Course Proposal: Add

CID and name: **20066085----Gumm, Jennifer**

1. Course: **BIO 125**

2. Term/Year: **Fall 2014**

3. CIP CODE/10 Digit Program Code: **2613100002**

4. Short Course Title: **Intro to Ecology and Evolution**

5. Long Course Title:

Principles of Ecology and Evolution

6. Prerequisites:
TSI complete, 125L co-requisite

7. College: **College of Science/Mathematics**

8. Department Teaching Course: **Biology**

9. Instruction Type: **Lecture**

10. Credit Hours Maximum: **3**

Credit Hours Minimum: **3**

Maximum Hours counted toward degree: **3**

11. Maximum contact hours each week Fall Semester: **3**

12. May this course be taken more than one time each semester? **NO**

13. Grade Type: **Standard: A-F**

14. Will this course require additional library resources? **NO**

If YES, please explain:

15. Does this course replace a course on the current/previously listed inventory? **NO**

If YES list the prefix and number; If not applicable enter N/A:

16. What is the primary reason you are proposing this course? Describe the need this new course will fill or the problem it is designed to solve.

Under the current curriculum, students are not exposed to ecological and evolutionary concepts until they are juniors or seniors. Evolution is identified as a Unifying Concept and Biological Evolution is identified as a major topic in Life Science by the National Science Education Standards written by the National Research Council (1996). The Biology Department offers a wide variety of core curriculum courses, but none have Evolution or Ecology as a primary focus.

17. Describe the place of the proposed course within your current curriculum. (Will it be elective or required? Part of a major or a minor?)

This course has been accepted into the University Life and Physical Science Core curriculum. BIO 125 will be a program requirement for all Biology majors and an optional course for Biology minors.

18. How does the proposed course differ from similar courses being offered at Stephen F. Austin?

This is the only general freshman level course focusing on concepts of ecology and evolution offered at the University.

19. Syllabus: Course Learning Goals
List course objectives; describe what students who complete the course will now or be able to do.

After successful completion of this course student will be able to: 1) Demonstrate understanding of the process of science by distinguishing between science and non-science and designing experiments that address testable hypotheses. 2) Use quantitative reasoning to interpret evolutionary and ecological data (tables, figures and graphs) from primary research, theoretical models and computer based-simulation experiments. 3) Demonstrate understanding of the skills and attitudes necessary for effective teamwork in collaborative learning activities and a semester long project. 4) Critically assess the interrelationship of human dimensions and ecology/evolution and communicate resulting conclusions in oral, visual and written formats. 5) Understand evolution as the unifying concept in biology. 6) Understand the factors that govern interactions between organisms and their environments.

20. Any Other Information.

College of Sciences and Mathematics Department of Biology

----Course Syllabus----
Must accurately reflect the course syllabus. (N/A is not acceptable response)

21. Enter course description exactly as it will appear in the general/graduation bulletin:

3 semester hours, 3 hours lecture. Fundamental principles of biological inquiry, scientific analysis, and concepts in ecological and evolutionary biology.

22. Program Learning Outcomes
List the program learning outcomes addressed in this course as identified in the course matrix for your degree program. If your department requires a listing of all Program Learning Outcomes (PLOs) on the syllabus, please identify those that are directly taught in this course. If this is a general education core curriculum course and no PLOs are taught in this course then insert the following statement under this heading:

This is a general education core curriculum course and no specific program learning outcomes for this major are addressed in this course.

PLO 1. The student will demonstrate a good knowledge base in biological concepts (Knowledge). PLO 2. Clearly articulate scientific information in oral form. PLO 3. Clearly articulate scientific information in written form. PLO 4. Be able to design, carry out, and analyze experiments to answer biological questions. PLO 5. Demonstrate teamwork skills needed to coordinate diverse multidisciplinary teams to solve challenges in the biological world.

