

UNDERGRADUATE CURRICULUM PROPOSAL COVER SHEET

Title of Proposal – Must begin with Department Abbreviation:

BIOL- Conversion of a Biol499 class to a regular Biology class (Biol4**) offering BIOL 434

Check One: Full Proposal or Information Item

Effective Date for Curricular Offering: Fall 2009

FROM: Ethan A. Carver, Biological and Environmental Sciences, Holt Hall 227, 425-4315, ethan-carver@utc.edu
(proposal originator: include spokesperson's name, department, office number, telephone, e-mail)

Does this require new resources from the originating department or other department? NO
Please attach explanation if yes.

Faculty of the originating department approved this proposal on 11/7/08 (date),
by a vote of 16 aye votes; 0 nay votes; 1 abstentions: 1 eligible voting members absent

The following have examined this proposal:

Dept Head/Director: John C. Tucker John C. Tucker approve neutral disapprove*
(printed name) signature

College Curriculum Committee Date: _____ Vote: _____ Signature of Chair: _____

Spokespersons for Affected Departments:

(name, department, date) signature approve neutral disapprove*

Dean/Director: H. Burkenn H. Burkenn approve neutral disapprove*
signature

University Registrar: Linda Orth Linda Orth Comments: _____
(printed name) signature

ms

Provost: Phil Oldham Phil Oldham approve neutral disapprove*
(printed name) signature

*Those who disapprove may attach an explanation

ACTIONS on this proposal:	Curriculum Committee	Faculty Senate
Date the proposal was considered	_____	_____
Vote of the body:	_____	_____
Accepted as information item (indicate date)	_____	_____
Approved as submitted (indicate date)	_____	_____
Approved with amendments (amendments indicated and transmitted to all signatories above, date):	_____	_____
Signature of Chair:	_____	_____

BIOL 434

Human Development and Disease

Rationale:

This proposal requests the introduction of a new class in the Biology curriculum. Our department has seen a large increase in student enrollment in our program, and it has become increasingly difficult for students to enroll in upper-level biology courses. Human Development and Disease will provide our majors, and Pre-Professional majors (200+students) in particular, with another Zoology course that is human-centric and very applicable to future health care providers.

Historically, Pre-Professional majors have only been able to choose from three different classes to fulfill the Zoology requirements for this concentration. This included; Comparative Zoology (Biol313), Histology (Biol330), and Vertebrate Developmental Embryology(Biol403). These classes were not offered often enough, or were not large enough to meet the increased enrollment of Pre-Professional majors in our department. Three years ago, we added an option for the students to take Human Anatomy (Biol191), and one additional Zoology class, instead of the original three classes. This extra option requires the student to take additional classes, and has also been problematic.

The department recently filled a Human Anatomy and Physiology lecturer position specifically to shift teaching responsibilities within the department and allow more advanced Biology courses to be taught more often, and for new courses to be introduced to the curriculum. The lecturer will teach Human Anatomy every other semester, and will position me to teach an additional course every other fall semester.

The existing Vertebrate Developmental Embryology class (Biol403) is a basic research science class that does not directly address human developmental concerns. This new course focuses on human development and associated disease states in a very clinical manner. It discusses human development, professional ethics, new developments from clinical trials, and helps students relate science with their future careers.

Human Development and Disease was taught in the Fall 2007 semester, and the enclosed syllabi are from that class. The student reviews of the class were very favorable, and a copy of them will be made available upon request.

Course Description:

The four credit hour course centers on the study of genetic, physiological, environmental and interactive variables that influence human development from gametogenesis to birth. The student will acquire an understanding of how development occurs in humans and the relationship between abnormal developmental processes and human disease states. Laboratory explores human development through the use of embryological slides, models, and applied techniques.

Grading format: Standard grading format :A-F shown in syllabus.

