Submit original with signatures + 1 copy + electronic copy to UAF Governance. See http://www.uaf.edu/uafgov/faculty/cd for a complete description of the rules governing curriculum & course changes.

TRIAL COURSE OR NEW COURSE PROPOSAL

SUBMITTED BY:

<table>
<thead>
<tr>
<th>Department</th>
<th>College/School</th>
<th>CNSM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology and Wildlife</td>
<td></td>
<td>5762</td>
</tr>
</tbody>
</table>

Prepared by: Diane O'Brien

Email Contact: fndo@uaf.edu

Contact: Diane O'Brien

1. ACTION DESIRED
   (CHECK ONE):
   
   [ ] Trial Course
   [x] New Course

2. COURSE IDENTIFICATION:

   Dept: Biol
   Course #: F6XX
   No. of Credits: 3

   Justify upper/lower division status & number of credits:
   The proposed course is a graduate seminar with a focus on critical reading and interpretation of the primary literature. It is based on the conceptual bases for techniques important to research in animal ecology and wildlife. It will meet for 3 hours per week for lectures, presentation and discussion.

3. PROPOSED COURSE TITLE:
   Animal Stable Isotope Ecology

4. CROSS LISTED?
   YES/NO

   (Requires approval of both departments and deans involved. Add lines at end of form for such signatures.)

   NO

5. STACKED?
   YES/NO

   NO

6. FREQUENCY OF OFFERING:
   Alternate Spring
   (Every or Alternate) Fall, Spring, Summer - or As Demand Warrants

7. SEMESTER & YEAR OF FIRST OFFERING (if approved)
   Spring 2011

8. COURSE FORMAT:
   
   NOTE: Course hours may not be compressed into fewer than three days per credit. Any course compressed into fewer than six weeks must be approved by the college or school's curriculum council. Furthermore, any core course compressed to less than six weeks must be approved by the core review committee.
   
   COURSE FORMAT:
   (check one)
   
   [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [x] 6 weeks to full semester

   OTHER FORMAT
   (specify)

   Mode of delivery (specify lecture, field trips, labs, etc)
   Mixed lecture, student presentation, and discussion

9. CONTACT HOURS PER WEEK:
   
   [3] LECTURE hours/weeks
   [ ] LAB hours/week
   [ ] PRACTICUM hours/week

   Note: # of credits are based on contact hours. 800 minutes of lecture=1 credit. 2400 minutes of lab in a science course=1 credit. 1600 minutes in non-science lab=1 credit. 2400-4800 minutes of practicum=1 credit. 2400-8000 minutes of internship=1 credit. This must match with the syllabus. See http://www.uaf.edu/uafgov/faculty/cd/credits.html for more information on number of credits.

   OTHER HOURS (specify type)

10. COMPLETE CATALOG DESCRIPTION including dept., number, title and credits (50 words or less, if possible):
   
   [ ]
Animal Stable Isotope Ecology, Biol 693 (3 credits). This seminar examines recent primary literature in stable isotope ecology, which uses naturally occurring variation in $^{13}$C, $^{15}$N, $^{18}$O, $^2$H, and $^{34}$S as markers of organismal and ecological processes. The focus will be on animal studies, including diet reconstruction, mixing models, food webs, metabolism, nutrient allocation, and migration.

11. **COURSE CLASSIFICATIONS:** (undergraduate courses only. Use approved criteria found on Page 10 & 17 of the manual. If justification is needed, attach on separate sheet.) N/A
   - H = Humanities
   - N = Natural Science
   - S = Social Sciences

   Will this course be used to fulfill a requirement for the baccalaureate core? YES NO

   IF YES, check which core requirements it could be used to fulfill:
   - O = Oral Intensive, Format 6
   - W = Writing Intensive, Format 7
   - Natural Science, Format 8

12. **COURSE REPEATABILITY:**
   Is this course repeatable for credit? YES X NO

   Justification: Indicate why the course can be repeated (for example, the course follows a different theme each time).

   How many times may the course be repeated for credit? TIMES

   If the course can be repeated with variable credit, what is the maximum number of credit hours that may be earned for this course? CREDITS

13. **GRADING SYSTEM:**
   - LETTER: X
   - PASS/FAIL: 

RESTRICIONS ON ENROLLMENT (if any)

14. **PREREQUISITES**
   Graduate standing or permission of instructor

   These will be required before the student is allowed to enroll in the course.

15. **SPECIAL RESTRICTIONS, CONDITIONS**

16. **PROPOSED COURSE FEES**
   S

   Has a memo been submitted through your dean to the Provost & VCAS for fee approval? Yes/No

17. **PREVIOUS HISTORY**
   Has the course been offered as special topics or trial course previously? Yes/No

   If yes, give semester, year, course #, etc.: Spring 2006, 2007 and 2009

18. **ESTIMATED IMPACT**
   WHAT IMPACT, IF ANY, WILL THIS HAVE ON BUDGET, FACILITIES/SPACE, FACULTY, ETC.

