**BIO 450/550 METHODS OF SCIENCE TEACHING – SPRING 2017**

I. Purpose

BIO 450/550 is a methods course for prospective teachers of biology,

chemistry and middle school science. This course provides practical

information about the types of methods and materials available to the

science teacher. Items pertinent to the PRAXIS exam will also be

covered. See Item X for additional requirements if taken for

graduate credit.

II. Text-none required

III. Activities/Requirements

A. Attain proficiency with OptixCam Digital Microscope Camera

B. Attain proficiency with C500W 5.0 mp Dual WiFi/USB Digital

Microscope Camera.

C. Teaching/laboratory supplies

Students will compile a list of approximately twelve reliable

suppliers of teaching/laboratory supplies and equipment. The

instructor will provide catalogs from the companies.

D. Observations

Twenty field hours of observations are required for this course

with documentation of interaction with students. The instructor

will provide Field Experience Summary Forms from the School of

Education for documentation. 200 hours are required before student

teaching.

E. "How To" Folder

Your "How To" folder will include a minimum of 30 classroom

activities, experiments, laboratory exercises and demonstrations.

You may include a wide variety of items including items from

teachers in the field. We will do a number of items in class such

as clean a microscope, extract DNA, paper chromatography of plant

pigments, etc. There will be an investigation of what types of

teaching aids are available on the internet including the Khan

Academy.

F. Watch DVDs including Making North America, Siberian Apocalypse, the

Day the Mesozoic Died, and Inconvenient Truth

G. PRAXIS review: There will be a comprehensive review of the book

*PRAXIS II Content Knowledge and/or Study Guide: Middle School Tests.*

Books will be provided.

Check Off Items

\_\_\_\_\_ OptixCam

\_\_\_\_\_ C500W WiFi/USB microscope camera

\_\_\_\_\_ Twelve sources of scientific supplies and teaching supplies

\_\_\_\_\_ How-to folder

\_\_\_\_\_ Completed 20 hours of observation with student interactions

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_. \_\_\_\_\_, \_\_\_\_\_ DVDs

\_\_\_\_\_ Completed PRAXIS review including practice tests

IV. Academic Requirements

A. Creationism Court Cases

Write a short synopsis of ten major court cases about teaching

creationism: *Epperson v. Arkansas, Segraves v. State of California,*

*McLean v. Arkansas Board of Education, Edwards v. Aguillard, Webster*

*v. New Lenox School District, John E. Peloza v. Capistrano Unified*

*School District, Freiler v. Tangipahoa Board of Education, Rodney*

*LeVake v. Independent school District 656, et al, Selman Et al. v.*

*Cobb County School District et al., Tammy Kitzmiller, et al. v.*

*Dover Area School District, et al.*

B. Next Generation Science Standards and Common Core

The instructor will provide information relative the Next Generation

Science Standards and the Common Core Standards. The student is to

write a short paper reviewing the history of and rationale for the

Next Generation Science Standards. Also, comment on some so-called

“controversial” topics included in the standards. A reference book,

*Next Generation Science Standards for States by States, Volume 1*,

The National Academies Press, 2013, ISBN-13 978-0-309-27227-8, will

be provided

C. Lesson Plans for a “Mini-unit” of instruction – 5 instructional days

This requirement has several goals or purposes. One is to

introduce the process of planning. A second purpose is to provide

experience in preparing and presenting lessons. This week of

instruction will consist of five lessons (5 instructional days) on a

particular topic in your field of study.

The “Source of Evidence” Lesson Plan is to be used.

Write daily lesson plans to tell how you would present your topic.

Use a variety of teaching techniques such as lecture, group

activities, demonstrations, laboratories, recitation, and problem

solving. Also, include the use of items such as overhead projector,

TV/VCR/DVD, computer, power point, SMART Board and chalkboard/

whiteboard. Identify the materials you would need and sources of

the materials. The Kahn Academy is to be incorporated into the

lesson plans.

Each lesson plan will comply with the new Next Generation Science

Standards.

If time permits, we might even practice teaching one or more

Lessons.

D. Examinations: There will be one take-home exam.

E. Eugenia Scott’s Book: Read Chapter One about science and complete

a handout.

F. Grading – all items must be completed to receive a grade

Check-off items -------------------------- 000 (must be completed)

Court cases ------------------------------ 100

Next Generation -------------------------- 100

Mini unit (5 days) with lesson plans) --- 200

Exams 1 @ 150 points each ---------------- 150

Eugenia Scott’s Chapter 1 ---------------- 20

TOTAL 570

V. Attendance

There are no "excused" absences; students are responsible for all

material covered in class. It is the student's responsibility to

borrow notes when they are absent. **The University Undergraduate**

**Attendance Policy will be followed in this class.** Recording devices

are not allowed in class.

VI. Praxis Review

The instructor will individualize instruction for middle school science

and secondary school biology by conducting:

A. a review of content knowledge for the middle school science component

of the Praxis Test. The book *The Complete* Middle *School Study Guide*

*for Science*, Workman Publishing, 2016, will also be reviewed.

B. a review of content knowledge for the Praxis II biology test.

In both cases, Praxis study guide books will be provided.

VII. Disability Statement

Campbellsville University is committed to reasonable accommodations for

students who have documented learning and physical disabilities as well

as medical or emotional conditions. If you have a documented

disability or condition of this nature, you may be eligible for

disability services. Documentation must be from a licensed

professional and current in terms of assessment. Please contact the

Coordinator of Disability Services at 270-789-5192, if needed.

VIII. Emergency Numbers – Campus Security

**270-403-3611 (cell)**

**270-789-5555**

IX. Sexual Misconduct Statement

Campbellsville University and its faculty are committed to assuring a

safe and productive educational environment for all students. In order

to meet this commitment and to comply with Title IX of the Education

Amendments of 1972 and guidance from the Office for Civil Rights, the

University requires all responsible employees, which includes faculty

members, to report incidents of sexual misconduct shared by students to

the University’s Title IX Coordinator. Additional information about

victims of sexual violence is available at:

www.campbellsville.edu/titleIX

Terry VanMeter, Title IX Coordinator

UPO 944

Office: Administration Building 8A

Phone: 270-789-5016

Email: twvanmeter@campbellsville.edu

X. Graduate Credit

To receive graduate credit for this course the student must complete the

following:

A. Keep a portfolio of ways to teach controversial topics such as

evolution, global warming & climate change, extinction, loss of

biodiversity, and the role of nutrition in obesity & diabetes

B. Research the GEMS curriculum and produce lessons plans

C. Research the Kahn Academy and identify some lessons that could be

used in the classroom

XI. Supplemental

Additional reading/video assignments may be included especially as it

pertains to geology, evolution and Next the Generation Science Standards.

Such assignments will be added to the “Check Off Items” list.