Course instructor: Dr. Ethan Carver

Course Objectives:

1. Describe the major milestones and anatomical structures associated with human development.
2. Explain the major theories and issues associated with human heredity and prenatal development and subsequent disease states.
3. Understand research methods used to study development and their applications.

Course Details:

(Must take both lab and lecture concurrently, details provided in syllabi.)

Impact:

Pedagogical consequences: We have revised our teaching schedules with the addition of a lecturer position. The lecturer position will teach a Human Anatomy course during alternating Fall semesters, and allow Dr. Carver to teach an additional upper-level biology course, and help facilitate student completion of degree requirements.

Economic impact: The economic impact of this course should be minimal to the department. Laboratory models have been purchased with a UC Foundation Instructional Excellence Award (#R04-1011-082). The use of laboratory fees will offset the costs of recurring laboratory materials.

External impact: No major impact on requirements and resources in other departments or programs is expected.

Catalog additions

Course Description (*New*):

434 Human Development and Disease (4)

This four credit hour course centers on the study of genetic, physiological, environmental and interactive variables that influence human development from gametogenesis to birth. The student will acquire an understanding of how development occurs in humans and the relationship between abnormal developmental processes and human disease states.

Laboratory explores human development through the use of embryological slides, models, and applied techniques. *Lecture 3 hours, laboratory 2 hours.*

Prerequisite: Biology 325 with a minimum grade of C; Biology 313 recommended.

Pre-or corequisite: Chemistry 352/354. Laboratory/studio course fee will be assessed.

Current catalog (p79) *See next page.*

Biology (B.S.)

General Education (see pages 65-68 for list of approved courses)

Rhetoric and Composition: Two approved courses in rhetoric and composition (6 hours)

Mathematics: One approved mathematics course (3 hours)

Statistics: Biology 216* (4 hours) or Mathematics 210 (3 hours) *Students who have taken Engineering 222, HHP 401, Mathematics 307, 408, Psychology 201 or Sociology 250 and subsequently changed their major to Biology will have satisfied this requirement.*

Natural Sciences: Two approved natural science courses, at least one including a laboratory component (7-8 hours)

Humanities and Fine Arts: Two approved humanities and fine arts courses, one from fine arts and one from either (6 hours)

Cultures and Civilizations: Option A: Western Humanities I and II and one approved Non-Western Cultures and Civilizations OR Option B: World Civilization I, II, III (9 hours total)

Behavioral and Social Sciences: Two approved behavioral or social science courses in two different disciplines (6 hours)

Major and Related Courses

English 278 (required within the first 60 hours) or Biology 495. *Students who have taken English 276, 277 or 279 and subsequently changed their major to Biology will have satisfied this requirement.*

Foreign Language through the first college year in one foreign language or the equivalent through placement exam. Students with documented evidence that English is their second language as determined by the department head will meet the foreign language requirement after successful completion of English 122.

Mathematics 131 and 136; OR 144, 145 and 151/152 (Initial course in Mathematics sequence is dependent upon UTC Math Placement.)

Chemistry 121/123, 122/124, 351/353, 352/354.

Biology - 38 hours including 121, 122 (a grade of C or better must be earned in 122 in order to take courses beyond the 100 level for which 122 is a prerequisite), 325 (326 required for the molecular concentration but is an elective for all other concentrations), four laboratory courses above the 100 level, 3 hours of a single, formal lecture or laboratory course at the 400 level.

No more than 4 hours of 497r and/or 498r may be counted as part of the 38 hours of biology. All senior level students must take a major field achievement test in biology prior to graduation.

2.0 average in all biology courses.

Minimum of 39 hours of 300 and 400 level courses.

Electives to complete 120 hours.

See page 63 for additional requirements.

*Also satisfies requirement in the major.

Each biology major must also complete the requirements for one of the following concentrations.

