FAIRMONT STATE UNIVERSITY

MEMORANDUM

TO: Curriculum Committee

FROM: Jack Kirby JKK

DATE: May 6, 2013

SUBJECT: Curriculum Proposal #12-13-60, REVISION #3
New General Studies Science Course: Evolution and Human Nature
Final Faculty Senate Approval 4/23/2013

I recommend approval of the attached REVISION #3 of Curriculum Proposal #12-13-60 from the College of Science and Technology, Department of Biology, Chemistry, and Geoscience. This copy is the final draft of the proposal.

FAIRMONT STATE UNIVERSITY

MEMORANDUM

TO: Curriculum Committee

FROM: Jack Kirby JKK

DATE: April 15, 2013

SUBJECT: Curriculum Proposal #12-13-60, REVISION #2
New General Studies Science Course: Evolution and Human Nature

I recommend approval of the attached REVISION #2 of Curriculum Proposal #12-13-60 from the College of Science and Technology, Department of Biology, Chemistry, and Geoscience. This revision changes prerequisites that were not in the original proposal.

c: Dr. Christina Lavorata
Dr. Anthony Gilberti
Dr. Albert Magro
Ms. Evie Brantmayer
Ms. Leslie Lovett

be First

FAIRMONT STATE UNIVERSITY

MEMORANDUM

TO: Curriculum Committee

FROM: Jack Kirby

DATE: March 27, 2013

SUBJECT: Curriculum Proposal #12-13-60, REVISION #1
New General Studies Science Course: Evolution and Human Nature

I recommend approval of the attached REVISION #1 of Curriculum Proposal #12-13-60 from the College of Science and Technology, Department of Biology, Chemistry, and Geoscience. This revision addresses minor corrections that needed to be made to the proposal.

c: Dr. Christina Lavorata
Dr. Anthony Gilberti
Dr. Albert Magro
Ms. Evie Brantmayer
Ms. Leslie Lovett

be First

FAIRMONT STATE UNIVERSITY

MEMORANDUM

TO: Curriculum Committee

FROM: Jack Kirby

DATE: March 13, 2013

SUBJECT: Curriculum Proposal #12-13-60
New General Studies Science Course: Evolution and Human Nature

I recommend approval of the attached Curriculum Proposal #12-13-60 from the College of Science and Technology, Department of Biology, Chemistry, and Geoscience.

This proposal creates SCIE 1221: Evolution and Human Nature, a new four-hour General Studies Course that has been previously offered as SCIE 1199.

c: Dr. Christina Lavorata
Dr. Anthony Gilberti
Dr. Albert Magro
Ms. Evie Brantmayer
Ms. Leslie Lovett

be first

CURRICULUM PROPOSAL (Submit one hard copy and an electronic copy to the Associate Provost by the second Tuesday of the month.)

Proposal Number: 12-13-60

School/Department/Program: College of Science and Technology

Preparer/Contact Person: Albert Magro

Telephone Extension: 4877

Date Originally Submitted: NA

Revision (Indicate date and label it Revision #1, #2, etc.): NA

Implementation Date Requested: Fall term of 2013

I. **PROPOSAL**. Write a brief abstract, not exceeding 100 words, which describes the overall content of the proposal.

Evolution and Human Nature **is intended as a 4 credit general studies course. Students will be exposed to the principles of natural selection and other evolutionary concepts. The course will pursue the notion that concepts regarding human evolution can be applied to better understand how human adaptations relate to aesthetics and meta-ethical questions like ----is there any objective, natural or universal basis to morality? The evolutionary perspectives of ethics and aesthetics will be compared to perspectives found in scripture, literature, fine arts and philosophical writings. Implications for a continuing dialogue between the sciences and the humanities will be explored.**

If approved, this proposal would generate a new permanently numbered course that has been successfully offered on two occasions as a SCIE 1199 (a 4 credit course) with the title *Evolution and Human Nature.* In addition, approval is being sought from the General Studies Committee that would satisfy Attributes for Ethics VI.A and Natural Sciences VII.D.

