Washington State University  
MAJOR CURRICULAR CHANGE FORM - - COURSE  
(Submit original signed form and ten copies to the Registrar’s Office, zip 1035)  

Future Effective Date: 08/01/2015  
☐ New course  ☐ Temporary course  ☐ Drop service course  
☐ There is a course fee associated with this course (see instructions)  

☐ Variable credit 1-4  
☐ Increase credit (former credit ________)  
☐ Number (former number ________)  
☐ Crosslisting (between WSU departments) (Must have both departmental signatures)  
☐ Conjoint listing (400/500)  
☐ Request to meet Writing in the Major [M] requirement (Must have All-University Writing Committee Approval)  
☐ Request to meet GER in ________ (Must have GenEd Committee Approval)  
☐ Professional course (Pharmacy & Vet Med only)  
☐ Graduate credit (professional programs only)  
☐ Other (please list request)  

☐ Repeat credit (cumulative maximum ________ hours)  
☐ Lecture-lab ratio (former ratio ________)  
☐ Prefix (former prefix ________)  
☐ Cooperative listing (UI prefix and number ________) taught by:  
  ☐ WSU  ☐ UI  ☐ jointly taught  
☐ S, F grading  

☐ Other (please list request)  

Biology  594  
Advanced Topics in Evolution  

<table>
<thead>
<tr>
<th>course prefix</th>
<th>course no.</th>
<th>title</th>
<th>credit</th>
<th>lecture hrs</th>
<th>lab hrs</th>
<th>studio hrs</th>
<th>prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1-4</td>
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</tbody>
</table>

Description (20 words or less)  
Presentation and discussion of advanced topics in evolution taken from research in progress or current literature.  

Instructor:  variable  
Phone number:  
Email:  

Contact:  Justine Rupp  
Phone number: 335-8649  
Email: ruppj@wsu.edu  
Campus Zip Code: 4236  

- Please attach rationale for your request, a current and complete syllabus, and explain how this impacts other units in Pullman and other branches (if applicable).  
- Secure all required signatures and provide 10 copies to the Registrar’s Office.  

Chair/date: 12/29/2014  
Dean/date: 9/17/14  
General Education Com/date:  
Chair (if crosslisted/interdisciplinary)*  
Dean (if crosslisted/interdisciplinary) *  
Graduate Studies Com/date:  

All-University Writing Com/date:  
Academic Affairs Com/date:  
Senate/date:  

*If the proposed change impacts or involves collaboration with other units, use the additional signature lines provided for each impacted unit and college.
Biology 594 Advanced Topics in Evolution

Justification

As modern biological sciences continues to grow as a field, so too does the need for topical seminar courses. In accordance with the growth of biology, so too has the number of graduate students and faculty in SBS at WSU. This growth has resulted in higher demands among our graduate students for seminar courses in topical areas.

One area where we anticipate offering an increased number of special topics and seminar courses is in evolution. We have hired 4 tenure track faculty in this particular area in the last 3 years and all are offering seminar courses. Currently, we only have 1 advanced topics course (in Biology, Biology 589), however our recognized departmental strengths are in ecology, evolution and physiology. Other departments at WSU, such as the Department of Chemistry, have multiple advanced topics courses, including “Advanced topics in Inorganic Chemistry”, “Advanced topics in Organic Chemistry”, “Selected topics in Analytical Chemistry.” Similarly, the Department of Mathematics has “Topics in Mathematics”, “Topics in Applied Mathematics” and “Topics in Mathematics Application.” We are seeking a similar breakdown of courses to accommodate the increasing demand for our special topics courses as well as to accommodate the breadth of training our graduate students need. With regards to the latter, our recent approved curriculum changes for graduate training in our department emphasize the need for breadth, which can be accommodated with a greater number of advanced topics courses.

This course offering would likely also attract students from departments and schools across campus, including from School of the Environment, Entomology, Plant Pathology, and the School of Global Animal Health. As such, this seminar offering would be of wide appeal to SBS students, as well as enhance interactions and resulting interdisciplinary discussions of graduate students from across campus. As graduate student education is shifting from having departmental walls to being more integrated and interdisciplinary programs that are campus-wide (e.g., Molecular Plant Sciences at WSU), increased offerings of seminar courses that potentially have wide appeal is a step toward aligning with national trends.

A sample syllabus is attached.
Biology 594: Advanced Topics in Evolution - *The Origin of Species*

*Note: This is an example syllabus of the type of course that would be taught under Biology 594*

**NOTE** THAT THIS IS A SYLLABUS IS AN EXAMPLE OF A 2 CREDIT SPECIAL TOPICS COURSE; A 1 CREDIT COURSE MAY BE ENTIRELY DISCUSSION-BASED WITHOUT AN ORAL PRESENTATION OR FINAL EXAM, A 3 CREDIT COURSE WOULD HAVE 3 HOURS OF MEETINGS (E.G., 2 HOURS OF LECTURE AND 1 HOUR OF DISCUSSION) PER WEEK AND A 4 CREDIT COURSE WOULD POTENTIALLY HAVE A 3 HOUR COMPUTER LAB OR WET LAB COMPONENT