23. General Education Core Curriculum Objectives/Outcomes

List the Exemplary Educational Objectives (EEOs) for this course if the course is included in the general education core curriculum. If you have reworded the EEOs as outcomes for your course, please be sure that the original intent of the EEO is retained.

CO 1. Critical Thinking: to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information. CO 2. Communication Skills: to include effective development, interpretation and expression of ideas through written, oral and visual communication. CO 3. Empirical and Quantitative Skills: to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions. CO 4. Teamwork: to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.

24. Student Learning Outcomes

List all student learning outcomes (SLOs) for this course including the course specific student learning outcomes that support the PLOs above. In general, SLOs in a course that support the PLOs are specific and include the exact knowledge, skill or behavior taught in the course that supports the more global PLOs. For additional information on meaningful and measurable learning outcomes see the assessment resource page http://www.sfasu.edu/assessment/index

SLO 1. Demonstrate understanding of the process of science by distinguishing between science and non-science and designing experiments that address testable hypotheses. (PLO 1, 4) SLO 2. Use quantitative reasoning to interpret evolutionary and ecological data (tables, figures and graphs) from primary research, theoretical models and computer based-simulation experiments. (PLO 4,5) SLO 3. Demonstrate understanding of the skills and attitudes necessary for effective teamwork in collaborative learning activities and a semester long project. (PLO 2, 3, 5) SLO 4. Critically assess the interrelationship of human dimensions and ecology/evolution and communicate resulting conclusions in oral, visual and written formats. (PLO 2, 3, 5) SLO 5. Understand evolution as the unifying concept in biology. (PLO 1, 2, 3) SLO 6. Understand the factors that govern interactions between organisms and their environments. (PLO 1, 2, 3)

25. Syllabus: Proposed Textbook/Assigned Reading Materials.

Biological Science (4th Edition), Freeman.

26. Course Requirements

Describe the major course requirements, assignments, examinations, projects.

Your final grade in this course is determined by grades from lecture exams, a group project, daily lecture quizzes, and participation in the course evaluation. Group Project: As a group, students will conduct a research project and present the results of the project to the class. This is a semester-long project designed to emphasize teamwork and communication skills. Students will be assigned groups in the first week of class and will participate in group and class discussions about characteristics and strategies for effective groupwork. The project itself will be a video, digital media, or formal presentation that will require students to prepare a written script, present the project orally and with computer-generated visual aids (MovieMaker, iMovie, Prezi or Powerpoint). The project will consist of multiple assignments that will be assessed following the Core Curriculum Objectives including a Group Contract (CO2, 4), a Prospectus/Abstract (CO1, 2, 4), an annotated bibliography (CO1, 2, 4), a storyboard/draft (CO 1, 2, 4), a project journal (CO 4), a project reflection (CO 2, 4) and the final project itself (CO 1, 2, 4).

27. Course Calendar

Create a tentative timeline for the course. At a minimum, list the topics that the course will cover and indicate the approximate amount of time to be devoted to each, either by percent of course time or number of weeks. The calendar should provide information for the maximum number of weeks scheduled for the course.

Week 1 Topics: Scientific Inquiry: What is Science?, Definition of scientific inquiry. Scientific Terms (Fact, Law, Hypothesis, Theory, etc), Scientific Method (forming & testing hypothesis) Instruction: CO1: Oral instruction in the scientific method focusing on hypothesis formation. CO4: Oral instruction and guided activities in effective groupwork focusing on constructive group behaviors, effective group communication and setting and meeting expectations. Week 2 Topics: Scientific Method continued- Experimental design & data analysis, Control groups, variables, replication, data collection, basic statistics Instruction: CO1: Oral instruction on designing controlled experiments. CO3: Oral instruction and activities in data analysis and statistics. Week 3 Science Immersion- Reading & Writing Science Papers, Paper

