Submit originals (including syllabus) and one copy and electronic copy to the Faculty Senate Office. See http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures/ for a complete description of the rules governing curriculum & course changes.

**CHANGE COURSE (MAJOR) and DROP COURSE PROPOSAL**
Attach a syllabus, except if dropping a course.

<table>
<thead>
<tr>
<th>SUBMITTED BY:</th>
<th>Department</th>
<th>Biology and Wildlife</th>
<th>College/School</th>
<th>CNSM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepared by</td>
<td>Mark Lindberg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Email Contact</td>
<td><a href="mailto:mslindberg@alaska.edu">mslindberg@alaska.edu</a></td>
<td>Faculty Contact</td>
<td>Mark Lindberg</td>
<td></td>
</tr>
</tbody>
</table>

1. **COURSE IDENTIFICATION:** As the course now exists.

<table>
<thead>
<tr>
<th>Dept.</th>
<th>WLF</th>
<th>Course #</th>
<th>F625</th>
<th>No. of Credits</th>
<th>4</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>COURSE TITLE</th>
<th>Population Dynamics of Vertebrates</th>
</tr>
</thead>
</table>

2. **ACTION DESIRED:** √ Check the changes to be made to the existing course.

<table>
<thead>
<tr>
<th>Change Course</th>
<th>x If Change, indicate below</th>
<th>Drop</th>
<th>what is changing.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>NUMBER</th>
<th>TITLE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PREREQUISITES**
*Prerequisites will be required before a student is allowed to enroll in the course.

<table>
<thead>
<tr>
<th>CREDITS (including credit distribution)</th>
<th>3 (2 lecture/1 lab)</th>
<th>COURSE CLASSIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADD A STACKED LEVEL (400/600)</td>
<td>Dept.</td>
<td>Course #</td>
</tr>
<tr>
<td>Include syllabi.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How will the two course levels differ from each other? How will each be taught at the appropriate level?

Stacked course applications are reviewed by the (Undergraduate) Curricular Review Committee and by the Graduate Academic and Advising Committee. Creating two different syllabi—undergraduate and graduate versions—will help emphasize the different qualities of what are supposed to be two different courses. The committees will determine: 1) whether the two versions are sufficiently different (i.e. is there undergraduate and graduate level content being offered); 2) are undergraduates being overtaxed?; 3) are graduate students being undertaxed? In this context, the committees are looking out for the interests of the students taking the course. Typically, if either committee has qualms, they both do. More info online—see URL at top of this page.

<table>
<thead>
<tr>
<th>ADD NEW CROSS-LISTING</th>
<th>Dept. &amp; No.</th>
<th>Requires approval of both departments and deans involved. Add lines at end of form for additional signatures.</th>
</tr>
</thead>
<tbody>
<tr>
<td>STOP EXISTING CROSS-LISTING</td>
<td>Dept. &amp; No.</td>
<td>Requires notification of other department(s) and mutual agreement. Attach copy of email or memo.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OTHER (specify)</th>
<th></th>
</tr>
</thead>
</table>

3. **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 and the appropriate Faculty Senate curriculum committee. Furthermore, any core course compressed to less than six weeks must be approved by the Core Review Committee.

<table>
<thead>
<tr>
<th>COURSE FORMAT:</th>
<th>(check all that apply)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>X</th>
<th>6 weeks to full semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>OTHER FORMAT (specify all that apply)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Mode of delivery (specify lecture, field trips, labs, etc.) | 2 hours of lecture 3 hours of lab per week |
4. **COURSE CLASSIFICATIONS:** (undergraduate courses only. Use approved criteria found in Chapter 12 of the curriculum manual. If justification is needed, attach separate sheet.)

| H = Humanities | 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 also submitted | W = Writing Intensive, *Format 7 submitted | X = Baccalaureate Core |

4.A **Is course content related to northern, arctic or circumpolar studies? If yes, a "snowflake" symbol will be added in the printed Catalog, and flagged in Banner.**

| YES | NO |

5. **COURSE REPEATABILITY:**

**Is this course repeatable for credit?**

| YES | NO | X |

**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?**

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

6. **COMPLETE CATALOG DESCRIPTION including dept., number, title, credits, credit distribution, cross-listings and/or stacking, clearly showing the changes you want made.**

(Underline new wording, strike-through old wording and use complete catalog format including dept., number, title, credits and cross-listed and stacked.)