2126 - General Biology

Physics 103/183, 104/184 or Geology 111/181, 112/182 (Physics 103/183, 104/184 recommended for prospective graduate students)

Biology courses:

Botany (select 1 course) - 207, 351, 352

Zoology (select 1 course) - 312, 313, 320, 330, 340, 342, 403, 408, 456, 457, 458 (Courses offered in Botany and Zoology at Gulf Coast Research Laboratory may be substituted. Approval of the department head required)

Ecology and Evolution (select 1 course) - 306/307, 315, 406, 416, 440, 450

Cell and Physiology (select 1 course) - 304, 311, 323, 401, 404, 412, 420, 428, 460, 463

Recommended electives: Chemistry 341, 466

2127 - Preprofessional (Premedical, Pre dental, Premedical Technology)

Chemistry 466, Physics 103/183 and Physics 104/184

Biology courses:

Botany (select 1 course) - 207, 351, 352.

Zoology (select 1 option) - 313, or 403, or 191 plus one course to be chosen from 312, 320, 340, 342, 408, 456, 457, 458

Ecology and Evolution (select 1 course) - 306, 315, 416, 450

Cell and Physiology (select 2 courses) - 311, 323, 428, 460

One additional course to be chosen from

Zoology - 312, 313, 320, 330, 340, 342, 403, 408, 456, 457, 458

OR

Cell and Physiology - 304, 311, 323, 412, 420, 428, 460, 463

Recommended elective - Classics 300

Recommended, Premedical technology - BIOL 311, BIOL 412

2128 - Ecology

Physics 103/183, 104/184 or Geology 111/181, 112/182 (Physics 103/183, 104/184 recommended for prospective graduate students)

Biology courses:

Botany (select 1 course) - 207, 351, 352

Zoology (select 1 course) - 312, 313, 320, 330, 340, 342, 403, 408, 456, 457, 458 (Courses offered in Botany and Zoology at Gulf Coast Research Laboratory or Highlands Biological Station may be substituted. Approval of the department head required.)

Ecology and Evolution (select 3 courses) - 306/307 (required), 315, 406, 416, 440, 450

Cell and Physiology (select 1 course) - 304, 311, 323, 401, 404, 428, 460, 463

Recommended electives: Geography 221, Geology 123

2129 - Organismal Biology

Mathematics: 144, 145 and 151/152 recommended for prospective graduate students.

Physics: 103/183, 104/184 or Geology 111/181, 112/182 (Physics 103/183, 104/184 recommended for prospective graduate students)

Biology courses:

Botany and Zoology (select 4 courses) - 207, 312, 313, 320, 340, 342, 351, 352, 403, 408, 456, 457, 458 (A minimum of one botany and one zoology course must be taken. Courses offered in Botany and Zoology at Gulf Coast Research Laboratory or Highlands Biological Station may be substituted. Approval of the department head required.)

Ecology and Evolution (select 2 courses) - 306/307, 315, 406, 416, 440, 450

Cell and Physiology (select 1 course) - 304, 323, 460

Recommended elective: Chemistry 466

2130 - Molecular

Mathematics 144, 145 and 151/152 recommended for prospective graduate students.

Chemistry 466, Physics 103/183 and Physics 104/184

Biology courses:

Botany (select 1 course) - 207, 351, 352

Zoology (select 1 course) - 312, 313, 320, 330, 340, 342, 403, 408, 456, 457, 458

Ecology and Evolution (select 1 course) - 306, 315, 406, 416, 450

Cell and Physiology - 311, 326, 412, 420, 428

Recommended elective: Chemistry 341

4520 - BIOLOGY MINOR

The Biology Department offers a minor requiring 20 hours of biology including Biology 121, 122 and eight hours at the 300 level or above.

Minimum 2.0 average in the minor.

Environmental Science (B.S.)

The environmental science major consists of two parts: 1) a core curriculum required of all majors and 2) a concentration of study in one of the following areas: biology, chemistry, engineering, geology, geography, mathematics, or sociology/anthropology. Environmental science courses are described below; all other required courses are described in the listings of other departments named.