evaluation & peer review of writing, Intro to Evolution, Definition of evolution; evidence for evolution Instruction: CO1: Oral instruction on evaluation of scientific papers and evidence for evolution. CO2: Oral instruction and review activities in effective writing for scientific audiences. Week 4 Topics: Intro to Heredity, Mendelian Genetics Instruction: CO1: Oral instruction on interpretation and analysis of the Hardy-Weinberg Equilibrium. CO3: Oral instruction and activities calculating genotypic and phenotypic probabilities. Week 5 Topics: Hardy-Weinberg Equilibrium. Definition of and Deviations from Instruction: CO1: Oral instruction on interpretation and analysis of the Hardy-Weinberg Equilibrium. CO3: Oral instruction and activities on calculating Hardy-Weinberg Equilibrium variables. Week 6 Topics: Microevolution I, Natural/Sexual Selection Instruction: CO1: Oral instruction on analysis of natural selection. Week 7 Topics: Microevolution II, Genetic drift, migration, mutation Instruction: CO1: Oral instruction on comparing and contrasting the forces of microevolution. CO3: Oral instruction and activities on calculating population genetic variables related to microevolution. Week 8 Topics: Macroevolution I, Species concepts, Speciation mechanisms Instruction: CO1: Oral instruction on differentiating species based on multiple species concepts. Week 9 Topics: Macroevolution II, Phylogenies, cladistics, & taxonomy, Phylogeography Instruction: CO1: Oral instruction on classification and understanding relationship among species. Week 10 Topics: Climate & Biomes Instruction: CO 1: Oral instruction in predicting how climate variables influence major vegetation patterns. Week 11 Topics: Population Ecology I, Distribution, Life History Instruction: CO1: Oral instruction in interpreting population pyramids and predicting population growth. CO3: Oral instruction in calculating variable to build life history tables. Week 12 Topics: Population Ecology II, Population growth, Human population ecology Instruction: CO3: Oral instruction in calculating population growth rates. Week 13 Topics: Community Ecology, Species interactions, Competition & Predator-prey (including parasites) Instruction: CO1: Oral instruction in identifying outcomes of species interactions based on graphical analysis. Week 14 Topics: Community Ecology & Biodiversity, E.g., Succession Instruction: CO1: Oral instruction in compare and contrasting models of succession in biological systems. CO3: Oral instruction in calculating measures of biodiversity. Week 15 Topics: Ecosystem Ecology, Nutrient Cycling (including pollution), Climate Change Instruction: CO1: Oral instruction in evaluating evidence related to climate change. CO3: Oral instruction in calculating movement patterns in nutrient cycles. Week 16: Final Exam

28. Grading Policy

Describe how the grade for the course is determined.

Final grades reflect both the lecture and the lab scores using the following formula: 66% Lecture Score + 33% Lab Score = Final Score. Your grade is determined by earning 90%, 80%, 70% and 60% of the available points for the associated traditional letter grade.

29. Attendance Policy

State your attendance policy.

Attendance is expected for each lecture. Students with poor attendance typically do very poorly in this course. Makeup lecture exams will be limited to one and will be scheduled during dead week unless prior arrangements are made to take the exam prior to the scheduled exam.

30. Academic Integrity (A-9.1)

Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

Definition of Academic Dishonesty

Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1) submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one's paper without giving the author due credit.

Please read the complete policy at http://www.sfasu.edu/policies/academic_integrity.asp

31. Withheld Grades Semester Grades Policy (A-54)

Ordinarily, at the discretion of the instructor of record and with the approval of the academic

chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.

32. Students with Disabilities
To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to http://www.sfasu.edu/disabilityservices.