**Example of a complete description:**

**PS F450 Comparative Aboriginal Indigenous Rights and Policies (s)**

3 Credits

Offered As Demand Warrants

Case study Comparative approach in assessing Aboriginal to analyzing Indigenous rights and policies in different nationstate systems. Seven Aboriginal situations Multiple countries and specific policy developmentsexamined for factors promoting or limiting self-determination. Prerequisites: Upper division standing or permission of instructor. (Cross-listed with ANS F450.) (3+0)

**WLF F625 Population Dynamics of Vertebrates**

4 3 Credits

Offered Spring Odd-numbered Years

Sampling vertebrate populations, modeling their population dynamics and the implications for management. Focus will be on study design, model assumptions, estimation of population parameters, and inference, and population projections. State-of-the-art computer applications will be employed in laboratory exercises of actual and simulated data. Special fees apply. Prerequisites: BIOL F271; STAT F401. Cross-listed with FISH F625. (32+3)

7. **COMPLETE CATALOG DESCRIPTION AS IT SHOULD APPEAR AFTER ALL CHANGES ARE MADE:**

**WLF F625 Population Dynamics of Vertebrates**

3 Credits

Offered Spring Odd-numbered Years

Sampling vertebrate populations, modeling their population dynamics and the implications for management. Focus will be on study design, model assumptions, estimation of population parameters, and inference. State-of-the-art computer applications will be employed in laboratory exercises of actual and simulated data. Special fees apply. Prerequisites: BIOL F371; STAT F401. Cross-listed with FISH F625. (2+3)
8. **GRADING SYSTEM:** Specify only one.
   - LETTER: X
   - PASS/FAIL: 

9. **ESTIMATED IMPACT**
   WHAT IMPACT, IF ANY, WILL THIS HAVE ON BUDGET, FACILITIES/SPACE, FACULTY, ETC.
   None

10. **LIBRARY COLLECTIONS**
    Have you contacted the library collection development officer (kljensen@alaska.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.

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

The library collection was adequate for the class in the past and I am proposing to reduce the amount of material in the class.

11. **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)

None

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

    The positive impact will be that I can cover some material in more detail and the negative is that some material will not be covered at all.

13. **JUSTIFICATION FOR ACTION REQUESTED**
    The purpose of the department and campuswide 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. If you ask for a change in # of credits, explain why; are you increasing the amount of material covered in the class? If you drop a prerequisite, is it because the material is covered elsewhere? If course is changing to stacked (400/600), explain higher level of effort and performance required on part of students earning graduate credit. Use as much space as needed to fully justify the proposed change and explain what has been done to ensure that the quality of the course is not compromised as a result.

    The course was being co-taught by myself and Christine Hunter, a faculty member who left in Spring 2014. Christine had expertise in population projection models, which I don't for graduate student level instruction. Christine would cover this material in the second half of the course. I did not modify the course following Christine's departure and for the Spring 2015 offering because we were hiring new faculty that may have been able to replace her. However, we did not hire a faculty member that could replace Christine in the class. I taught the class in spring 2015 by filling in some additional material, but the material that I can cover adequately, could be offered as 3 credits and more easily with a 2 hour lecture, 3 hour lab format, thus the proposed major change. The attached syllabus is how I propose to adapt the course to this new format. I copied this template from blackboard for editing and apologize for some of the formatting issues that result. Links to urls and course material in blackboard are broken, but the syllabus to detailed enough to assess.
APPROVALS: (Forms with missing signatures will be returned. Additional signature blocks may be added as necessary.)

[Signatures and dates]

Signature, Chair, Program/Department of: Wildlife Biology & Conservation
Date 21 Jan 2015

Signature, Chair, College/School Curriculum Council for: CNSM
Date 9-1-15

Signature, Dean, College/School of: CNSM
Date 9-24-15

Offerings above the level of approved programs must be approved in advance by the Provost (e.g., non-graduate level program offering of a 600-level course):

[Signature and date]

Signature of Provost (if applicable)

ALL SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE.

[Signature and date]

Signature, Chair
Faculty Senate Review Committee: ___Curriculum Review ___GAAC
 ___Core Review ___SADAC

ADDITIONAL SIGNATURES: (As needed for cross-listing and/or stacking; add more blocks as necessary.)

[Signature and date]

Signature, Chair, Program/Department of:

[Signature and date]

Signature, Chair, College/School Curriculum Council for:

[Signature and date]

Signature, Dean, College/School of:

Note: If removing a cross-listing, you may attach copy of email or memo to indicate mutual agreement of this action by the affected department(s).

If degree programs are affected, a Format 5 program change form must also be submitted.

See next page for SFOS signatures.
APPROVALS: (Forms with missing signatures will be returned. Additional signature blocks may be added as necessary.)