II. **DESCRIPTION OF THE PROPOSAL**. Provide a response for each letter, A-H, and for each Roman Numeral II–V. If any section does not apply to your proposal, reply N/A.

A. Deletion of course(s) or credit(s) from program(s)

Total hours deleted. N/A

B. Addition of course(s) or credit(s) from program(s)

Total hours added. N/A

C. Provision for interchangeable use of course(s) with program(s)

N/A

D. Revision of course content. Include, as an appendix, a revised course description, written in complete sentences, suitable for use in the university catalog.

N/A

E. Other changes to existing courses such as changes to title, course number, and elective or required status.
N/A

F. Creation of new course(s). For each new course

1. Designate the course number, title, units of credit, prerequisites (if any), ownership (FSU or shared) and specify its status as an elective or required course. If you are creating a shared course, attach a memo from the Deans of the affected Schools explaining the rationale for the course being shared.
   - **SCIE 1221**
   - **Evolution and Human Nature**
   - **PR: Minimum English ACT score of 18, or SAT-Critical Reading of 450, or Reading of 71 on the COMPASS test "C" or better in ENGL 1104.**
   - **4 Credit Hours**
   - **Elective under SCIE**
   - **Ownership FSU**

2. Include, as an appendix, a course description, written in complete sentences, suitable for use in the college catalog. **(See Appendix I)**

3. Include, as an appendix, a detailed course outline consisting of at least two levels.
   (See Appendix II)

4. In order to meet the requirements as outlined in Goal One of the Strategic Plan, please include Outcome Competencies and Methods of Assessment as an appendix. Examples are available upon request from the Chair of the Curriculum Committee.

   (See Activities, Appendix III), (See Scoring Rubric for Activities, Appendixes IV-VIII), (See Outcomes and Assessment, Appendix IX)

G. Attach an itemized summary of the present program(s) affected, if any, and of the proposed change(s).

Describe how this proposal affects the hours needed to complete this program. Specifically, what is the net gain or loss in hours? Use the format for Current and Proposed Programs in Appendix A.
N/A

III. **RATIONALE FOR THE PROPOSAL.**

A. **Quantitative Assessment**: Indicate the types of assessment data, i.e., surveys, interviews, capstone courses, projects, licensure exams, nationally-normed tests, locally developed measurements, accreditation reports, etc., that were collected and analyzed to determine that curricular changes were warranted. Quantitative data is preferred.

The course *Evolution and Human Nature* as proposed is an exploration of the evolutionary basis of aesthetics, meta-ethics, normative ethics, and applied ethics. The course is not commonplace. In addition to the uniqueness of this specific course, a focused nationwide evolutionary approach to ethics and aesthetics, although on the horizon, is not yet part of any degree program. Thus, there are no national examinations, developed measurements, licensure exams or accreditation reports to be used as comparative assessment tools that could generate nationally-normed measurements that would justify the probable functional effectiveness of the course. However, what can be offered to the committee is some evidence that the applications of evolutionary biology to ethical and aesthetical inquiries will contribute to the successful liberal education of students.

The idea for this course originated in 1990 at Purdue University when the preparer of this proposal was approached to create and teach a social values course to prisoners at the maximum security prison in Westville, IN. At that time Purdue University had a baccalaureate program for the prisoners and participation by the faculty was totally voluntary. The course offered was entitled the *Social Impact of Biology*. The course content emphasized the evolutionary basis of ethics and aesthetics. It was a fine success with the prisoners contributing to the ideas that progressed throughout the course. The ideas developed were brought to FSU and over the years there were several 1199 courses offered. Each time the course was offered the number of students who took the course was small so there is no quantitative assessment data that could be used to justify the approaches or the value of the course content. However, no students failed or, for that matter, received a grade lower than a C. Also, from the reaction and comments from the students, it can be deduced that the course was very well received. Overall, the information obtained from the limited student response surveys indicate that the course would have value as a general studies offering. Information obtained from the Student Response Surveys had a scale of 1-5, with the highest rating being a 5 (100%), and a 4 rating as 80% and so on with a rating of 1 at 20%. The results from 10 students the last year the course was taught as a 1199 general studies elective are as follows:

- **Relevant course material ----------96%**
- **Communicated interest and enthusiasm----------100%**
- **Stimulated intellectual curiosity----------100%**
- **Confident and knowledgeable of subject----------95%**
- **Overall course response----------94%**

In addition there were encouraging unsolicited comments from the students within the student evaluative survey which included:

- ***Very informative and covered a range of ideas and information. The Instructor was very informative and was very enthusiastic and more than happy to speak to us about topics. Outside of class the instructor was extremely helpful in completing assignments.***

- *I really enjoyed this class. It was very informative and exciting. It really sparked my curiosity.*
- *I loved this class. It was very interesting*
- *Very knowledgeable. Questions were answered well. Wanted to make us think about questions and reach our own answers. One of the most interesting classes ever. GREAT!*
- *Excellent! This class should be taken by everyone! It has sparked my interest in many other fields and has helped in arts interpretation! I wish this class was longer! 3 hrs! We could cover more material.*
- *I enjoyed this class a lot. It gave me a lot of New Perspectives on things. I look forward to taking a similar course in the future.*
- *Instructor was helpful and I really enjoyed the course.*

B. **Qualitative Assessment**: Based upon the assessment data above, indicate why a curricular change is justified. Indicate the expected results of the change. Be sure to include an estimate of the increased cost, or reduction in cost of implementation. FOR EXAMPLE: Will new faculty, facilities, equipment, or library materials be required?

The development of a course is in many instances motivated by the department's conviction that the course will fill a need. The College of Science and Technology eliminated as General Studies offerings BIOL 1101 and BIOL 1102. Also the following discontinued physical sciences courses were eliminated as General Studies science offerings: Phy. Sci 101 Astronomy, Phy. Sci. 102 Chemistry, Phy. Sci. 103 Geology, Phy. Sci. 104 Physics and Phy. Sci. 105 History of Science. What has occurred since the elimination of those options is that a large proportion of SCIE offerings are within a few courses with most of them taught by adjunct faculty. The General Studies SCIE Courses Committee of the College of Science and Technology has recommended that the offerings of SCIE courses be broadened. This proposal is in part designed to broaden SCIE general studies offerings to the students.

The current approaches to the humanities, particularly the studies of ethics and aesthetics, are for the most part separate from the sciences. The separation has been a long time coming with its origins in the 16th century when criteria for scientific constructs of reality were explicitly formulated. Formal approaches to the current explorations of ethics and aesthetics were originally broached by natural philosophers. The sciences were also incorporated within the natural philosophy. Subsequently, the physical, biological and social sciences began to coalesce out of natural philosophy into disciplines separate from the creative output within the humanities. The creative aspects of the fine arts, music, literature and theater and the sciences developed on parallel tracks. By the 20th century the separation was nearly complete. It could be said that a current challenge to universities is to interface disciplines so that pursuits regarding the validity of human values will be in accordance with scientific constructs of reality along with an appreciation of why since antiquity the issues raised within the fields of ethics and aesthetics were considered worthy of exploration. With regard to general education, the general studies curricula of most universities are designed to provide a balance of the humanities and sciences. Unfortunately, the general studies curriculum of most universities offers little opportunity for the student to interrelate the sciences and the humanities.

An objective of this course is to demonstrate a relationship between hominid evolution and the constructs of human values as expressed in the humanities. This is particularly pertinent to those explorations which involve human nature, its limits, and its interests. Thus, this

curriculum proposal is put forth with the belief that ethics and aesthetics are in part rooted in the evolution of humans. The course will emphasize the analysis and exchange of ideas between the sciences and the humanities. An intent is to demonstrate that the constructs of reality of the sciences and the explorations of disciplines within the humanities are not mutually exclusive. The scientific constructs presented here will in the main draw upon the theory of natural selection as proposed by Charles Darwin. In other words, there is the belief that concepts regarding the evolution of humans can be applied to better understand how human adaptations relate to aesthetics as well as meta-ethical questions like ----is there any objective, natural or universal basis to morality? The course favors the point of view that complex innate emotional understandings about ethics and aesthetics are adaptive, normative and have a component of universality. To reiterate, the principle objective of the course is to expose the students to relevant ideas from the discipline of evolutionary biology in such a way that they can apply them to current explorations about ethics and aesthetics.