Dept. Chair John T. Moore Date: 11/8/13

College Curriculum Chair _____ Date: _____

Dept. Dean _____ Date: _____

College Curriculum Dean _____ Date: _____

RELEASE: 8.3

Course Proposal: Add

CID and name: **20066085----Gumm, Jennifer**

1. New Course Subject: **BIO 125L**

2. Term/Year: **Fall 2014**

3. CIP CODE/10 Digit Program Code: **2613100002**

4. Short Course Title: **Intro Ecology Evolution Lab**

5. Long Course Title:

Principles of Ecology and Evolution Lab

6. Prerequisites:
TSI complete, BIO 125 Co-requistite

7. College:

8. Department Teaching Course:

9. Instruction Type: **Laboratory**

10. Credit Hours Maximum: **1**

Credit Hours Minimum: **1**

Maximum Hours counted toward degree: **1**

11. Maximum contact hours each week Fall Semester: **2**

12. May this course be taken more than one time each semester? **NO**

13. Grade Type: **Standard: A-F**

14. Will this course require additional library resources? **NO**

If YES, please explain:

15. Does this course replace a course on the current/previously listed inventory? **NO**

If YES list the prefix and number; If not applicable enter N/A:

16. What is the primary reason you are proposing this course? Describe the need this new course will fill or the problem it is designed to solve.

This is a lab course that will correspond with Bio 125. Under the current curriculum, students are not exposed to ecological and evolutionary concepts until they are juniors or seniors. Evolution is identified as a Unifying Concept and Biological Evolution is identified as a major topic in Life Science by the National Science Education Standards written by the National Research Council (1996). The Biology Department offers a wide variety of core curriculum courses, but none have Evolution or Ecology as a primary focus.

17. Describe the place of the proposed course within your current curriculum. (Will it be elective or required? Part of a major or a minor?)

This course has been accepted into the University Life and Physical Science Core curriculum. BIO 125L will be a program requirement for all Biology majors and an optional course for Biology minors.

18. How does the proposed course differ from similar courses being offered at Stephen F. Austin?

This is the only general freshman level lab course focusing on concepts of ecology and evolution offered at the University.

19. Syllabus: Course Learning Goals
List course objectives; describe what students who complete the course will now or be able to do.

After successful completion of this course student will be able to: 1) Demonstrate understanding of the process of science by distinguishing between science and non-science and designing experiments that address testable hypotheses. 2) Use quantitative reasoning to interpret evolutionary and ecological data (tables, figures and graphs) from primary research, theoretical models and computer based-simulation experiments. 3) Demonstrate understanding of the skills and attitudes necessary for effective teamwork in collaborative learning activities and a semester long project. 4) Critically assess the interrelationship of human dimensions and ecology/evolution and communicate resulting conclusions in oral, visual and written formats. 5) Understand evolution as the unifying concept in biology. 6) Understand the factors that govern interactions between organisms and their environments.

20. Any Other Information.

College of Sciences and Mathematics Department of Biology

----Course Syllabus----
Must accurately reflect the course syllabus. (N/A is not acceptable response)

21. Enter course description exactly as it will appear in the general/graduation bulletin:

1 semester hours, 2 hours lab. Fundamental principles of biological inquiry, scientific analysis, and concepts in ecological and evolutionary biology.

22. Program Learning Outcomes
List the program learning outcomes addressed in this course as identified in the course matrix for your degree program. If your department requires a listing of all Program Learning Outcomes (PLOs) on the syllabus, please identify those that are directly taught in this course. If this is a general education core curriculum course and no PLOs are taught in this course then insert the following statement under this heading:

This is a general education core curriculum course and no specific program learning outcomes for this major are addressed in this course.

PLO 1. The student will demonstrate a good knowledge base in biological concepts (Knowledge). PLO 2. Clearly articulate scientific information in oral form. PLO 3. Clearly articulate scientific information in written form. PLO 4. Be able to design, carry out, and analyze experiments to answer biological questions. PLO 5. Demonstrate teamwork skills needed to coordinate diverse multidisciplinary teams to solve challenges in the biological world.

23. General Education Core Curriculum Objectives/Outcomes

List the Exemplary Educational Objectives (EEOs) for this course if the course is included in the general education core curriculum. If you have reworded the EEOs as outcomes for your course, please be sure that the original intent of the EEO is retained.

CO 1. Critical Thinking: to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information. CO 2. Communication Skills: to include effective development, interpretation and expression of ideas through written, oral and visual communication. CO 3. Empirical and Quantitative Skills: to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions. CO 4. Teamwork: to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.