Signature, Chair, Program/Department of: Wildlife Biology & Conservation
Date: 9/21/15

Signature, Chair, College/School Curriculum Council for: CNSM
Date: 9/21/15

Signature, Dean, College/School of: 
Date: 9/21/15

Offerings above the level of approved programs must be approved in advance by the Provost (e.g., non-graduate level program offering of a 600-level course):

Signature of Provost (if applicable)

ALL SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE.

Signature, Chair
Date

Faculty Senate Review Committee: ___Curriculum Review ___GAAC
___Core Review ___SADAC

ADDITIONAL SIGNATURES: (As needed for cross-listing and/or stacking; add more blocks as necessary.)

Signature, Chair, Program/Department of: Fisheries
Date: 10/1/2015

J. Andrés López
Date: October 1, 2015

Signature, Chair, College/School Curriculum Council for:

Signature, Dean, College/School of: 

Note: If removing a cross-listing, you may attach copy of email or memo to indicate mutual agreement of this action by the affected department(s).

If degree programs are affected, a Format 5 program change form must also be submitted.
ATTACH COMPLETE SYLLABUS (as part of this application). This list is online at:
http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures/-uaf-syllabus-requirements/
The Faculty Senate curriculum committees will review the syllabus to ensure that each of
the items listed below are included. If items are missing or unclear, the proposed course
(or changes to it) may be denied.

SYLLABUS CHECKLIST FOR ALL UAF COURSES
During the first week of class, instructors will distribute a course syllabus. Although
modifications may be made throughout the semester, this document will contain the
following information (as applicable to the discipline):
1. Course information:
   □ Title, □ number, □ credits, □ prerequisites, □ location, □ meeting time
   (make sure that contact hours are in line with credits).
2. Instructor (and if applicable, Teaching Assistant) information:
   □ Name, □ office location, □ office hours, □ telephone, □ email address.
3. Course readings/materials:
   □ Course textbook title, □ author, □ edition/publisher.
   □ Supplementary readings (indicate whether □ required or □ recommended) and
   □ any supplies required.
4. Course description:
   □ Content of the course and how it fits into the broader curriculum;
   □ Expected proficiencies required to undertake the course, if applicable.
   □ Inclusion of catalog description is strongly recommended, and
   □ Description in syllabus must be consistent with catalog course description.
5. □ Course Goals (general), and (see #6)
6. □ Student Learning Outcomes (more specific)
   . Instructional methods:
   □ Describe the teaching techniques (eg: lecture, case study, small group discussion,
     private instruction, studio instruction, values clarification, games, journal writing,
     use of Blackboard, audio/video conferencing, etc.).
8. Course calendar:
   □ A schedule of class topics and assignments must be included. Be specific so that it
     is clear that the instructor has thought this through and will not be making it up on the
     fly (e.g. it is not adequate to say "lab". Instead, give each lab a title that describes
     its content). You may call the outline Tentative or Work in Progress to allow for
     modifications during the semester.
9. Course policies:
   □ Specify course rules, including your policies on attendance, tardiness, class
     participation, make-up exams, and plagiarism/academic integrity.
10. Evaluation:
   □ Specify how students will be evaluated, □ what factors will be included, □ their
       relative value, and □ how they will be tabulated into grades (on a curve, absolute
       scores, etc.) □ Publicize UAF regulations with regard to the grades of "C" and below as
       applicable to this course. (Not required in the syllabus, but is a convenient way to
       publicize this.) Link to PDF summary of grading policy for "C":
11. Support Services:
   □ Describe the student support services such as tutoring (local and/or regional)
     appropriate for the course.
12. Disabilities Services: Note that the phone# and location have been updated.
    http://www.uaf.edu/disability/ The Office of Disability Services implements the Americans
    with Disabilities Act (ADA), and ensures that UAF students have equal access to the
    campus and course materials.
   □ State that you will work with the Office of Disabilities Services (208 WHITAKER
     BLDG, 474-5655) to provide reasonable accommodation to students with disabilities.