IV. Should this proposal affect any course or program in another school, a memo must be sent to the Dean of each school impacted and a copy of the memo(s) must be included with this proposal. In addition, the Deans of the affected schools must sign below to indicate their notification of this proposal. **N/A**

By signing here, you are indicating your college's/school's notification of this proposal.

College/School	Dean	Signature

V. Should this proposal affect any course to be added or deleted from the general studies requirements, a memo from the chair of the General Studies Committee indicating approval of the change must be included with this proposal. **N/A**

VI. ADDITIONAL COMMENTS.

With regard to Appendix I below, this course is not part of any degree program. It is a 4 credit SCIE course intended to meet the General Studies requirements of Natural Sciences and Ethics. In addition to satisfying General Studies requirements the course can also be offered as a free elective for interested students.

APPENDIX I

SCIE 1221: EVOLUTION AND HUMAN NATURE

COURSE DESCRIPTION: This course is intended for students who have an interest in the interrelationship of science and the humanities. Students will be exposed to concepts in paleontology and the principles of evolution. The course will serve as an activities-based, General Studies elective that will demonstrate the relationship of evolutionary biology to the nature of humans. Novel approaches to explaining truth, beauty and the good will be offered. Evolutionary perspectives of ethics and aesthetics will be compared with similar perspectives found in philosophy, literature, scripture and other writings. The implications for a continuing dialogue between science and the humanities will be explored. PR: Minimum English ACT score of 18, or SAT-Critical Reading of 450, or Reading of 71 on the COMPASS test or a "C" or better in ENGL 1104.

APPENDIX II
SCIE 1221: EVOLUTION AND HUMAN NATURE
COURSE OUTLINE

The Theory of Evolution

- **Natural Selection**
- **Genetic Drift and the Founder Effect**
- **Alleles and Chromosomes**

The Hominid Evolutionary Tree and the Origins of Humans

- ***Ardipithecus***
- ***Australopithecus***
- ***Homo***

***Homo sapiens'* Adaptive Patterns of Survival**

- **Mate Cooperation and Family Structure**
- **Long Term Care of the Young**
- **Social Cooperation**

Ethics and the Burden of Ever Increasing Disorder

- **The Second Law of Thermodynamics within the Context of Order and Disorder**
- **Life Forms as Ordered Systems**
- **Natural Sources of Increasing Disorder that Support Life Forms**

Adaptive Patterns of Survival as the Foundation of Ethics

- **Philosophical Explorations of Meta-Ethics, Applied Ethics and Normative Ethics**
- **The Ethical Consequences of Having Evolved as a Rational, Social Animal**
- **The Ethical Consequences of the Evolved Patterns of Mate Cooperation, Family Structure and Long Term Care of the Young**

APPENDIX II CONT. SCIE 1221: EVOLUTION AND HUMAN NATURE
COURSE OUTLINE
Primitive and Derived Anatomical Traits and the Evolution of the Human Skeleton • **Past Phenotypic Anatomical Traits No Longer Expressed** • **Prevalent Phenotypic Anatomical Traits** • **Anatomical Traits as a Cue for Mate Selection and the Avoidance of Mating with Closely Related Species**
The Evolutionary Basis of Our Sense of Beauty • **Philosophical Explorations of Our Innate Sense of Beauty** • **Primitive Traits are Unattractive While Derived Traits are Attractive** • **Universal Attractiveness as Those Derived Traits that are Universally Shared by Modern Humans**
Evolved Anatomical Traits and the Aesthetic Response to Figurative Art • **Philosophical Explorations of the Aesthetic Experience** • **Classical Figurative Art and the Exaggeration of Apomorphic Anatomical Traits** • **Primitive Figurative Art and the Exaggeration of Both Apomorphic and Plesiomorphic Anatomical Traits**
Evolved Human Adaptations and Aesthetics • **The Aesthetic Experience as a Release from the Burden of Ever Increasing Disorder** • **Evolved Human Adaptations and Allegories in Theater and Literature** • **The Aesthetic Experience as a Subliminal Array of Adaptive Emotions Out of the Context of their Original Evolutionary Significance**

