments are part of the lab grade.

• O course = 'oral communication intensive'. The suggested small group format and inter-group communication for the in-lab assignment further meets the group oral communication component of UAF criteria. The in-lab assignments are part of the lab grade.
  8. one in-lab assignment per ten teaching labs (1% of total grade each).
  —teaching labs are those in which presentations or examinations do not otherwise occur. All in-lab assignments are de-able and to be fully completed and handed in by end of each lab.
  —in-lab assignments are best done collectively in small groups, with only one written answer sheet needing to be submitted per such group. These small groups will be decided by the class, and need not be consistent for each in-lab assignment.
  —communication between everyone and all the small groups in discussing the in-lab materials and in lab assignments is strongly encouraged, as are questions to and discussions with the instructor and TA.

Grading Outline II

Grade Determination

lecture = 3 credits (75% of total grade)
laboratory = 1 credit (25% of total grade)

Assignments and Examinations:

1: Lecture exam (30% of total grade) - May 10th, 2002 (1015 to 1215).
—will receive instruction and materials to assist with preparation (see class schedule).
—based only on lecture material taught for the entire term.
—one written exam approximately two hours long.
—several short written answers to questions about specific content.
—'longer' written paragraph or 'mini-essay' type answers to questions requiring interpretation, organization, and synthesis of taught information and knowledge.
—graded by instructor and/or TA, and available from instructor or on his office door by mark submission deadline.
—all answers must be in ink, or no discussion of the grade may take place afterward.

2: Laboratory exam (15% of total grade) - April 24th, 2002.
—will receive instruction and materials to assist with preparation (see class schedule).
—based only on laboratory material taught in the ten teaching labs for the entire term.
—two individual oral presentations and group / class symposium will not be re-examined.
—one written exam approximately one to two hours long.
—will be utilization of material learned from / summarized by in-class lab assignments.
—graded with comments from instructor and/or TA, and returned by May 6th, 2002. A brief discussion will take place at that time.
—all answers must be in ink, or no discussion of the grade may take place afterward.

3 - 4: Two written papers (30% of total grade) - February 25th and April 15th, 2002.
—will receive instruction and materials to assist with preparation (see class schedule).
—both papers must cite literature and references appropriately, and must properly use and spell
scientific names properly. Precise guidance for citing literature, species, and taxonomy will be part of
the instruction and preparatory materials.
—reference use guideline - written paper one should properly cite and use approximately five
appropriate primary scientific journal literature articles.
—reference use guideline - written paper two should properly cite and use approximately ten
appropriate primary scientific journal literature articles.
—must both be based on scientific literature published in primary journals.
—both written papers should be approximately five to ten typed pages
—both papers need not be typed, but if handwritten should be equivalent in length and very legible.
—any handwritten papers must be in ink, or no discussion of the grade may take place afterward.
Handwritten papers in pencil are not acceptable.
—both papers must be at least 1.5 (or 2 = double) line spaced, regardless of being typed or
handwritten.
—both written papers must be about FISH, not any other aquatic or taxonomic group(s).
—both written papers must be on fish BIOLOGY, not fisheries, management, etc.
—if these topic specifications are still unclear, please see instructor or TA before beginning written
paper. You are responsible for choosing an appropriate topic, but this can be discussed / assisted by
the instructor and/or TA.
—both written papers will be independently graded by instructor and/or TA with grade and comments
largely based on content, proper format (introduction, main ideas and points, and conclusions), ideas,
understanding, organization, and appropriateness of subject.
—both written papers will then be further independently graded, but with less emphasis, based on
tone, word choice, sentence structure, grammar, punctuation, and spelling.
—both written papers must be handed in on time at beginning of lecture that day to enable instructor
to meet deadlines for grading, comments and oral presentations, and also for his potential feedback
and re-writes.
—will deduct one letter grade for each lecture (2 or 3 days) late in the case of both written papers.
—if instructed by written comments on either written paper, then student must immediately
schedule an appointment before the next lecture session (ie. in two days). This is for assistance and
instruction with the two written papers and to help prevent similar problems with the two oral
presentations associated with each written paper.
—if necessary, this assistance / instruction could eventually require a re-write of either written paper.
—a re-write of either written paper would be re-evaluated, but not re-graded (also see overall policy
on re-grading at end of this document).