Catalog changes: (All changes in bold and underlined, and are just the addition of the class to the proper Zoology group)

2126 - General Biology

Physics 103/183, 104/184 or Geology 111/181, 112/182 (Physics 103/183, 104/184 recommended for prospective graduate students)

Biology courses:

Botany (select 1 course) - 207, 351, 352

Zoology (select 1 course) - 312, 313, 320, 330, 340, 342, 403, 408, 456, 457, 458, **434**

(Courses offered in Botany and Zoology at Gulf Coast Research Laboratory may be substituted. Approval of the department head required)

Ecology and Evolution (select 1 course) - 306/307, 315, 406, 416, 440, 450

Cell and Physiology (select 1 course) - 304, 311, 323, 412, 420, 428, 460, 463

Recommended electives: Chemistry 341, 466

2127 - Preprofessional (Premedical, Predental)

Chemistry 466, Physics 103/183 and Physics 104/184

Biology courses:

Botany (select 1 course) - 207, 351, 352.

Zoology (select 1 option) - 313, or 403, or **434**; or 191 plus one course to be chosen from 312, 320, 340, 342, 408, 456, 457, 458

Ecology and Evolution (select 1 course) - 306, 315, 416, 450

Cell and Physiology (select 2 courses) - 311, 323, 428, 460

One additional course to be chosen from

Zoology - 312, 313, 320, 330, 340, 342, 403, 408, 456, 457, 458, **434**

OR

Cell and Physiology - 304, 311, 323, 412, 420, 428, 460, 463

Recommended elective - Classics 300

2130 - Molecular

Mathematics 144, 145 and 151/152 recommended for prospective graduate students.

Chemistry 466, Physics 103/183 and Physics 104/184

Biology courses:

Botany (select 1 course) - 207, 351, 352

Zoology (select 1 course) - 312, 313, 320, 330, 340, 342, 403, 408, 456, 457, 458, **434**

Ecology and Evolution (select 1 course) - 306, 315, 406, 416, 450

Cell and Physiology - 311, 326, 412, 420, 428

Recommended elective: Chemistry 341

Human Development and Disease

Fall Semester 2007
Biology 499
HOLT207
M/W/F 10-10:50 am
Dr. Ethan Carver

Office Hours: M/W/F 9-10 am T-TH 10-11am
Office: Holt 227
Office Phone: 423-425-4315, Department phone: 423-435-4341
Email: Ethan-Carver@utc.edu

Lecture Text: Human Embryology and Developmental Biology (B.Carlson-3rd ed.)

Syllabus is tentative and dates/topics are subject to change.

<u>Date</u>	<u>Topic</u>	<u>Text Chapter</u>
August 20	Introduction/Orientation	*
August 22	Gametogenesis	1p1-13
August 24	Gametogenesis	1p14-25
August 27	Fertilization	2
August 29	Cleavage	3p43-53
August 31	Implantation	3p53-63
September 3	<i>No Classes (Labor Day)</i>	
September 5	Molecular Development I	4p65-72
September 7	Molecular Development II	4p72-81
September 10	Formation of Germ Layers I	5p83-91
September 12	Formation of Germ Layers II	5p91-101
<u>September 14</u>	<u>EXAMINATION I -100 Points</u>	
September 17	Basic Body Plan I	6p103-114
September 19	Basic Body Plan II	6p114-127
September 21	Placenta/Extra-embryonic Membranes I	7p129-140
September 24	Placenta/Extra-embryonic Membranes II	7p140-149
September 26	Developmental Disorders I	8p151-158
September 28	Developmental Disorders I	8p159-169
October 1	Integumentary System	9p173-182
October 3	Skeletal System	9p182-193
October 5	Muscular System	9p193-208
<u>October 8</u>	<u>EXAMINATION II -100 Points</u>	
October 10	Limb Formation I	10p209-214
October 12	Limb Formation I	10p215-231
October 15	Nervous System I	11p233-245
October 17	Nervous System II	11p245-264
October 19	Nervous System III	11p264-275
October 22	<i>No Classes (Fall Break)</i>	