APPENDIX II CONT.
SCIE 1221: EVOLUTION AND HUMAN NATURE
COURSE OUTLINE

Intrademic Selection

- **Intrademic Selection as a Form Natural Selection and a Meta-ethical Explanation of Normative Social Ethics**
- **Intrademic Selection as a Selection Process for Social Adaptations and Innate Ethical Understandings**
- **The Conundrum of Altruism Explained by Intrademic Selection**

Interdemic Selection

- **Interdemic Selection as a Form of Natural Selection Promoting Human Adaptations**
- **Paleoanthropologic Evidence for the Development of Tools and Weapons**
- **The Conundrum of Humans Excessive Brain Capacity Explained by Weapons and Brain Selecting Brain**

The Survival Aspects of Our Innate Understanding of the Ethics of Truth

- **Condemned to Receive Information From the Past with an Obligation to Negotiate the Future**
- **Evolved Adaptive Understandings of Truth and Falsehood as a Two State System**
- **The Threat to Survival Due to an Inaccurate Construct of Reality as the Reason for the Evolved Innate Disdain that Humans Have for Deceit and Hypocrisy**

The Ethics of the Future

- **Ethics is Species Specific, Temporal and Dependent Upon the Naturally Evolved Patterns of Survival of *Homo sapiens* as a Species**
- **The Meta-ethical Effects of the Continued Evolution of *Homo Sapiens* through Genetic Engineering and Cloning as a Replacement of Natural Selection**
- **Ethical Considerations of Introducing Plant and Animal Genes Into the Human Genome and Introducing Human Genes Into the Animal Genome**

BREAK

Student Capstone Power Point Presentations

FINAL EXAM WEEK

APPENDIX III SCIE 1221 IN-CLASS ACTIVITIES FOR EVOLUTION AND HUMAN NATURE	
ACTIVITY	**ASSESSMENT**
1). A number of 15 minute student panel (5 students per panel) discussions regarding the relative evolutionary significance of Natural Selection vs. the evolutionary mechanisms of Genetic Drift and the Founder Effect.	**See scoring Rubric for student panel discussions in Appendix IV**
2). Students will present to the class a Hominid family tree showing their interpretation of the evolutionary pathway leading to *Homo Sapiens*.	**See scoring Rubric for student presentations in Appendix V**
3). A number of 15 minute student panel discussions (5 students per panel) exploring how the evolved patterns of mate cooperation, family structure, long term care of the young and social cooperation adaptively impact *Homo sapiens'* inner moral sense.	**See scoring Rubric for student panel discussions in Appendix IV**
4). Students demonstrate disorder perspective of the Second Law of Thermodynamics by diffusion of NH_3 and HCl in a glass tube, by the diffusion of heat from hot to cold and not vice versa, and the diffusion of ink through a clear solvent. Students will also microscopically examine stained slides of human blood cells and tissue and write a short paragraph presenting the view of the burden of ordered life systems in a closed system of ever increasing disorder.	**See scoring Rubric for student exploratory experimental activities in Appendix VI**