3: Written paper one (10% of total grade) - due February 25th, 2002.
—must have complete photocopy of primary literature journal paper that was reviewed
(including its full reference etc. sections) attached to submission of written paper one.
—individually graded with comments from instructor and/or TA, and returned by March 4th, 2002. A
brief discussion to facilitate feedback, understanding, and improvement will take place at that time.

4: Written paper two (20% of total grade) - due April 15th, 2002.
—each written paper two must be independent; yet also be a coherent component, of an overall group
focus or theme topic collectively decided upon and organized by the class.
—basically, each individual written paper two and oral presentation two should be composed of
different aspects (eg. species or topics) within an overall group subject (see oral presentation and
group seminar headings below).
—individually graded with comments from instructor and/or TA, and returned by April 22nd, 2002. A
brief discussion to facilitate feedback, understanding, and improvement will take place at that time.

5 - 6: Two individual oral presentations (10% of total grade) - March 13th and May 1st, 2002.
—will receive instruction and materials to assist with preparation (see class schedule).
—both oral presentations are individual efforts and preparations, and the resulting talks should be
approximately five to ten minutes each per person.
—each oral presentation will be followed by a brief ‘question / answer’ period by class and instructor /
TA.
—both oral presentations will be independently graded with comments based on proper format
(introduction, main ideas and points, and conclusions), effective speaking, and appropriate
development and use of visual aids.
—visual aids can be as simple as overheads as long as appropriate, useful, and
interpretable
—both oral presentations will then be further independently graded with comments based on
clarity, ‘mastery’ of subject material, organization, synthesis, and understanding.

5: Oral presentation one (4% of 10% total grade for two oral presentations) - March 13th, 2002.
—graded by March 27th 2002 with comments only by instructor and teaching assistant. A brief discussion to facilitate feedback, understanding, and improvement will take place at that time.
—if instructed by professor, TA, or through written comments for oral presentation one, then student must immediately schedule an appointment before the next lecture session (ie. in two days). This is for assistance and instruction with the oral presentations, and to help prevent similar problems with oral presentation two.
—if necessary, assistance / instruction could require a brief re-presentation of oral presentation one to only the instructor, TA, and maybe that student's selected classmates.
—a re-presentation of oral presentation one would be re-evaluated, but not re-graded (also see overall policy on re-grading at end of this document).

6: Oral presentation two (6% of 10% total grade for two oral presentations) - May 1st, 2002.
—graded by May 6th 2002 with comments by class, and by instructor and teaching assistant. A brief discussion will take place at that time.
—each person in class will be provided with 'anonymous' individual score sheets for evaluations of every oral presentation two which will be summarized and used in grading. These class evaluations will be summarized and will form an important part of the grade for oral presentation two, within the context of the grades from the instructor and TA.

7: One group seminar development/organization/operation (5% of total grade) - May 1st, 2002.
—will receive instruction and materials to assist with preparation (see class schedule).
—graded by May 6th 2002 with comments by class, and by instructor and teaching assistant. A brief discussion will take place in the lecture at that time.
—each person in class will be provided with 'anonymous' individual score sheets for evaluations of every other class member's contribution in terms of preparation, work, and participation. These class evaluations will be summarized and will form an important part of the grade for oral presentation two, within the context of the grades from the instructor and TA.
—the same criteria will form the grade from the instructor and TA.