October 24	Neural Crest	12
October 26	Sense Organ-Eye	13p291-306
October 29	Sense Organ-Ear	13p306-315
October 31	Head and Neck	14p317-334
November 2	Head and Neck	14p334-351
<u>November 5</u>	<u>EXAMINATION III -100 Points</u>	
November 7	Digestive System	15p353-370
November 9	Glands	15p370-374
November 12	Respiratory System	15p374-391
November 14	Urinary System	16p393-401
November 16	Reproductive Systems	16p401-427
November 19	Hematopoiesis/Vessel Formation	17p429-446
November 21	Heart Development	17p446-478
November 23	<i>No Classes (Thanksgiving Break)</i>	
November 26	Fetal Development	18p477-491
November 28	Birth	18p492-498
<u>November 30</u>	<u>EXAMINATION IV -100 Points</u>	
December 3	<u>Review Class</u>	
<u>December 5 (8-10am)</u>	<u>COMPREHENSIVE FINAL -100 Points</u>	

Class information: It is essential to develop a good working vocabulary as you progress throughout the semester. You should be able to define the structures/terminology as you move through each section of material. It is important that you learn the major functions of all the anatomical structures that you are studying throughout the course.

Attending class is an important requirement that will enhance your ability to understand the material. Be on time for class. At the very least, prior to each lecture, read the chapter appropriate for the lecture topic*. Take notes during the lecture. Read the chapter carefully and make certain that you write definitions for all major terms. The text should be used as a supplement to the lecture material, and not as substitute for attending class.

Quizzes: There are **11 unannounced** quizzes during the semester. These quizzes will be given over the assigned reading from the textbook for that specific date. It is not a quiz over previously discussed material. *It is over the material you should read prior to class.* The quizzes are worth 10 points each. You will be able to drop the lowest quiz grade. There are **NO** make-up quizzes, if you miss a quiz for any reason, you receive a zero on the quiz.

Examinations: The exams will be multiple-choice, definitions, short answer and essay. If you are having trouble with certain areas, please do not wait until right before an exam to seek clarification. It is better to ask these questions early, and avoid prolonged confusion.

Make-ups: Please note there will be **NO** make-up examinations. If you are ill or an emergency arises, it is your responsibility to notify me prior to exam time as soon as

possible. If you miss an exam and provide an excuse acceptable to me (“Dr’s excuse, etc.), your grade will be prorated based on the remaining exams. If you miss a second exam for **ANY** reason, you will receive a **zero** for that exam.

Grading :

4 Lecture Tests (100 points each)	400 points
Comprehensive Final	100 points

Laboratory Total	300 points
------------------	------------

Quiz Total	100 points
------------	------------

Course Total	900 points
--------------	------------

This is a 4-hour course that includes a required laboratory component. There is no partitioning of credits between lecture and lab.

The course grade will be calculated as follows:

$$\frac{\text{Total lecture exam points} + \text{total laboratory points} \times 100}{\text{Total possible points (900)}} = \%$$

Grade Scale: 90- 100% =A
80- 89%=B
70- 79%=C
60- 69%=D
Below60%=F

There is **no** curve for the class. (If you make 89.99%, it is a B, etc...)

There is **no** extra-credit for the class.

School Closure: On exam day, if school is closed due to unforeseen circumstances, (weather), the exam will be given during the next scheduled class.

Courtesy: The use of electronic devices, such as cell phones or MP3 players, is not allowed during class. Please turn off cells phones before the start of class.

Electronic Device policy: Cell phones, MP3 players, iPods, etc..., should not even be present during an exam. If you have an electronic device out or in-use during an exam, your exam will be taken, and you will receive a **zero** on the exam, and potentially other disciplinary measures.

University Policies and Procedures: Please refer to the Student Handbook for policies on topics such as the honor system.