APPENDIX III CONT. SCIE 1221 IN-CLASS ACTIVITIES FOR EVOLUTION AND HUMAN NATURE	
ACTIVITY	**ASSESSMENT**
5). Students are formed into small groups (5 per group) which respond to questions about the evolved patterns of survival of *Homo sapiens* and how the patterns have impacted the adaptive ethical understandings of humans. The questions are posed by the instructor. The 5 individuals within each group must consult with each other before responding to the question.	**See scoring Rubric for student competitive activities in Appendix VII.**
6.) Students identify bones of the human skeleton and measure the ratio of the Tibia/Fibula to the Femur and the ratio of the Radius and Ulna to Humerus and the length of the neck of the Femur. The skeletal allometric values of *Homo sapiens* are compared to published allometric values of the bones of chimpanzees.	**See scoring Rubric for student exploratory experimental activities in Appendix VI**
7). Students will read assigned specific passages and then pairs of students will debate (10 min for each debate) the following issues: The philosophical explorations of: the Empiricists such as Locke, or Berkley, or Hume or Skinner vs the innate Rationalism of Plato, or Plotinus, or Descartes, or Kant or Chomsky. Following the debates, a class discussion considering whether empiricism and nativism can coexist on a continuum, with neither being fully acceptable on its own merits nor whether either of the positions alone could be fully acceptable on its own merits. All of the assigned passages are available on the web and will be readily accessible to the students.	**See scoring Rubric for student debates in Appendix VIII.**

APPENDIX III SCIE 1221 IN-CLASS ACTIVITIES FOR EVOLUTION AND HUMAN NATURE	
ACTIVITY	**ASSESSMENT**
8). Students draw and color an art work containing at least one human figure illustrating exaggerated primitive and derived anatomical traits. Students present their drawings to the class and provide a rationale to the class for their drawing.	**See scoring Rubric for student exploratory experimental activities in Appendix VI**
9). Students read assigned passages from poems, plays and novels such as the plays Antigone and Tartuffe, or the epic poem The Divine Comedy, or the novel The Wizard of Oz and relate to the class the human nature and ethical messages of the art works in terms of adaptive evolutionary ultimate arguments. All of the assigned passages are available on the web and will be readily accessible to the students.	**See scoring Rubric for student presentations in Appendix V**
10). Students will engage in role playing by acting out self-serving or group advancing roles and the group will mandate an action toward each role player from a specific list of punishments or rewards. Following the role playing activity the class will discuss modern societies' systems of retribution (eg prisons, death penalty etc.) and whether intrademic selection within very small demes, over millions of years, could promote an adaptive inner sense of moral behavior and explain adaptive traits such as the evolutionary conundrum of human altruistic behavior.	**See scoring Rubric for student competitive activities in Appendix VII.**

APPENDIX III CONT. SCIE 1221 IN-CLASS ACTIVITIES FOR EVOLUTION AND HUMAN NATURE	
ACTIVITY	**ASSESSMENT**
11.) Students participate in a game theory exercise that demonstrates the outcomes of interdemic selection with the two choices being war and elimination or peace and cooperation. Students by interacting with the instructor and the class will then analyze whether interdemic selection can eliminate peoples with inferior technology and what would be the effect of such a selection pressure over millions of years on very small demes particularly regarding the evolutionary conundrum of the excess brain capacity of *Homo sapiens*.	**See scoring Rubric for student competitive activities in Appendix VII**
12). Students recite to the class an 8 line poem in couplet form (with an aa or other rhyme scheme), which they have written. The poem should either directly or allegorically emphasize the course perspective about how adaptive evolutionary ideas concerning beauty and ethics may change in light of modern biological techniques. The student in collaboration with the class will then analyze the poems and identify the evolutionary adaptive concepts.	**See scoring Rubric for student presentations in Appendix V**
13). Students will present a 15 min capstone Power Point presentation from a select list of topics that provide overviews of what was covered in the course.	**See scoring Rubric for student presentations in Appendix V**

