

Program and Course Development

ETE 5220

Spring - 2009
3 Semester Credits

COURSE SYLLABUS

“My High School Electronics teacher was another hero. He didn’t just use a course out of a book. He wrote his own courses. He wrote his own assignments. That’s how I run my computer classes now.” **Steve Wozniak, Inventor**

Instructor: Edward M. Reeve, Ph.D
Interim Vice Provost for International Education
Professor, Department of Engineering & Technology Education (ETE)
Utah State University
6000 Old Main Hill
Logan, Utah 84322-6000
Office Phone: (435) 797-3642 e-mail: ed.reeve@usu.edu

Class Schedule: Monday, Wednesday, & Friday: 9:30 a.m. - 10:20 a.m.

Class Materials Needed: 3-Ring Notebook, USB Flash Drive

Selected Readings:

ITEA (2000/2002). *Standards for Technological Literacy: Content for the Study of Technology*. Reston, VA: The International Technology Education Association (ITEA). Available at:

<http://www.iteaconnect.org/TAA/PDFs/xstnd.pdf>

ITEA (2003). *Advancing Excellence in Technological Literacy: Student Assessment, Professional Development, and Program Standards*. Reston, VA: The International Technology Education Association (ITEA). Available at:

<http://www.iteaconnect.org/TAA/PDFs/AETL.pdf>

Wiggins and McTighe (2005). *Understanding by Design*. Alexandria, VA: Association for Supervision and Curriculum Development (ASCD) - www.ascd.org

ITEA (2005). *Planning Learning: Developing Technology Curricula*. Reston, VA: The International Technology Education Association (ITEA)

Course Overview:

The purpose of this course is to review the basic principles and practices of curriculum development used in engineering and technology education (ETE) and career and technical education (CTE). The course will examine current curricula trends and will require the development of appropriate ETE and CTE curriculum materials, including a “curriculum unit” for a selected area of study. The course will also review a variety of ETE and CTE curriculums currently being used in the schools. In addition, the course will provide a good overview on the selection and assessment of appropriate curriculum resources.

Course Objectives:

At the completion of this course, you will be able to:

1. Define and explain the relationships between the various terms used in the field curriculum development, engineering and technology education (ETE), and career and technical education (CTE).
2. Discuss the purpose of the *Standards of Technological Literacy: Content for the Study of Technology* and how they can be used to develop standards-based curriculum.
3. Discuss the purpose of *Advancing Excellence in Technological Literacy: Student Assessment, Professional Development, and Program Standards* and how *Program Standards* are used in developing technology education curricula.
4. Explain the major concepts associated with *Backward Design*.
5. Develop a sample “curriculum unit” for a selected area of study.
6. Discuss state and national curriculum efforts, including those identified by Utah’s Classification of Instruction Programs (CIP codes) and Utah Pathways.
7. Identify appropriate instructional materials that can be used in the classroom to enhance the teaching and learning environment.
8. Evaluate a variety of curriculum units or programs developed for those who teach in engineering and technology education.
9. Provide an overview of curriculum materials developed for ETE and CTE “student organizations.”
10. Search and locate appropriate curriculum materials.
11. Use the Internet as an effective teaching and learning tool.
12. Discuss how to internationalize the curriculum.

Course Requirements:

1. Attend class regularly and “participate” in class discussions.
2. Complete all reading assignments and class activities. Selected assignments will have a due date and will be due at the beginning of class - materials turned in late will receive a 10% deduction in points.
3. Working in small groups, complete the appropriate research and development needed develop a “high quality” curriculum unit and its related materials.
4. Present information related to the ITEA Standards for Technological Literacy.
5. Critically evaluate selected engineering and technology education curricula.
6. Complete five quizzes, and a final exam.

Major Course Project:

A **curriculum** provides the “specifications” needed in the delivery course content. The specifications include information about the way content is delivered, including the structure, organization, balance, and presentation of content in the laboratory-classroom. All courses needed a curriculum and this is achieved through curriculum planning. **Curriculum planning** is the "process of logically sequencing subject matter so students can achieve the goals, standards and benchmarks they need to learn at each grade level."

Each school subject area (e.g., technology education) has courses (e.g., Foundations of Technology, Engineering Design, etc.) that need a well-developed curriculum. An individual course may have a **curriculum guide**, made up of **units**, that details what is to be taught in the course. In this course you will work in teams to develop a **Curriculum Unit** for a selected area of study.

There are many components associated with a **Curriculum Unit**. These components may include the following:

- *Introduction Section*: title page, table of contents, and recognition of the curriculum development team.
- *Course/Unit Introduction*: purpose or mission of the course, target population, and prerequisites.
- *Philosophy Section*: brief philosophy of the field of study and the philosophy of the course
- *Goals and Objectives for the Course/Unit*: listing of major course goals and major performance objectives for the course.
- *Standards/Competencies Addressed in the Course/Unit*: a listing of standards/competencies addressed in the course.
- *Curriculum Resource Materials*: including print-based materials (e.g., required textbooks, workbooks, and supplemental reading materials), and non-print materials (e.g., simulators, Internet sites, audio/video materials, and computer-based media).

- *Instructional Strategies used in the Course/Unit:* identification and description of recommended instructional strategies (e.g., cooperative learning, modular instruction, and problem solving).
- *Course/Unit Outline:* listing of the scope and sequence of major units of instruction and related lessons.
- *Course/Unit Activities:* student projects, portfolios, design briefs.
- *General Safety and Behavioral Rules.*
- *Evaluation/Assessment Section:* details of written and performance requirements.
- *Appendix:* course syllabus, sample activities, Vita of team members.

Basic Assumptions Related to Curriculum Development

- A quality curriculum development process addresses what students should know, be able to do, and be committed to (content), how it is taught (instruction), how it is measured (assessment), and how the educational system is organized (context).
- Every aspect of curriculum development should model inclusive, learner-centered instruction. Curriculum development should mirror the best teaching practices. Curriculum development, instruction, and assessment should be open, fair processes. Everyone involved must know the purposes for every activity, the materials or processes to be used, the definition of success, and the consequences of failure.
- The goal of a well developed curriculum is to encourage individuals to be independent, yet collaborate effectively; to be self-evaluative yet take others' perceptions into account; and to be voracious learners, yet commit themselves to a balanced education.
- Curriculum development should reflect the fact that students learn better when topics and concepts are tied together through interdisciplinary curriculum and thematic instruction.
- The curriculum development process must assume that students develop at different times; levels or stages must be looked at as ranges rather than specific grade levels or single-age categories.

NOTE: If a student has a disability that will likely require some accommodation by the instructor, the student must contact the instructor and document the disability through the Disability Resource Center, preferably during the first week of the course. Any requests for special considerations relating to attendance, pedagogy, taking of examinations, etc must be discussed with and approved by the instructor. In cooperation with the Disability Resource Center, course materials can be provided in alternative formats--large print, audio diskette or *Braille*.

COURSE OUTLINE

ETE 5220

Spring - 2009

- Week 1:**
1/5/09
- Course Introduction
 - The Second Installment of the ITEA/Gallup Poll and What It Reveals as to How Americans Think About Technology (Complete Discussion Sheet)
Available at: <http://www.iteaconnect.org/TAA/PDFs/GallupPoll2004.pdf>
 - Introduction to the *Standards for Technological Literacy: Content for the Study of Technology* (Complete Activity #1)
 - Technology Education Terminology (Handout)
- Week 2**
1/12
- Historical Perspective of Curriculum Development (PPT)
 - *Standards for Technological Literacy: Content for the Study of Technology* -- Activity #1 Presentations
- Week 3:**
1/19
- Holiday: Monday 01-19-09 - No Class**
- Introduction to Educational Standards (Reeve Paper)
 - Proposed Engineering Education Standards
 - Using Instructional Technology in Curriculum Development
- Week 4:**
1/26
- *Advancing Excellence in Technological Literacy: Program Standards*
Planning Curricula (Section 2)
 - Technology and Design (PPT)
- Week 5:**
2/2
- The Curriculum Development Process: Backward Design
 - Standards-Based Curriculum Development for Pre-Service and In-Service: A "Partnering" Approach Using Modified Backwards Design (*The Technology Teacher*, November 2004, pp. 26-29)
- Week 6:**
2/9
- The Curriculum Development Process: Standards-Base Curriculum, Development or Revision (Section 3)
 - Competency-Based Education
- Week 7:**
2/16
- Holiday: Monday 02-16-09** (Monday schedule of classes on Tuesday Feb. 17)
- Utah's Career Pathways & Courses
 - The Curriculum Development Process

- Week 8:** - The Curriculum Development Process
2/23 - Selection and Assessment of Curriculum Materials
- Week 9:** - Curriculum Unit Development
3/2 - Review of Selected Technology Education and Pre-engineering Curricula (e.g., CATTS, Project Lead the Way, Infinity, etc.)
- Week10:** **Spring Break - No Class**
3/9
- Week 11:** - Curriculum Unit Development
3/16 - Review of Technology Education and Pre-engineering Curricula
- *Skills USA, JETS, & Technology Student Association (TSA) & other*
- Technology & Engineering Related Competitions: see
<http://www.engineeringedu.com/competitions.html>
- Week 12:** **2009 ITEA Conference - No Classes Wednesday and Friday**
3/23 - Curriculum Unit Development
- Week 13:** - Internationalizing the Technology Education Curriculum
3/30 - Curriculum Unit Development
- Week 14:** - Evaluating Curricula (Section 4)
4/6 - Curriculum Unit Development
- Week 15:** - Curriculum Unit Presentations
4/13
- Week 16:** - Final Exam Review
4/20 - **Last Day of Class: 4/24/09**

FINAL EXAM: Wednesday, April 29, 2009 – 9:30 a.m. - 11:20 a.m.

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NAME: _____

Phone: _____ E-Mail _____

Course Requirements

Activity #1 (20 points) _____

Activity #2 (20 points) _____

Activity #3 (20 points) _____

Activity #4 (20 points) _____

Activity #5 (20 points) _____

Sample Curriculum Unit (100 points)..... _____

5 Quizzes

Quiz #1 _____ Quiz #2 _____ Quiz #3 _____ Quiz #4 _____

Quiz #5 _____ (50 points total)..... _____

Final Exam (50 points)..... _____

TOTAL POINTS (300) _____

Grading Scale

282 - 300 A	270 - 281 A-	
261 - 269 B+	249 - 260 B	240 - 248 B-
231 - 239 C+	219 - 230 C	210 - 218 C-
192 - 209 D+	180 - 191 D	