Special Services: If you find that personal problems, career indecision, study and time management difficulties, etc. are adversely affecting your successful progress at UTC, please contact the Counseling and Career Planning Center at 425-4438. If you are a student with a disability (e.g. physical, learning, psychiatric, vision, hearing, etc.) and think you might need special assistance or a special accommodation in this class or any other class, please speak with your professor as soon as possible. You may also contact the UTC Office for Students with Disabilities at 425-4006 or go by their office in 110 Frist Hall on the UTC campus.

Human Development and Disease
 Laboratory
 Fall Semester 2007
 Biology 499
 HOLT228
 W -- 1-2:50 am
 Dr. Ethan Carver

Office Hours: M/W/F 9-10 am T-TH 10-11am
 Office: Holt 227
 Office Phone: 423-425-4315, Department phone: 423-435-4341
 Email: Ethan-Carver@utc.edu

Lab Text: Handouts on BlackBoard

Syllabus is tentative and dates/topics are subject to change.

Date	Topic	Handout
August 22	Orientation	
August 29	Spermatogenesis	1
September 5	Oogenesis	2
September 12	Cleavage/Implantation	3
<u>September 19</u>	<u>EXAMINATION I -100 Points</u>	<u>T</u>
September 26	Gastrulation	4
October 3	Neurulation	5
October 10	Organogenesis	6
October 17	Model building*	7
<u>October 24</u>	<u>EXAMINATION II -100 Points</u>	<u>T</u>
October 31	Organogenesis/Limb development	8
November 7	4 month fetus	9
November 14	Full term and Birth	10
November 21	Movie	
<u>November 28</u>	<u>EXAMINATION III -100 Points</u>	<u>T</u>

Handouts will be posted on Blackboard before class. Please bring the handout to class.

Laboratory Care: The laboratory is for your use during assigned class periods and during times when classes do not meet. Do not abuse this privilege. Do not put marks on models. Handle all laboratory materials and equipment with care. Return all materials to their appropriate containers or storage areas before leaving the lab. Clean up your area after you have finished your dissection.

Please keep the laboratory doors SHUT at all times.

Do not eat or drink in the laboratory at any time.

There are several lounges in the building for this purpose.

Turn off lights when you are the last person to leave the lab. If you are eating or drinking in the laboratory, 10 points will be deducted from your grade.

Make-ups: There will be no make-up exams. If you are ill or an emergency arises, it is your responsibility to notify your instructor prior to the exam time or as soon as possible. If you miss an exam due to illness or an emergency and can provide a valid excuse, the final lab grade will be the average of the two exams taken. If you are late for a practical exam, you will not get extra time.

This is a 4-hour course that includes a required laboratory component. There is no partitioning of credits between lecture and lab.

The Lab grade will be calculated as follows:

Three laboratory practicals - 300 points (95 points each *-15 pts for model)
Total laboratory points = 300 points

The course grade will be calculated as follows:

$$\frac{\text{Total lecture exam points} + \text{total laboratory points} \times 100}{\text{Total possible points (900)}} = \%$$

Grade Scale: 90- 100% =A (810 pts and above)
81- 89%=B (720 pts-809 pts)
71- 79%=C (630 pts-719 pts)
60- 69%=D (540 pts-629 pts)
Below60%=F (539 pts and below)

There is no curve for the class. (If you make 809 pts, it is a B, etc...)

There is no extra-credit for the class.

Special Services: If you find that personal problems, career indecision, study and time management difficulties, etc. are adversely affecting your successful progress at UTC, please contact the Counseling and Career Planning Center at 425-4438. If you are a student with a disability (e.g. physical, learning, psychiatric, vision, hearing, etc.) and think that you might need special assistance or a special accommodation in this class, please speak with me as soon as possible. You also need to call the Office for Students with Disabilities/College Access Program at 425-4006 or come by their office - 110 Frist Hall.