Washington State University  
Instructor: Prof. Jeremiah Busch (jwbusch@wsu.edu, Eastlick 387; 5-0086)  
Class hours: 3:30-5:30, Wednesdays (Eastlick 361); 2 credits  
Text: Darwin’s *Origin of Species* (6th edition; purchase on Amazon.com)  
Pre-requisites: graduate standing and at least one undergraduate course on evolution

**Course Objectives**  
Charles Darwin’s *Origin of Species* stands as one of the most influential scientific works in modern history. Given the importance of this book to the development of evolutionary biology as a discipline, the purpose of this class is to discuss this classic text, but to also use recently published articles in the literature to examine areas of great progress in this broad discipline. Specifically, high impact papers concerning adaptation, biogeography, evo-devo, epigenetics, hybridization, paleontology, sexual selection, speciation, the origin of complex traits, and social evolution will be chosen to accompany weekly readings of the *Origin of Species*. By the end of the course, students will be familiar with Darwin’s most influential work and will also appreciate areas where many advances are being made to understand the evolution and diversity of species.

**Student learning outcomes**  
I expect that students will:
1. Demonstrate a working knowledge of natural selection and Darwinian evolution  
2. Communicate the importance of a historical perspective in evolutionary biology  
3. Critically evaluate the primary literature  
4. Synthesize a body of literature in written form

<table>
<thead>
<tr>
<th>Student Learning Outcomes for this course: At the end of this course, students should be able to:</th>
<th>Course Topics/Dates The following topic(s)/dates(s) will address this outcome:</th>
<th>Evaluation of Outcome: This outcome will be evaluated primarily by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstrate a working knowledge of natural selection and Darwinian evolution</td>
<td>Each week, especially Weeks 3 (Natural Selection) and 10 (Macroevolution)</td>
<td>Weekly discussions, oral presentation at end of semester, take home final</td>
</tr>
<tr>
<td>Communicate the importance of</td>
<td>Weekly discussions,</td>
<td>Participation in weekly</td>
</tr>
</tbody>
</table>
historical perspective in evolutionary biology | Week 15 | discussions, generation of weekly discussion questions, discussion leader, presentation in Week 15
Critically evaluate the primary literature | Weekly discussions, Week 15, Week 16 | Weekly participation, oral presentation, take home final
Synthesize a body of literature in written form | Week 16 | Take home final

**Weekly Meetings and Papers**

We will meet once a week to discuss a chapter reading and an accompanying paper. Students will volunteer to lead a single discussion early in the semester. I would like students to choose papers to accompany readings in the *Origin* by meeting with me and discussing the chapter beforehand. Papers should have a broad and general impact and serve to illustrate concepts in the *Origin of Species* or point out areas where great progress has been made since Darwin’s time. Students must choose their paper one week in advance of class discussion and send the paper to the class via email so that other students have ample time to read and digest the material.

**Assignments and Grading**

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Attendance and general participation</td>
<td>20%</td>
</tr>
<tr>
<td>Discussion leader</td>
<td>20%</td>
</tr>
<tr>
<td>Weekly discussion questions</td>
<td>10%</td>
</tr>
<tr>
<td>Oral presentation</td>
<td>20%</td>
</tr>
<tr>
<td>Take home final</td>
<td>30%</td>
</tr>
</tbody>
</table>

**Grading criteria:**

*Attendance and participation*

We understand that graduate students occasionally have to miss class for field work or intensive lab work in addition to traditional excuses like illness. Please let us know in advance to the extent possible and accommodations will be made. If there are any questions about how participation will be graded, please discuss this with the instructors as early as possible in the semester so it will be as clear as possible.

Otherwise, students are expected to attend every class meeting; three total absences are allowed. Students will receive no credit if more than three unexcused absences occur. Students are expected to make at least one comment per session to achieve the full 20 percent for this portion of their grade.

*Discussion leader*

Each student is expected to lead a discussion based on the primary literature at least once (depending on the number of students) during the semester. This student will be responsible for synthesizing discussion questions from students and presenting the paper for the weekly discussion.

*Discussion questions*

Students should each prepare 1-2 questions that are meant to be discussed by the class so that we may better understand the week’s idea. Broadly speaking, ideal questions
should be general and thought-provoking. Useful questions may involve comparison of
the ideas in the *Origin of Species* to those in important modern works, as this may
illuminate areas of progress or substantial disagreement. Given Darwin’s Victorian
writing style, questions may also force the class to decipher the meaning of important
sections of the *Origin of Species*, or to consider the predictions made about topics which
are currently areas of intense research today.

**Oral presentations**

Each student will be expected to develop an independent presentation on material
closely related to the course topics. This presentation should synthesize at least 5 articles
from the primary literature. Students are encouraged to consult the instructor prior to
their presentation. Powerpoint or related format should be used, and presentations should
be 15 minutes plus questions.

**Take-home final**

Students will be given a take home essay final which will be assigned the week
before dead week and due the Wednesday of finals week. The final will consist of 5
questions, and students are expected to provide a 1-2 page answer for each question.
Students may use any materials they wish to answer questions, but they may not consult
with other students in the class when writing their final exam.