5/21/2013
WLF625 – Analysis of Vertebrate Populations

Instructor

Mark Lindberg
411 Irving I
474-6598
mslindberg@alaska.edu
Office Hours: TBD

Meeting Place/Time

Lecture - TR 9:45-10:45, Lab R 2-5, Murie 309

Course Description

Sampling vertebrate populations, modeling their population dynamics and the implications for management. Focus will be on study design, model assumptions, estimation of population parameters, and inference. State-of-the-art computer applications will be employed in laboratory exercises of actual and simulated data. Lectures and computer based laboratories will be used to develop knowledge of modeling theory and skills with analytical software. By the end of the course, students will be able to determine appropriate design and analysis approach for studies of “marked” individuals and be able to use appropriate software to complete their analysis. Prerequisites: BIOL 371, STAT 401. (Cross-listed with FISH F625). (2+3)

Course Goal

By the end of the course, students will be able to determine appropriate design and analysis approach for studies of “marked” individuals and be able to use appropriate software to complete their analysis.

Learning Outcomes

- Knowledge of the range of designs used to analyze data on marked animals
- Understanding of Generalized Linear Models
- Ability to use a range of software (Mark, RMark, WinBugs, Presence, R, SECR) to complete analysis
- Use of both frequentist and Bayesian approaches to analysis

Instructional Method

The course will have 2 hours of lecture and 3 hours of lab per week. Lecture and lab material will be delivered via Blackboard with links to relevant on-line material. Labs will be used to analyze actual data sets and conduct simulations.

Text

Recommended:
Grading

Lab Assignments 70%
Term Project - 30%
Grades will be determined using straight percentages. Class participation will be used as a criteria to make decisions about borderline grades. This is a graduate class so I will not take attendance and I will assume that if you miss class that you have a valid reason. If you know in advance that you will miss several classes, please let me know. I will also assume that you are familiar with the student code of conduct, particularly as it applies to academic issues.

Students are to work independently on all assignments, unless otherwise indicated. If plagiarism is detected, students will be given a grade of zero on their assignment/test. Note that material lifted from the internet or term papers previously submitted by students at UAF or other universities is very likely to be detected as plagiarized using online resources such as turnitin.com and plagiarism.org. Students are expected to submit homework assignments on time, and grades will be reduced by 10% each day after the due date.

I will work with the Office of Disabilities Services (203 WHIT, 474-7043) to provide reasonable accommodation to students with disabilities.