8: Ten in-lab written assignments (10% of total grade).
—will receive instruction and materials to assist with preparation (see class schedule).
—each written in-lab assignment is due at the end of its lab period (see class schedule). The emphasis is on writing, but diagrams and drawings where necessary, or for clarity / explanation, are very suitable and encouraged.
—each written in-lab assignment is to present a 'correct' answer in a coherent and organized fashion that covers and demonstrates understanding of each lab's materials.
—each hand-written in-lab assignment must be at least 1.5 (or 2 = double) line spaced, and it must be very legible.
—all answers must be in ink, or no discussion of the grade may take place afterward.
—in-lab assignments are to be done collectively in small groups, with only one written answer sheet needing to be submitted per such group.
—these small groups will be decided by the lab class, and need not be the same for each in-lab assignment.
—these small groups should consist of two to four individuals (or maybe five if necessary).
—individuals will not be involuntarily excluded from small groups.
—the class is fully expected and instructed to behave maturely and properly incorporate everyone into functioning small groups.
—each written in-lab assignment must have the names of each member of all small group written clearly on the top.
—each person in any small group collectively doing each written in-lab assignment will receive the same grade for that particular in-lab assignment.
—communication between everyone and all the small groups in discussing the in-lab materials and in lab assignments is strongly encouraged, as are questions to and discussions with the instructor and TA.
—the instructor and TA will assist where and as possible, short of giving the absolute answer to the in-lab assignments.
—each written laboratory assignment (and any appropriately requested or useful diagrams or drawings) will be independently graded by instructor and/or TA with comments largely based on content, format, flow of thought / ideas, understanding, and organization.
—each written laboratory assignment will then be further independently graded, but
with less emphasis, based on tone, word choice, sentence structure, grammar, punctuation, and spelling.
—each written laboratory assignment will be returned and briefly discussed at the beginning of the next teaching lab session to facilitate feedback, understanding, and improvement.

**Overall Relevant Policies**

'Re-Grading'
Please bring any assignment that has grading inaccuracies due to incorrect addition of points or something of that nature, and this will be corrected. If you would like a re-assessment of any segment of an assignment for reasons of disagreement with the grade, then I will gladly do so, but will also re-grade the entire assignment and not just the disputed portion. Grading is often subjective and based on a composite of marks given throughout any one assignment, and this policy permits this to be maintained in any possible re-determination of grades.

**Plagiarism and / or 'Cheating'**
Each student is fully expected to be honest in all their work in this course. Anything else will be considered an extremely serious offense and will subject the student to strong disciplinary action. Under this discipline, it will be my suggestion and preference that such a student at least fails this course, and that depending on the nature of the offense more serious discipline could then be recommended to the UAF University Disciplinary and Honor Code Committee (please see UAF Student Academic Honor Code for details regarding undergraduates and graduates).

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*Modified 1 February 2002. Website questions or comments to SFOS web coordinator.*
SCHEDULE and SYLLABUS (Class and Lab) - Ichthyology (Fish / Biol 427)

(Ichthyology - course web site (password protected): http://www.sfos.uaf.edu/)

- actual specific subjects covered in any lecture or lab may somewhat vary on particular dates.
- course is still in development, and it is on a new schedule from the first time I offered it.
  - a good approximation to this material will get covered in class and lab.
- note - dates of exams / assignments are not going to vary (these deadlines are real).

January
15 - Course Information, Introduction, and Outline.
20 - Course Assignments, Grading, and Structure.
  - Instruction and Resources on Writing Papers and Giving Oral Presentations
21 - LAB - cancelled (no lab): Apologies, but due to commitments beyond control of instructor.
22 - Lecture cancelled (no class): Apologies, but due to commitments beyond control of instructor.
  - Bill Carter (TA) and Other Previous / Grad Students gave handouts and answered questions.
27 - General Introduction to Fishes and Ichthyology.
  28 – LAB - Ichthyology Lab and Specimens Introduction, Use, and Safety.
    - External Anatomy / Morphology and Locomotory Forms of Fishes.
      - in-lab assignment one (~1% of total grade).
29 - Hagfish - Agnathan Fishes (Superclass Agnatha – jawless fishes).

February
3 - Lampreys - Agnathan Fishes (Superclass Agnatha – jawless fishes).
  4 - LAB - Osteology and Internal Anatomy of Fishes. Scales and Otoliths for Ageing.
    - in-lab assignment two (~1% of total grade).
5 - 'Ancient' Fishes (Extinct and Extant).
10 - Sharks, Rays, Skates, and Ratfish (Grade Chondrichthyes – jawed cartilaginous fishes).
  11 – LAB – What is a Species? Introduction to Evolution, Speciation, and Evolutionary Ecology.
    - in-lab assignment three (~1% of total grade).
12 - Shark Life-History, Feeding, & Attacks (Grade Chondrichthyes – jawed cartilaginous fishes).
17 - Eels and Herring (also bonefish, bony-tongues, and tarpon) – jawed bony fishes.
  - Subdivisions Clupeomorpha, Elopomorpha, and Osteoglossomorpha.
18 – LAB - Major Fish Taxonomic Groups and Overall Systematics.
  - Introduction / Background for Phylogenetic Classification and Taxonomy.
    - in-lab assignment four (~1% of total grade).
19 - Superorder Placodontostei.
24 - Superorder Ostariophysi (Ostariophysi Fishes).
  - I will provide and discuss by at least today example midterm take-home essay exam questions.
25 – LAB – Hagfish and Lampreys (Superclass Agnatha – jawless fishes).
  - in-lab assignment five (~1% of total grade).
26 - Series Perciformes (Perciformes Fishes).
  - CLASS MIDTERM TAKE-HOME ESSAY EXAM handed out (~15% of total grade).
  - on class lectures only, up to and including today’s class.