APPENDIX IV SCIE 1221	
GENERAL SCORING RUBRIC FOR PANEL DISCUSSION	
PLEASE NOTE: **Individuals within the panel will be called upon by the audience and the instructor to comment on specific questions. Each individual within the panel is expected to actively contribute and provide explanations to topics raised by the class and the instructor. In addition to responding individually to a specific question a spontaneous interactive discussion by the panel is required.**	
A **90 - 100**	• **Demonstrates active participation** • **Provides responses devoid of conceptual errors** • **Shows understanding of questions and then answers appropriately** • **Identifies the important elements in their explanations** • **Gives complete clear, coherent, and unambiguous explanations** • **Gives strong supporting arguments** • **Relates ideas in terms of Evolutionary Biology** • **Relates explanation to topics covered in the course** • **Extends and amends ideas of the topic** • **Communicates effectively to rest of panel and audience** • **Includes examples of counter arguments, if appropriate** • **Raise questions to discuss with other members of the panel** • **Following ones response encourages other members of the panel to extend and amend the response** • **Extends and amends the responses of other panel members**
B **80 - 89**	• **Demonstrates participation that meets almost all of the criteria as listed above without conceptual errors**
C **70 - 79**	• **Demonstrates participation that meets most of the criteria as listed above without conceptual errors**
D **60 - 69**	• **Demonstrates participation that included some understanding of ideas, but in an unclear way, while also making fundamental conceptual errors**
F < 60	• **Frivolous, irrelevant, or cursory participation**
0	• **No participation and does not contribute to the panel discussion**

APPENDIX V SCIE 1221	
GENERAL SCORING RUBRIC FOR IN-CLASS PRESENTATIONS	
PLEASE NOTE: **DO NOT JUST READ THE PRINTING PROJECTED ON THE SCREEN OR READ OFF NOTES OR 3X5 CARDS.** **YOU NEED TO DEMONSTRATE COMPREHENSION BY PRESENTING YOUR TOPIC AS A LECTURE TO THE CLASS WITHOUT EXCESSIVE READING FROM NOTES.**	
A **90 - 100**	• **Identifies the important elements of the presentation** • **Presentation is complete with clear, coherent, and unambiguous explanations** • **Gives strong supporting arguments** • **Relates ideas in terms of Evolutionary Biology** • **Relates presentation to topics covered in the course** • **Extends ideas of the topic** • **Communicates effectively to identified audience** • **Includes examples of counter arguments, if appropriate** • **Includes clear and simple power point slides that are appropriate** • **Shows understanding of topic and any questions and then answers appropriately**
B **80 - 89**	• **Gives a solid presentation that meets almost all of the criteria as listed above without conceptual errors**
C **70 - 79**	• **Gives a presentation that meets most of the criteria as listed above without conceptual errors**
D **60 - 69**	• **Gives a presentation that included some understanding of ideas, but in an unclear way, while also making fundamental conceptual errors**
F < 60	• **Frivolous, irrelevant, or cursory presentation**
0	• **No presentation**

APPENDIX VI SCIE 1221	
SCORING RUBRIC FOR EXPERIMENTAL ACTIVITIES	
A **90 - 100**	• **Provides all necessary background principles for the experiment** • **Well-written report with all experimental details covered** • **All figures, graphs, tables are correctly drawn, are numbered and contain titles/captions.** • **All important trends and data comparisons have been interpreted correctly** • **Shows good comprehension of concepts incorporated in the experiment** • **Includes the question to be answered by the experiment** • **When hypothesis is being tested gives opinion as to whether hypothesis is actually testable** • **Provides arguments as to whether accumulated data supports or contradicts hypothesis** • **Summarizes the essential data used to draw conclusions** • **Conclusions follow data and avoids wild guesses or leaps of logic** • **Discusses applications of experiment and speculates about real world connections**
B **80 - 89**	• **Performs experiments in a way that meets almost all of the criteria as listed above without conceptual errors**
C **70 - 79**	• **Performs experiments in a way that meets most of the criteria as listed above without conceptual errors**
D **60 - 69**	• **Performs experiments in a way that included some understanding of ideas, but in an unclear way, while also making fundamental conceptual errors**
F < 60	• **Performs experiments in a frivolous, irrelevant, or cursory way**
0	• **No participation in laboratory experiment**

APPENDIX VII SCIE 1221
GENERAL SCORING RUBRIC FOR STUDENT COMPETITIVE ACTIVITIES
PLEASE NOTE: Each individual within the group is expected to actively contribute to formulating the group's answer to the questions posed by the instructor. All of the individuals within the group are expected to consult with each other before an answer is given. The competitive in-class activities are scored as a quiz grade with the individuals within the highest scoring group each being awarded a 100 % quiz grade. Other groups will receive the appropriate fraction of 100 points which will be calculated. For example, if Group 1 scores 10 correct answers as the highest score and if Group 2 scores 8 correct answers the individuals within Group 2 will receive an 80% quiz grade. The answers are adjudicated correct or incorrect by the instructor who poses the questions to the groups.

APPENDIX VIII SCIE 1221	
GENERAL SCORING RUBRIC FOR STUDENT DEBATES	
PLEASE NOTE: **Two individuals will engage in a ten minute debate taking opposing points of view. The opposing points of view will be provided to each debater by the instructor. The debaters will be given specific resources to formulate the point of view that they are to defend.**	
A **90 - 100**	• **Presents arguments enunciating clearly** • **Provides arguments devoid of conceptual errors** • **Demonstrated consistency with regard to the point of view that is to be presented** • **Shows understanding of issue and then argues appropriately** • **Identifies the important elements when presenting their point of view** • **Gives complete clear, coherent, and unambiguous explanations** • **Gives strong supporting information to enhance credibility of posed arguments** • **Relates ideas in terms of Evolutionary Biology** • **Relates explanation to topics covered in the course** • **Extends and amends ideas of the topic** • **Communicates effectively and persuasively to the audience** • **Gives effective counter arguments** • **Extends and amends the arguments of the other debater**
B **80 - 89**	• **Demonstrates the ability to debate in a way that meets almost all of the criteria as listed above without conceptual errors**
C **70 - 79**	• **Demonstrates the ability to debate in a way that meets most of the criteria as listed above without conceptual errors**
D **60 - 69**	• **Demonstrates the ability to debate in a way that included some understanding of ideas, but in an unclear way, while also making fundamental conceptual errors**
F < 60	• **Debates in a frivolous, irrelevant, or cursory way**
0	• **Refuses to participate in debate**

APPENDIX IX OUTCOMES FOR SCIE 1221: EVOLUTION AND HUMAN NATURE		
EXPECTED OUTCOMES FOR SCIE 1221	**ALL ATTRIBUTES ARE APPLIED TO EACH OUTCOME**	**ASSESSMENT TECHNIQUES ARE APPLIED TO EACH ATTRIBUTE**
1). Explain natural selection and other evolutionary concepts as presented in the course. **2). Describe the evolutionary tree for bipedal hominids and the timing and geographical migration of humans.** **3). Explain meta-ethical, normative and applied ethical issues covered in the course.** **4). Describe aesthetics including inquiries about art criticism, or the validity of cultivated aesthetic judgments, or the idea of correct taste, or the necessity to describe an artwork in aesthetic terms.** **5). Discuss the similarities and differences between the evolutionary and historical philosophical approaches to ethics and aesthetics.** **6). Discuss the implications of the course's explorations which relate evolutionary biology to the humanities.**	**Equipped with basic scientific literacy and methods of inquiry, analysis, and description in the natural sciences, students should understand the role of science in everyday life and how the natural sciences contribute to the general welfare of civilization. Students will be able to:** **Outcome VII.D.1** **Use the vocabulary of basic principles, facts and theories of the natural sciences** **Outcome VII.D.2** **Demonstrate and understand the process and limitations of scientific inquiry** **Outcome VII.D.3** **Demonstrate the following skills: analysis, problem solving, quantitative manipulation, and data interpretation/evaluation** **Outcome VII.D.4** **Apply analysis, problem solving, quantitative manipulation, and data interpretation/evaluation to accomplish meaningful goals**	**Evaluate each student and the class' overall performance on each attribute by assessing appropriate specific questions from examinations, on-line quizzes and in-class activities which include: explicit rubrics, multiple choice, fill in the blank and short paragraphs along with lab reports as formats of assessing. Overall performance of the students will be statistically tested by the analysis of variance comparing each student's overall course grades on examinations, quizzes and activities with university entrance ACT or SAT scores as an assessment of institutional enrollment policies. The ANOVA data will also be used to help improve pedagogical approaches used in the course.**