19. **LIBRARY COLLECTIONS**
   Have you contacted the library collection development officer (ffklj@uaf.edu, 474-6695) with regard to the adequacy of library/media collections, equipment, and services available for the proposed course? If so, give date of contact and resolution. If not, explain why not.
20. IMPACTS ON PROGRAMS/DEPTS
What programs/departments will be affected by this proposed action?
Include information on the Programs/Departments contacted (e.g., email, memo)

This is a graduate seminar and will not affect the undergraduate curriculum. This course offering expands the opportunities for graduate students in Biology, SFOS, and Anthropology, all of whom have participated in the course when it was a Special Topics.

21. POSITIVE AND NEGATIVE IMPACTS
Please specify positive and negative impacts on other courses, programs and departments resulting from the proposed action.

Positive: see above
Negative: none

JUSTIFICATION FOR ACTION REQUESTED
The purpose of the department and campus-wide curriculum committees is to scrutinize course change and new course applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory. Use as much space as needed to fully justify the proposed course.

The proposed course, animal Stable Isotope Ecology, meets an important and growing research need of our Biology and Wildlife graduate students. Stable isotope analyses are becoming a standard tool in ecological research, and a great number of B&W students use stable isotopes in some aspect of their animal or human research (including students from the Barnes, Barboza, Kitaysky, Wipfli, Follmann, Powell, D. O'Brien, and O'Hara labs in B & W, the Castellini, Blum, Wooller and Gradinger labs in SFOS, and the Murray and Gerlach labs in Anthropology). However, the application of these powerful tools to animal ecology is still very much a developing field, and thus applying them correctly requires some sophistication and mastery of a rapidly growing literature. When I offered the class as a Special Topics in 2006 it attracted 13 students at the graduate level, all of whom were planning to incorporate stable isotope techniques into their research. I offered the course again in 2007 to 8 students, some of whom participated from Juneau via videoconferencing.
**APPROVALS:**

<table>
<thead>
<tr>
<th>Signature, Chair, Program/Department of:</th>
<th>Date</th>
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<tbody>
<tr>
<td>Christa Mulder for Richard Boone &quot;attached&quot;</td>
<td>Sept 25, 2008</td>
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<tr>
<th>Signature, Chair, College/School Curriculum Council for:</th>
<th>Date</th>
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<tbody>
<tr>
<td>Diane Wagner</td>
<td>9/29/08</td>
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<tr>
<th>Signature, Dean, College/School of:</th>
<th>Date</th>
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<tbody>
<tr>
<td>Joan Braddock</td>
<td>10/24/08</td>
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</table>

Signature of Provost (if applicable)

Offerings above the level of approved programs must be approved in advance by the Provost.

**ALL SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE REGISTRAR’S OFFICE.**

**ADDITIONAL SIGNATURES: (If required)**

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<th>Date</th>
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</table>
Animal Stable Isotope Ecology  
Biol 693 Spring 2011  
3 credits

**Professor:** Diane O’Brien  
Office: 230 Arctic Health Research Building  
Phone: x5762  
Email: ffdo@uaf.edu

**Office hours:** Tuesday/Thursday 3:30-5

**Class meetings:**  
T/Th 9:45-11:15, room 208 Irving 1

**Prerequisites:** Graduate standing

**Course materials**  
Readings will be from books and from the primary literature. Readings will either be handed out in class or posted to Blackboard as PDFs. (please enroll yourself in BB ASAP if you’re not already enrolled).

We will read several chapters of the following book:

**Stable Isotope Ecology** (2006) by Brian Fry (Springer)

It comes with supplemental materials on CD and is worth purchasing if you know stable isotopes are going to be part of your current/future research. It is currently available for $51.06 on Amazon.com. If you do not purchase it, I will make sure it is available on reserve and will post assigned simulations etc to blackboard.

**Course Description**  
This seminar examines recent primary literature in stable isotope ecology, which uses naturally occurring variation in $^{13}\text{C}$, $^{15}\text{N}$, $^{18}\text{O}$, $^{2}\text{H}$, and $^{34}\text{S}$ as markers of organismal and ecological processes. The focus will be on animal studies, including diet reconstruction, mixing models, food webs, nutrient allocation, migration, and compound-specific stable isotope analysis. It will be structured to some extent around the research needs of the graduate students who enroll, and they will determine how much emphasis is placed on the different areas.

**Instructional Methods**  
The general format will be lecture on Thursdays and discussion on Tuesdays; although we will deviate (more discussion or more background lecture) as topics require. We will use Blackboard for communication and for posting readings and assignments.

**Course Goals and Student Learning Outcomes**  
This course will prepare students to incorporate stable isotope techniques into their own independent research, and will give them the tools and background to design data collection, present and interpret data, and write with the correct terminology and nomenclature about a rapidly growing set of powerful analytical tools. The course will also give students experience with paper presentations, research design, and scientific writing. The students should expect to master terminology, principles, key formative studies, applications, and data interpretation.
Evaluation and Course Policies

Students will be evaluated as follows:

**Participation (30%)** This includes attendance, preparation, and participation in class discussions. Students will be asked to self-evaluate participation and will receive feedback 3-4 times during the semester so that this aspect of evaluation is transparent.