CALENDAR

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Reading</th>
<th>Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 Jan</td>
<td>Introduction:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Orientation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Software Check</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 Jan</td>
<td>Review of Study Design:</td>
<td>Text:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Survey Sampling,</td>
<td>Chapters 2, 5, and 6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Quasi-Experiments 1 and 2,</td>
<td>MARK Book:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Experiments</td>
<td>Chapter 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Capture-Mark-Recapture:</td>
<td>Doherty/White Notes:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Index and Detection Probability</td>
<td>Stats Review</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CMR designs</td>
<td>Random Sample</td>
<td></td>
</tr>
<tr>
<td>22 Jan</td>
<td>Binomial Probability and Likelihood Theory</td>
<td>White et al. (1982),</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Maximum Likelihood Estimation</td>
<td>Chapter 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mark Book:</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Topic</td>
<td>Notes</td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>----------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td></td>
</tr>
</tbody>
</table>
| 27 Jan     | Sampling and Iterative Solutions | Penny Flip Exercise (R) Iterative XLS | Chapter 2
               |                                                                      | Doherty/White Notes: Binomial/Multinomial Coefficients Binomial Sampling Binomial Likelihood Maximum Likelihood Estimation MLE not in Closed Form Expected Value - Lab Confidence Interval - Lab |
| 29 Jan     | Known Fate Models (ppt) Nest Survival (ppt) Linear Models/Comparing Groups Covariates Generalized Linear Models - see chapter 6 Mark Book | Text: Chapter 15
<pre><code>           |                                                                      | Mark Book: Chapter 3 - lab Chapter 4 - lab Chapter 6 Chapter 16 Chapter 17 Doherty/White Notes: PIM - lab Dinsmore et al. 2002 - lab/Mt Plover data |
</code></pre>
<p>| 3 Feb      | Mule Deer Analysis Fawns 2011 blckduck solution (dbf &amp; fpt) Mountain Plover Nest Survival solution (dbf &amp; fpt) Input 2011 and weather data known fate homework blckduck-R | Mark Book: Appendix C - RMark |
| 5 Feb      | Cormack-Jolly-Seber Model                                              | Anderson et al. 2000 - discussion Goodness-of-fit                     |</p>
<table>
<thead>
<tr>
<th>Date</th>
<th>Notes</th>
</tr>
</thead>
</table>
| 10 Feb | Multinomials (Addition)  
European Dipper Analysis  
dipper female  
dipper  
Release GOF  
RMark?  
GOF |
| 12 Feb | GOF with U-CARE  
median c-hat  
Quasi-Likelihood/Extra Binomial Analysis  
Model Selection  
Dipper Design Matrix  
Solution (dbf & fpt)  
Advanced Design Matrices  
Canvasback Data  
HW#2 CJS |
| 17 Feb | Dipper HW and Model Selection  
Review Black Duck and Dinsmore analysis  
Canvasback HW |
| 19 Feb | Program Mark  
Chapter 4  
Doherty/White Notes  
AIC material - at end of notes  
Overdispersion |
| 24 Feb | Model Averaging  
Multistate Models  
Multistate Lab  
Brant data  
Program Mark  
Chapter 10  
Doherty/White Notes  
Multistate |
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Notes</th>
</tr>
</thead>
</table>
| 26 Feb | CJS HW review - solution fpt dbf  
Closed Models - solution fpt dbf  
Robust Design  
Closed Lab - Data  
Robust Lab - Data | Doherty/White  
CAPTURE and MARK  
Heterogeneity Models  
Robust Design  
Program Mark  
Chapter 14, 15  
Text - Chapters 14 and 19  
Kendall Robust Article |
| 3 Mar | Robust Design HW                                                      |                                                                      |
| 5 Mar | Occupancy Models  
Occupancy Lab MARK - Bear/Track Data  
Occupancy Lab - RMARK - RMARK Data | Occupancy Readings  
Nichols et al. 2000  
Boulanger et al. 2001 - community dynamics  
MacKenzie et al. 2002 - site occupancy  
Program Presence  
Documentation |
| 10 Mar | Phidot - software  
Patuxent - software  
Program Presence  
Package UNMARKED  
R for Bear/Track data | Phidot - software  
Patuxent - software  
Hierarchical Models - Royle and Darazio (2008)  
R Code for Royle and Darazio  
Robust Design HW Due |
| 12 Mar | Project Development  
Project Instructions                                                      |                                                                      |
| 17 Mar |                                                                      | Spring Break                                                        |
| 19 Mar |                                                                      |                                                                      |
| 24 Mar | Confidence Intervals  
Components of Variance/Shrinkage Estimation  
Band Recovery Models  
Brook Trout Input | Confidence Intervals  
Doherty and White  
Random Effects  
Burnham and White (2002)  
Franklin et al. (2002)  
MARK Book Chapter 8 (dead recovery) Appendix D (random effects)  
Brook Trout Lab |
<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>26 Mar</td>
<td>Random Effects</td>
<td></td>
</tr>
<tr>
<td>31 Mar</td>
<td>Project Development</td>
<td></td>
</tr>
<tr>
<td>2 Apr</td>
<td>Simulations <strong>Lecture, Lab, dipper_sim.dbf, dipper_sim.fpt</strong></td>
<td>MARK Book - Appendix A</td>
</tr>
<tr>
<td>7 Apr</td>
<td><strong>Combined Models</strong>&lt;br&gt;Burnham Models&lt;br&gt;Barker/Lindberg Models&lt;br&gt;Barker RD Model Supplement</td>
<td>Doherty and White Notes - Burnham Model&lt;br&gt;Lindberg et al. (2002)&lt;br&gt;Barker and White (2001)&lt;br&gt;Kendall et al. 2013</td>
</tr>
<tr>
<td>9 Apr</td>
<td>Pradel Models -<strong>transients/reverse</strong></td>
<td>Cilimburg et al. (2002)&lt;br&gt;MARK Book - Chapter 13</td>
</tr>
<tr>
<td>14 Apr</td>
<td>Finish Analysis</td>
<td></td>
</tr>
<tr>
<td>16 Apr</td>
<td>Presentation Preparation</td>
<td></td>
</tr>
<tr>
<td>21 Apr</td>
<td><strong>Hierarchical Model Analysis - Frequentist and Bayesian</strong></td>
<td>Royle and Darazio (2008)&lt;br&gt;Chapetr 1-3 - UAF&lt;br&gt;Library and on-line&lt;br&gt;Kery 2010 (on-line) and 2011 (on-line)&lt;br&gt;Royle and Darazio Chap3 notes</td>
</tr>
<tr>
<td>23 Apr</td>
<td>Spatial MR</td>
<td>Royce and Darazio (2008)&lt;br&gt;Chapter 7&lt;br&gt;Royce and Darazio Chap 7 notes&lt;br&gt;Royce et al. chap 4 model Mo</td>
</tr>
<tr>
<td>28 Apr</td>
<td>Student Presentations</td>
<td></td>
</tr>
<tr>
<td>30 Apr</td>
<td>Student Presentations</td>
<td></td>
</tr>
</tbody>
</table>