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SLO 1. Demonstrate understanding of the process of science by distinguishing between science and non-science and designing experiments that address testable hypotheses. (PLO 1, 4) SLO 2. Use quantitative reasoning to interpret evolutionary and ecological data (tables, figures and graphs) from primary research, theoretical models and computer based-simulation experiments. (PLO 4,5) SLO 3. Demonstrate understanding of the skills and attitudes necessary for effective teamwork in collaborative learning activities and a semester long project. (PLO 2, 3, 5) SLO 4. Critically assess the interrelationship of human dimensions and ecology/evolution and communicate resulting conclusions in oral, visual and written formats. (PLO 2, 3, 5) SLO 5. Understand evolution as the unifying concept in biology. (PLO 1, 2, 3) SLO 6. Understand the factors that govern interactions between organisms and their environments. (PLO 1, 2, 3)

25. Syllabus: Proposed Textbook/Assigned Reading Materials.

Lab protocols will be made accessible through D2L and the responsibility of the student to print.

26. Course Requirements

Describe the major course requirements, assignments, examinations, projects.

Your final grade in this course is determined by grades from lab based inquiry activities, and participation in the course evaluation. Laboratory Activities: Students will conduct a variety of inquiry activities in the lab section of the course. Each lab meeting will include written and oral instruction on the critical thinking skills developed in that activity and will include written and oral instruction in the empirical and quantitative skills used in that activity. Laboratory activities will include structured/guided inquiries in which students work though examples, questions, problems and case studies. Students will evaluate of primary literature and participate in group discussions. Additionally students will conduct experiments to test hypotheses in which they collect data using online databases and field based methods, analyze data using computer software, synthesize data and present conclusions using visual (graphical), written (lab reports), and oral (presentation) communication.

27. Course Calendar

Create a tentative timeline for the course. At a minimum, list the topics that the course will cover and indicate the approximate amount of time to be devoted to each, either by percent of course time or number of weeks. The calendar should provide information for the maximum number of weeks scheduled for the course.

Week 1 Topic: Scientific method Activity: Guided inquiry on the definition and process of scientific method. Group discussion on science vs. non-science Week 2 Topic: Experimental design Activity: Structured inquiry exploring amphibian deformities. Individual and group interpretation of data and hypotheses evaluation Week 3 Topic: Evaluating evidence for evolution Activity: Structured inquiry evaluating scientific claims. Group discussion evaluating science from non- science. Presentations of scientific criteria and class discussion Week 4 Topic: Heredity and disease Activity: Guided

inquiry evaluating the role of heredity in probability of disease. Small group analysis of various diseases and heredity. Presentation of findings to class Week 5 Topic: Hardy-Weinberg Equilibrium Activity: Structured inquiry calculating and applying Hardy-Weinberg Equilibrium to natural populations Week 6 Topic: Process of natural selection Activity:

28. Grading Policy
Describe how the grade for the course is determined.

Final grades reflect both the lecture and the lab scores using the following formula: 66% Lecture Score + 33% Lab Score = Final Score. Your grade is determined by earning 90%, 80%, 70% and 60% of the available points for the associated traditional letter grade.

29. Attendance Policy
State your attendance policy.

Attendance is expected for each lab. Students with poor attendance typically do very poorly in this course. Students with excused absences in lab may makeup laboratories by attending other lab sections in the same week as their missed lab.

30. Academic Integrity (A-9.1)
Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

Definition of Academic Dishonesty
Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1) submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one's paper without giving the author due credit.

Please read the complete policy at http://www.sfasu.edu/policies/academic_integrity.asp

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Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.

32. Students with Disabilities
To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to http://www.sfasu.edu/disabilityservices.

Dept. Chair Jerri Moore Date: 11/8/13

College Curriculum Chair _____ Date: _____

Dept. Dean _____ Date: _____

College Curriculum Dean _____ Date: _____

RELEASE: 8.3