

Technology Education Program

Rhode Island College
Feinstein School of Education and Human Development
Department of Educational Studies

Fall 2009

Course Syllabus

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Office Hours: Monday

I COURSE TITLE: Tech 200 Technological Systems (3 Credits)

CLASS HOURS: Tuesday- Thurs 4:00 -5:00
ROOM: WH 101

II PREREQUISITES: None

III CLASS CONDUCT: *Communication Devices* – Out of courtesy for other students and the instructor, please silence all communication devices (phones and pagers, etc.) during class time so that we may learn and work together without interruption.

IV CATALOG DESCRIPTION: Provides an overview of the development, societal impacts, and implications of the use of technological systems. Introduces the concepts of systems design, technological literacy and the utilization of technology as a human adaptive system utilizing resources to solve social-technical problems. Activities incorporate design and problem-solving approaches.
(3 Credit Hours)

Relationship to Feinstein School and Professional Development

This course is designed to introduce students to Technology and Technological Systems. The study of technology will create awareness of the resources and their manipulation to create efficient technological systems. Historical and contemporary technology will be investigated to provide a view of the importance of innovation and invention in technological development. Issues related to technological systems impacts and relationships with the individual, society, and the environment will support appropriate problem solving and decision-making opportunities. The directed laboratory experiences emphasize the application of physical laws of science, data acquisition, and data analysis, giving participants appreciation and understanding of the basic principles of developing, using and assessing technological systems.

Students will reflect on, analyze, select, and implement new and contemporary methods, activities, and curricula related to technology education. Students will be introduced to technological principles and cross curricular opportunities to solve problems related to the development and understanding of technology. Students will be prepared to teach technological systems using strategies appropriate for pre-service teachers, guided by the Rhode Island Beginning Teacher Standards.

Participants in this course should benefit from a consistent best practice scenarios and the intentional use of models which explore global attitudes and diverse student populations in the technology education classroom. This technology education course is grounded in FSHED's Conceptual Framework and the PAR Model embrace by Rhode Island College.

- V **TEXT:** Fales, J., Kuetemeyer, V., & Brusica, S. (2004). *Technology: Today & Tomorrow*. 5th edition Lake Forest, IL: GLENCOE ISBN: 0-07-830892-1

Several readings will be provided by the instructor. A notebook is required for handouts and work sheets.

VI **CLASS ATTENDANCE POLICY:**

Students should attend all class meetings and are responsible for all class work and assignments. At the beginning of each semester, instructors will distribute a syllabus, which may include attendance and/or class participation as a component of the course grade. Students who are absent must take the initiative to determine from the instructor what course work can be made up. Students who are absent on the day of an examination should make every effort to call the instructor (or department office) before the scheduled test.

...All students who incur or anticipate an extended absence (five or more consecutive days or more) should call the Office of Student Life at 456 - 8061, so that notice (not an excuse) may be sent to instructors. (p. 38 RIC Student Handbook)

- The policy of this class is that after the third absence the final grade will be dropped one letter grade.
- Six absences from this class will result in a final grade of (F).
- Absences are considered excused **only** when official documentation of the nature of the absence is supplied by the student. (i.e. attending physician's notice, court documents, obituaries, field trip memo)
- All exams and quizzes will be taken at the scheduled time. Make-up exams and quizzes may not be provided unless proper documentation is presented.

VII **COURSE RATIONALE:**

This course introduces the student to the relationship and impact technology shares with the individual, society, and the environment. Providing students with the means to study technological systems will create awareness of the importance of technology to their lives and the lives of others before them.

Students will be given the chance to examine historical technological systems. Through the lens of history, they will evaluate the development, appropriateness, and efficiency of technological systems. This course provides insight to contemporary technological systems by examining innovation and invention.

VIII LABORATORY EXPERIENCES AND HOURS:

Although lecture is the main method of instruction for this class, there will be a number of activities that will require a few hours of outside work, usually 3 -6 hours per week. Open lab times will be posted. The regularly scheduled class period will be reserved for lectures, demonstrations and other activities.

IX Course Objectives:

Upon satisfactorily completing this course, the student will be able to:

1. Define the term “technology”.
2. Identify common systems and subsystems.
3. Use terminology related to technological systems.
4. Analyze the resources, applications, and outputs of technological systems.
5. Compare and contrast the benefits or limitations of a variety of technological systems.
6. Describe the impacts of technological systems on the individual, society, and the environment.
7. Evaluate the appropriateness of technological systems.
8. Design, produce, and use several technological systems.

X TENTATIVE TOPIC OUTLINE

- | | |
|----------------------------------|---|
| I. Introduction to Technology | b.Water
c.Atmospheric
d.Space |
| A. Definitions | |
| 1. Science | |
| 2. Humanities | |
| 3. Technology | |
| 4. Individual | |
| 5. Environment | |
| B. Elements of Modern Technology | |
| 1.Technical Systems | |
| a.Mechanical | |
| b.Electronic | |
| c.Pneumatic | |
| d.Hydraulic | |
| 2.Human (Societal) Systems | |
| a.Economic | |
| b.Political (Government) | |
| c.Education | |
| d.Family (Personal) | |
| e.Religion | |
| 3.Natural (Environmental) | |
| a.Land | |
| | II. History / Development |
| | A. Ancient Technologies |
| | 1.Early Applications in Technology |
| | 2.Primitive Inventions & Inventors |
| | 3.Innovation |
| | B. Technologies of the Agricultural Society |
| | 1.Foundational Developments |
| | 2.Technological Systems |
| | C. Industrial Revolution |
| | 1.Early Cottage Industries |
| | 2.Industrial Age in England (post-1750) |
| | 3.Factory System in America |
| | 4.European & Asian Development |
| | 5.Recent Third World Development |
| | 6.Resource and environmental changes |
| | D. 19th Century Developments |
| | 1.Inventions/Inventors of the 1800's |
| | 2.Advancing Technological Systems |
| | E. Technologies of the 20th Century |
| | 1.Modern Inventions/Inventors |

2. Trends of the Information Age

3. Invention & Innovation

F. Future (21st century) Developments

III. Managed Technological Systems

A. Communication

1. Inputs of Human (Individual) vs. Mass Media
2. Technical Processes
3. Typical Output (Graphic, Audio, etc.)

B. Construction

1. Inputs to Residential, Commercial, & Industrial Systems
2. Technical Processes
3. Typical Outputs (Civil Structures, etc.)

C. Manufacturing

1. Inputs
2. Technical Processes
3. Typical Outputs

D. Transportation

1. Inputs to Human vs. Cargo Systems
2. Technical Processes
3. Typical Outputs (Relocated Goods & People)

E. Related Production Activities

1. Harvesting (Fishing, Agricultural, Forestry, etc.)
2. Extracting (Mining, Petroleum Drilling, etc.)
3. Bio-Technologies

IV. Impacts of Technology

(Human Problems & Technological Issues)

A. Resources

1. Materials (Renewable & Non-Renewable)
2. Agricultural & Food
3. Energy

B. Global Issues

1. Population Growth & Trends
2. