University of Arkansas, College of Education and Health Professions
Department of Curriculum and Instruction

1. Program Affiliation: Career and Technical Education: Technology and Engineering Education

1.1 Course Number and Title: TEED 1103: The Nature of Technology

Prerequisites: None

Meets: T/TH 9:30-10:45am, Peabody Hall 317

1.2 Instructor:
Vinson Carter, Ph.D.
vcarter@uark.edu
575-3076
314 Peabody Hall

1.3 Textbooks and/or Supplementary Materials

Required Texts:

International Technology and Engineering Education Association. (2000). *Standards for technological literacy: Content for the study of technology*. Reston, VA: Author.

This book can be downloaded for free as a PDF at:
http://www.iteaconnect.org/TAA/PDFs/xstnd.pdf

International Technology and Engineering Education Association. (1996). *Technology for All Americans*. Reston, VA: Author.

This book can be downloaded for free as a PDF at:
http://www.iteea.org/TAA/PDFs/Taa_RandS.pdf

National Academy of Engineering. (2002). *Technically speaking: Why all Americans need to know more about technology*. Washington, DC: Author.

This book can be downloaded for free as a PDF at:
http://www.nap.edu/catalog/10250/technically-speaking-why-all-americans-need-to-know-more-about

In addition to the University library, guest speakers, and journal articles distributed by the professor, the following reference materials will be used extensively:

Alcorn, P. (2003). *Social issues in technology: A format for investigation* (4th Ed.). Upper Saddle River, NJ: Prentice Hall.

Anderson, C. (2012). Makers: The new industrial revolution. New York: Crown Publishing.

Market, R.M. & Backer, P. B. (2010). *Contemporary technology: Innovations, issues, and perspectives.* (5th Ed.). Tinley Park, IL: Goodheart-Wilcox.

2. Course Description/Justification

2.1 Catalog Description: This introductory course in technology and engineering education focuses on the nature of technology. This is a foundational study of the close relationship between nature, emerging technologies, and technological literacy throughout history.

2.2 Relationship to Knowledge Base: This course supports the "Specialty Studies" component of the Scholar-Practitioner model by providing the teacher education candidate with a set of technological problem solving tools that can be used to develop curricula, deliver instruction, and guide learning in the technology and engineering education classroom. The course will model the methods expected in a contemporary technology and engineering education facility and expose the candidate to instructional strategies utilized throughout exemplary programs in the field.

3. Goals and Objectives

3.1 Goals

This course is designed to provide the candidate with a foundational understanding of the origins, impacts, and social implications of technological development.

All candidates pursuing degrees in the College of Education and Health Professions are expected to apply the principles of the conceptual framework as *Scholar Practitioners.* The scholar practitioner reflects a professional who is knowledgeable about subject matter and pedagogy; skillful in teaching and managing classrooms and schools; caring about students, families, school staff and the community; and constantly inquiring to better the profession and increase the success of students, schools and the community. The scholar practitioner is **knowledgeable, skillful, caring and inquiring** and is defined by the following tenets:

1. One who accesses, uses, or generates knowledge
2. One who plans, implements, and models best practices
3. One who understands, respects, and values diversity
4. One who is a developing professional and a lifelong learner
5. One who communicates, cooperates, and collaborates with others
6. One who makes decisions based upon ethical standards and professional criteria
7. One who is knowledgeable about teachers and teaching, learners and learning, and schools and schooling.

Technology: As with all teacher preparation coursework, students are expected to demonstrate technological competence in this course. This technological competence will be demonstrated through the use of the appropriate technological hardware and software as well as other web-based applications. Scholar-practitioners will utilize technology that enhances the instructional process during the completion on this course.

3.2. Objectives

Upon the completion of this course, students will be able to:

3.2.1. Demonstrate the ability to distinguish, differentiate and detail the relationships and departures between the natural and technological environments;

3.2.2. Draw comparisons between and within various academic fields and the study of technology;

3.2.3. Document the manners through which humans have adapted their environment through technological evolution;

3.2.4. Compare and contrast between indigenous technologies and those transported from society to society;

3.2.5. Describe the history and significant social, cultural, and political events that have shaped the development of technology;

3.2.6. Describe and be conversant with the role that technological development has on societal evolution;

3.2.7. Demonstrate the ability to communicate engineering and architectural design concepts through pictorial and multi-view drawings; and

3.2.8. Demonstrate the ability to utilize knowledge of technology to develop engaging curriculum for students.

4. Student Activities and Experiences

4.1. Assignments/Tasks

Grades for each student will be based on the following assignments:

4.1.1. Daily and weekly assignments (30 points)
Students will participate in ongoing daily and in-class design and engineering activities, assignments, readings, and discussion.

4.1.2. Anthropological Assignment (15 points)
Students will be required to submit and present an anthropological laboratory activity during the semester. This assignment will be developed in such a way as to illustrate the close relationship between early technologies and their natural inspirations. This laboratory activity will be submitted in a curricular format suitable for use in the elementary or secondary technology and engineering classroom education classroom and should be submitted both electronically and as a hard copy.