**The grading scale will be:**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
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<tbody>
<tr>
<td>90%+</td>
<td>A</td>
</tr>
<tr>
<td>87-89</td>
<td>A-</td>
</tr>
<tr>
<td>84-86</td>
<td>B+</td>
</tr>
<tr>
<td>80-83</td>
<td>B</td>
</tr>
<tr>
<td>77-79</td>
<td>B-</td>
</tr>
<tr>
<td>74-76</td>
<td>C+</td>
</tr>
<tr>
<td>70-73</td>
<td>C</td>
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<tr>
<td>67-69</td>
<td>C-</td>
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<tr>
<td>64-66</td>
<td>D+</td>
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<tr>
<td>60-63</td>
<td>D</td>
</tr>
<tr>
<td>&lt;60</td>
<td>F</td>
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</tbody>
</table>

**Attendance Policy.** Students are expected to attend every class session. If you are
unable to come to class for any reason, please let me know ahead of time if at all
possible. Students with more than 3 absences will not receive credit for the course.

**Students with Disabilities.** Reasonable accommodations are available for students with a
documented disability. If you have a disability and need accommodations to fully
participate in this class, please either visit or call the Access Center (Washington
Building 217; 509-335-3417) to schedule an appointment with an Access Advisor. All
accommodations MUST be approved through the Access Center. For more information
contact a Disability Specialist: Pullman or WSU Online: 509-335-3417.
http://accesscenter.wsu.edu, Access.Center@wsu.edu

**Campus Safety and Emergencies.** Washington State University is committed to
enhancing the safety of the students, faculty, staff, and visitors. It is highly recommended
that you review the Campus Safety Plan (http://safetyplan.wsu.edu/) and visit the Office
of Emergency Management web site (http://oem.wsu.edu/) for a comprehensive listing of
university policies, procedures, statistics, and information related to campus safety,
emergency management, and the health and welfare of the campus community.
**Academic Integrity.** WSU is an institution that upholds the highest standards of academic integrity. Students can work together on assignments, but are expected to hand in original work. Plagiarism or copying is considering cheating (for definitions of plagiarism, see the SBS webpage: [http://sbs.wsu.edu/index2.html](http://sbs.wsu.edu/index2.html)). It is strongly suggested that you read and understand these definitions. Any student caught cheating on any assignment will be given an F grade for the course and will be reported to the Office Student Standards and Accountability. Cheating is defined in the Standards for Student Conduct WAC 504-26-010 (3). It is strongly suggested that you read and understand these definitions. **Cheating on an exam or other assignment (including plagiarism) will result in a final grade of F for the entire course, will be reported to the Office of Student Affairs, and will result in additional disciplinary action by the University.**

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**Course Schedule**

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Origin of Species Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Organizational meeting</td>
<td>An Historical Sketch</td>
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<tr>
<td></td>
<td>Student sign-up for weeks</td>
<td>Introduction</td>
</tr>
<tr>
<td>Week 2</td>
<td>Darwin and Genetics</td>
<td>Chapter I: Variation Under Domestication</td>
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<tr>
<td></td>
<td></td>
<td>Chapter II: Variation Under Nature</td>
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<tr>
<td>Week 3</td>
<td>Natural Selection</td>
<td>Chapter III: Struggle for Existence</td>
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<td></td>
<td></td>
<td>Chapter IV: Natural Selection</td>
</tr>
<tr>
<td>Week 4</td>
<td>Environmental Effects</td>
<td>Chapter V: Laws of Variation</td>
</tr>
<tr>
<td>Week 5</td>
<td>Social Insects</td>
<td>Chapter VII: Instinct</td>
</tr>
<tr>
<td>Week 6</td>
<td>Difficulties</td>
<td>Chapter VI: Difficulties Of Theory</td>
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<tr>
<td>Week 7</td>
<td>Hybridization</td>
<td>Chapter VIII: Hybridism</td>
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<tr>
<td>Week 8</td>
<td>Paleontology</td>
<td>Chapter IX: On the Imperfection of the Geological Record</td>
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<tr>
<td>Week 9</td>
<td>NO CLASS</td>
<td><em>Spring Break</em></td>
</tr>
<tr>
<td>Week 10</td>
<td>Macroevolution</td>
<td>Chapter X: On the Geological Succession of Organic Beings</td>
</tr>
<tr>
<td>Week 11</td>
<td>Vicariance and Dispersal</td>
<td>Chapter XI: Geographical Distribution</td>
</tr>
<tr>
<td>Week 12</td>
<td>Islands</td>
<td>Chapter XII: Geographical Distribution (continued)</td>
</tr>
<tr>
<td>Week 13</td>
<td>Evo-Devo</td>
<td>Chapter XIII: Mutual Affinities of Organic Beings: Morphology, Embryology, Rudimentary Organs</td>
</tr>
</tbody>
</table>
Student presentations; paper due

Week 14  Darwin’s Impact  Chapter XIV: Recapitulation and Conclusion

Week 15  Student presentations