March
2 - Physiology - Respiration, Blood, and Circulation.
  3 – LAB - Sharks, Rays, Skates and Ratfish (Grade Chondrichthyes (jawed cartilaginous fishes).
    - in-lab assignment six (~1% of total grade).
4 - Physiology - Buoyancy, Osmoregulation, and Thermoregulation.
  - CLASS MIDTERM TAKE-HOME ESSAY EXAM handed back in today by end class.
9 - Skin - Bioluminescence, Colo(u)ration, Integument, and Scales.
10 – LAB – Superorder Ostariophysi (jawed bony rayed-fin fishes).
  - in-lab assignment seven (~1% of total grade).
11 - Senses - Chemoreception, Electoreception, and Sound Detection / Generation.
  - I will (by now (or soon)) go over class midterm exam for part of a lecture or lab period.
  - Provides time to incorporate any necessary ‘lessons’ for your upcoming papers.
  - I will make grading key available at that time and on course web site.
March (continued)
16 - Spring Break (no class).
17 - No LAB – Spring Break (no lab).
18 - Spring Break (no class).
23 - Senses - Vision.
   • in-lab assignment eight (~1% of total grade).
25 - Feeding – Adaptations, Patterns, Energetics, Growth, Longevity, etc..
30 - Early Life-History and Larvae.
31 – LAB - Pike, Other Salmonids (Whitefish / Grayling), and Smelt.
   • in-lab assignment nine (~1% of total grade).

April
1 - Reproduction - Sex Determination and Its Evolution; Mechanisms and Modes.
   • PAPERS to be handed in by end of class today (~25% of total grade).
6 - Reproduction - Strategies / Other Related Topics.
7 – LAB – Salmon, Trout, and Char (Family Salmonidae).
   • I will provide (by at least today) example lab exam questions.
   • in-lab assignment ten (~1% of total grade).
   • ten in-lab assignments for semester total ~ 10% of total grade.
8 - Diadromy (Migration).
13 - Behavio(u)rs – Schooling, etc..
14 – LAB – LAB EXAM (~15% of total grade).
15 - Evolution - Genetic / Morphometric Diversity and Speciation.
   - Special Habitats and Adaptations (particularly ‘Arctic’).
   • Papers Returned and Discussed (with time for you to use any comments for presentations).
20 - Evolution – Species Flocks, Hybridization, etc..
   • Brief Review (Pep Talk) for Oral Presentations.
21 – LAB – ‘CLASS’ ORAL PRESENTATIONS (~10% of total grade (talk on one day only).
22 - Biogeography.
27 - Conservation Biology.
   • Brief Review (Pep Talk) for Oral Presentations.
   • I will provide (by at least today) example final exam questions.
28 – LAB – ‘CLASS’ ORAL PRESENTATIONS (~10% of total grade (talk on one day only).
   • Return and Discuss Lab Exam (if not already done in last week’s lab).
   • Last Day of Ichthyology Lab.
29 - Related Applied / Management Issues.
   • Any Review for Final Class Exam.
   • Return Grades, Comments, and Feedback on Oral Presentations.
   • Last Day of Ichthyology Class.

May
3 – Last Day of General Classes at UAF.
5 - 8 - FINAL CLASS EXAM (~25% of total grade).
   • on class lectures for whole semester with some emphasis on lectures since midterm.
12 - Last Day for Instructors to submit Grades to Registrar’s Office.
   • I will endeavor to make myself and your exams available as necessary and possible.
   • Best wishes, and have a wonderful summer.