SMTE 4217: Secondary Approaches to the Life Sciences

SCIENCE, MATHEMATICS, AND TECHNOLOGY EDUCATION 4217.001
M 12:00-2:00
Classroom: Science and Engineering (EN) 201

INSTRUCTOR: Cherie A. McCollough, Ph.D.
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Office Hours: MW 9-10; TR 9-10, 1-2
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Students are welcome to make appointments to see me at times other than those listed above. If I am unavailable or need to relocate during office hours, I will post a note on my office door. You are welcome to come by my office at other times and if I am not busy, I would be happy to help you. A phone call is usually the best way to coordinate seeing me outside of office hours.

COURSE DESCRIPTION: Study of secondary science teaching and learning from the standpoints of theory and practice, curriculum objectives, materials and evaluation. The course will emphasize contemporary issues in biology ranging across the subdisciplines of molecular biology, physiology, evolution and environmental science. Examples of issues used to teach biological concepts are used including the Human Genome Project, DNA Fingerprinting, Cloning, Drug Addiction, Antibiotic Resistance, AIDS, Human Evolution, Acid Rain, Global Warming and other contemporary concepts relevant for middle and high school science classrooms and associated with the Texas Essential Knowledge and Skills (TEKS). Science content will be presented in contexts found in underlying issues presented in readings from current publications such as Time magazine, U.S. News & World Report and Newsweek as well as more traditional formats. Instruction regarding pedagogical foundations are those that are contained in the National Science Content Standards and Science Teaching Standards as prescribed by the National Science Education Standards, the National Science Teachers Association and the Texas Education Agency. Laboratory activities are either conducted in a computer laboratory and consist of topics examined by introductory videos and web searches or are more traditional “web laboratory” activities as are required by the state of Texas science teaching standards.

REQUIRED READINGS: Because this course is based on contemporary issues in biology, you will be expected to read selected articles from recent journals prior to class. These articles are available in WebCT as will supplemental readings, handouts, and other materials. If you would like to examine a biological concept in more detail after the lecture, a biology textbook such as Campbell and Reece’s Biology is a good resource.
OTHER RESOURCES: The instructor will make additional learning resources (e.g., books, handouts, reserve articles, software, websites) available during the semester. You will be given information about these resources. In addition, invited speakers may address various topics during this class.

STUDENT LEARNING OUTCOMES: This course gives students majoring in biology, chemistry, or physics (Teacher Certification) an opportunity to learn contemporary methods of teaching science content in middle/junior high schools and high schools. Emphasis will be placed on exploring appropriate models which reflect the nature, content and context of science teaching; the characteristics of students; and the nature of the instructional setting. The subject matter of science will serve as the vehicle to illustrate and develop an understanding of instruction.

The major course goal is to provide the pre-service science teacher with appropriate experiences for initial growth as a professional science teacher.

As a result of the course, the student will gain experiences in:
1. designing instruction for teaching the content and processes of science in a way that accounts for the nature of science and the nature of the learner;
2. utilizing specific teaching methods that encourage inquiry, discussion, laboratory activities, and knowledge construction;
3. modifying instruction to meet the varied needs, abilities and interests of student populations;
4. demonstrating an understanding of the interrelationships between science disciplines as well as between science and other academic areas;
5. developing a positive attitude toward science;
6. providing evidence of knowledge of ability to provide instruction relative to science-related societal issues;
7. becoming acquainted with current issues related to science education reform and realizing the inherent personal responsibility of upholding the professionalism required in science teaching;

ATTENDANCE POLICIES: I WILL BE TAKING ATTENDANCE AT EACH CLASS. STUDENTS ARE GIVEN ONE UNEXCUSED ABSENCE PER SEMESTER FOR THIS CLASS. AFTER THAT ABSENCE, THEY WILL RECEIVE A 10% DROP IN THEIR FINAL LETTER GRADE FOR EACH ADDITIONAL UNEXCUSED ABSENCE. LEAVING CLASS EARLY/ARRIVING LATE FOR CLASS WILL COUNT AS ½ ABSENCE.

Family vacations and celebrations of your 21st birthday are worthwhile, but are not classified as excused absences. If you book an airplane flight which conflicts with class, I do NOT consider that to be an excused absence. Routine events should be scheduled to avoid class conflicts. In general, only unavoidable absences are excused (major family illness or accidents, deaths, funerals).

Points missed because of an unexcused absence (including tardiness and leaving early) cannot be recovered. An excused absence allows us to make alternative arrangements.
for completing assignments. The documentation required for an absence to be excused must be…

- from an appropriate source (e.g., doctor, dentist, funeral director) who states the nature of the event that caused (or will cause) your absence.
- in writing, on official stationary, and signed. (I do not return excuses to you.) Telephone calls, FAXes, and e-mails are not acceptable.
- presented prior to the absence for a scheduled event (e.g., university-sponsored activity, recognized religious holiday, military service).
- presented no more than one week after the date of an unexpected absence.