4.1.3. Technological Footprint Assignment (15 points) Students will be required to complete a personal “footprint” assignment to calculate their personal technological footprint on Earth.

4.1.4. Invention Project (15 points)
Students will be required to submit and present an invention project. This will be discussed further during the semester.

4.1.5. Technology Regression Project (15 points)
Students will participate in an overnight technology regression project. This will be discussed further during the semester.

4.1.6. Final Exam/Project (10 points)

5. Content Outline

5.1. From Nature to Technology

a. Natural inspiration
b. Strength through technology
c. Food, shelter, defense
d. Knowledge, art, control
e. Expanding human capacity

5.2. Technology as a motivating force

a. A geo-political force
b. Designing solutions for problems
c. Introducing solutions/introducing problems
d. The interaction between humans and technology
e. The dream of continual progress - Faster, stronger, better…
f. Technology and rationality
g. Famous failures
h. Technology changing society
i. Society changing technology

5.3. The relationships between technology & other disciplines

a. Mathematics
b. Science
c. Engineering
d. The arts and humanities

5.4. Solving Human Problems

a. Human Wants and Needs
b. Providing food, shelter, clothing
c. Expanding kingdoms
d. Military technology
e. Influences life patterns/geography
f. Influencing migration/change
g. Healthcare and life expectancy

5.5 Creating human problems

a. The Consequences of Technological Development
b. Overpopulation

c. Mass migration
d. Environmental and ecological issues
e. Creating false security
f. Expanding impacts and threats
g. Unexpected benefits, costs, and risks
h. The side effects

5.6 Indigenous Technologies

a. Temporary technologies
b. Geographically available technologies
c. Impacting values/cultures
d. Third World technology
e. Technology of the future

5.7 Teaching technology and nature

a. Curriculum development
b. Activity development
c. Student assessment

6. Evaluation Policies

6.1. The following scale will be used to determine the final grade in the course:

A=100-93; B=92-85; C=84-78; D=77-70; F-below 69.

7. Syllabus Change

The Instructor reserves the right to make changes as necessary to this syllabus. If changes are made, advance notification will be given to the class.

8. Academic Policies

8.1 Accommodations

Students with disabilities requesting reasonable accommodations must first register with the Center for Education Access (CEA). The CEA is located in the Arkansas Union, Room 104, and on the web at http://cea.uark.edu/. The CEA provides documentation to students with disabilities who must then provide this documentation to their course instructors. Students with disabilities should notify their course instructors of their need for reasonable accommodations in a timely manner to ensure sufficient time to arrange reasonable accommodation implementation and effectiveness. A typical time frame for arranging reasonable accommodations for students who are registered with the CEA is approximately one to two weeks.

8.2 Academic Integrity

The application of the University of Arkansas Academic Integrity Policy will be fully adhered to in this course. Grades and degrees earned by dishonest means devalue those earned by all students; therefore, it is important that students are aware of the University of Arkansas Academic Integrity Policy. Academic dishonesty involves acts, which may subvert or compromise the integrity of the educational process.

"As a core part of its mission, the University of Arkansas provides students with the opportunity to further their educational goals though programs of student and research in an environment that promotes freedom of inquiry and academic responsibility. Accomplishing this mission is only possible when intellectual honesty and individual integrity prevail."

"Each University of Arkansas student is required to be familiar with and abide by the university's Academic Integrity Policy' which may be found on the UA website. Students with questions about how these policies apply to a particular course or assignment should immediately contact their instructor."

The description of the Academic Integrity Policy is located at: http://provost.uark.edu/245.php

The Academic Integrity Sanction Rubric is located at: http://provost.uark.edu/246.php

8.3 Inclement Weather

For information regarding whether the university is closed or an inclement weather day is declared check the UA website and sign up for the RazALERT Emergency Notification System at http://emergency.uark.edu/16735.php.

8.4 Instructor Policies

Attendance

This course is reserved for candidates preparing to become professional teachers. Subsequently, the ethics and responsibilities of professional teachers will be expected of all participants. Candidates must attend class to receive the maximum benefit and to avoid leaving their professional responsibilities in the hands of classmates. Candidates will be allowed two "sick" days regardless if excused or unexcused, if needed. Additional absences will result in the lowering of one letter grade per absence in your final grade. Furthermore, two occasions of coming late to class or leaving early will be counted as one absence.

Candidates are expected to arrive early, stay focused and attentive during the class, and submit all required materials prior to the due date. Late work will not be accepted for full-credit.

Professionalism

All candidates are to complete their own work during the semester. Although candidates are allowed to share ideas and learn from one another throughout the semester, students are not allowed to copy another person's work. All assignments must be original and completed individually. All citations must be documented using the 6th edition of the APA manual (http://www.apastyle.org/, http://psychology.vanguard.edu/faculty/douglas-degelman/apa-style/)

Candidates are required to maintain professional decorum during class. Cell phones and other electronic devices must be turned off and out of sight during class. Inappropriate and disruptive classroom behavior (including the use of cell phones, iPads, laptops, and other electronic devices) will not be tolerated, and will result in the loss of points from daily and weekly assignments.