**Assignments (70%)** The form of the homework assignments will vary from week to week, from problems to be solved to data presentation to paper synopses. There will be a take-home, written final exam that requires students to summarize and review key topics covered during the semester.

Letter grades will be assigned as follows: ≥90% = A, ≥80% = B, ≥70% = C, less than 70% = F.

**Student support services**
I encourage students to meet with me one on one to discuss any points needing clarification, questions involving their own research, or any other concerns with the course. Drop by during office hours or email me to schedule!

**Disabilities Services**
We welcome students with disabilities and will work with the Office of Disabilities Services (203 WHIT 474-7043) to provide equal access to the course via reasonable accommodations.

**Tentative Course Calendar**
This is a list of the topics we will cover and their approximate order. Each week there will be a class session (1.5 hours) devoted to lecture, and a class session (1.5 hours) devoted to paper discussion and presentations. Student research interests and needs may dictate that we spend more time on some of these topics. In and amongst these topics, we will also devote class time to planning proposals, presenting datasets, and getting feedback.

**NOTE:** This course calendar is subject to change to accommodate class page and topics of interest. Use it to start thinking about which topics you’d most like to present papers for. All changes will be announced in class and posted on Blackboard.
### COURSE CALENDAR

<table>
<thead>
<tr>
<th>Date</th>
<th>Class</th>
<th>Week Format</th>
<th>Topic</th>
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<tbody>
<tr>
<td>16-Jan</td>
<td>1</td>
<td>1 discussion</td>
<td>Intro to class</td>
</tr>
<tr>
<td>18-Jan</td>
<td>2</td>
<td>1 lecture</td>
<td>Isotope terminology and measurement</td>
</tr>
<tr>
<td>23-Jan</td>
<td>3</td>
<td>2 discussion</td>
<td>Isotope terminology and measurement</td>
</tr>
<tr>
<td>25-Jan</td>
<td>4</td>
<td>2 lecture</td>
<td>Fractionation</td>
</tr>
<tr>
<td>29-Jan</td>
<td>5</td>
<td>3 discussion</td>
<td>Fractionation</td>
</tr>
<tr>
<td>1-Feb</td>
<td>6</td>
<td>3 both</td>
<td>C isotopes in ecosystems</td>
</tr>
<tr>
<td>5-Feb</td>
<td>7</td>
<td>4 both</td>
<td>N isotopes in ecosystems</td>
</tr>
<tr>
<td>8-Feb</td>
<td>8</td>
<td>4 both</td>
<td>O and H isotopes in ecosystems</td>
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<tr>
<td>12-Feb</td>
<td>9</td>
<td>5 discussion</td>
<td>Intro to animal stable isotope ecology</td>
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<tr>
<td>15-Feb</td>
<td>10</td>
<td>5 lecture</td>
<td>Turnover</td>
</tr>
<tr>
<td>19-Feb</td>
<td>11</td>
<td>6 discussion</td>
<td>Turnover</td>
</tr>
<tr>
<td>22-Feb</td>
<td>12</td>
<td>6 discussion</td>
<td>Lipid extraction</td>
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<tr>
<td>26-Feb</td>
<td>13</td>
<td>7 LAB TOUR</td>
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<tr>
<td>1-Mar</td>
<td>14</td>
<td>7 lecture</td>
<td>Diet to tissue fractionation</td>
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<tr>
<td>5-Mar</td>
<td>15</td>
<td>8 discussion</td>
<td>Trophic level fractionation discussion</td>
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<tr>
<td>8-Mar</td>
<td>16</td>
<td>8 lecture</td>
<td>N balance and N trophic fractionation</td>
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<tr>
<td>12-Mar</td>
<td></td>
<td>SPRING BREAK</td>
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<td>15-Mar</td>
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<td>SPRING BREAK</td>
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<td>17</td>
<td>9 discussion</td>
<td>Body condition</td>
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<td>22-Mar</td>
<td>18</td>
<td>9 lecture</td>
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<td>26-Mar</td>
<td>19</td>
<td>10 discussion</td>
<td>Diet assessment</td>
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<td>29-Mar</td>
<td>20</td>
<td>10 lecture</td>
<td>Compound specific approaches to diet assessment</td>
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<td>2-Apr</td>
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<td>5-Apr</td>
<td>22</td>
<td>11 lecture</td>
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<td>9-Apr</td>
<td>23</td>
<td>12 discussion</td>
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<tr>
<td>12-Apr</td>
<td>24</td>
<td>12 discussion</td>
<td>Food webs</td>
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<td>16-Apr</td>
<td>25</td>
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<td>Food webs</td>
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<tr>
<td>19-Apr</td>
<td>26</td>
<td>13 lecture</td>
<td>Isotopes and human studies</td>
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<tr>
<td>23-Apr</td>
<td>27</td>
<td>14 discussion</td>
<td>Isotopes and human studies</td>
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<tr>
<td>26-Apr</td>
<td>28</td>
<td>14 lecture</td>
<td>Migration</td>
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<td>29</td>
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<td>30</td>
<td>15 lecture</td>
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<tr>
<td>7-May</td>
<td>31</td>
<td>16 discussion</td>
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