**Unacceptable Excuses:** Only unavoidable absences are excused (see above), so you should schedule routine personal events (e.g., vacations, wedding, reunions, non-emergency medical or dental visits, parent-teacher conferences, household or auto repairs) to avoid conflicts with your classes. Oversleeping is never an acceptable excuse. Employment conflicts are not acceptable excuses for absences, tardiness, or leaving class early. Texas waves jury duty for students, so jury duty is not an acceptable excuse. If you arrange to take any test at an alternate time and do not show for that appointment, then you forfeit the opportunity to take the test except at its originally scheduled time.

**It is the responsibility of the student to obtain any material missed during an absence from his/her classmates.** It is always your responsibility to determine what happened in class or laboratory during your absence. If you are absent, you must obtain any handouts or assignments from me in my office on your own time: I rarely bring assignments to class more than once. You must obtain class notes from other students.

Special circumstances may warrant deviating from these guidelines (including administering a “make-up” examination) and will be refereed to the Vice President of Student Affairs. This also applies to any situations for which you cannot provide an acceptable excuse as outlined above.

**Except in cases were prior arrangements have been made with the instructor for university approved absences, there is no provision for making up late work and/or missed exams and quizzes.** Anyone arriving after someone has completed an examination and left the room will not be allowed to take that examination. If you leave an examination room, for any reason, you must hand in your answer sheet and you will not be allowed to resume the examination. In the event of an examination that is missed, regardless of circumstances regarding illness, absenteeism, death in the family, etc., NO make-up examinations will be administered as that grade will be dropped if it is the lowest grade.

***Please turn off all cell phones, beepers, Palm Pilots, etc., before entering the classroom or laboratory, or at least place them on silent mode.***
## EVALUATION

Points will be awarded for the following. Please refer to handouts for rubrics, criteria, and examples of completed assignments and examinations in order to identify expectations for these assignments. **Every student should have a clear idea of expectations prior to completion of the following assignments/test administration.** Any and all questions regarding expectations should be immediately referred to the instructor. Please do not wait until the day before the assignment is due to ask questions!

1. Three examinations @ 200 points each 600
2. Laboratory exercises: 4 @ 50 points 200
4. Lecture Quizes (each lecture) 10 points 200
5. Lesson Plans (4 @ 100 points each) 400 points

**Total:** 1400 points

**Scale:**

- A – 90% - 100%
- B – 80% - 89%
- C – 70% – 79%
- D – 60% - 69%

Note; the above evaluation schedule is subject to minor changes as we progress through the course. It is the student’s responsibility to check their course grades on WebCT and make sure that accuracy is maintained.

**Academic Integrity/Plagiarism:**

**Academic dishonesty will NOT be tolerated.** University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a grade of ‘F’ for the course and the offense will be reported to the student affairs office.
Dropping a Class:
I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with me before you decide to drop to be sure it is the best thing to do. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. November 7 is the last day to drop a class with an automatic grade of “W” this term.

Classroom/professional behavior:
Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

Grade Appeals:
As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at http://www.tamucc.edu/provost/university_rules/index.html, and the College of Science and Engineering Grade Appeals webpage (http://sci.tamucc.edu/students/GradeAppeal.html). For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

Disabilities Accommodations:
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call or visit Disability Services at (361) 825-5816 in Corpus Christi Hall 116.
If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

Statement of Academic Continuity:
In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

SMTE 4217: Foundations of Secondary Life Sciences
Scheduled Readings and Assignments Fall 2014

NOTE: Several readings will be updated as semester progresses. Please keep informed of these changes via instructor/fellow classmate.

Sept 8 2014
Lecture - Introduction, Scientific Method and Publication

Sept 15
Lecture - How People Learn/Active Study Strategies
Lecture - Understanding By Design/How to write your lesson plans

Sept 22nd
Lecture - Human Development and Stem Cells
Lesson Plan 1 – DNA, Human Development, Stem Cells

Sept 29
Lecture - DNA and Human Genome Project
Laboratory 1 – DNA and epigenetics

October 6
Exam I
Lesson Plan 2 – Reproductive System/Prostate Cancer/Alcohol and Human Health

October 13
Lecture - Smoking, Emphysema and Lung Cancer
Lesson Plan 3: Heart Disease/Smoking, Emphysema, Lung Cancer

October 20 – no class
Laboratory 2 Gene-Culture Co-evolution and Human Diet

October 27

Oct 8, Lecture: Heart Disease
Oct 10, Laboratory 3: heart Attacks

Nov 3rd
Lecture: Alcohol and Human Health
Lesson Plan 3: Heart Disease/Smoking, Emphysema, Lung Cancer

November 10
Lecture: Origin and Evolution of Life
Lecture: DVD Evolution: Why Bother?

November 17
Exam II (both lect. & lab)
Lecture - Parasites and Disease

November 24
Lecture: Exotic Species and the Environment
Laboratory 4: Global Warming

December 1
Lecture: Emerging Diseases
Lesson Plan 4 – Invasive Species/Global Warming/Evolution

Final Exam: Exam III
Monday December 8 11:00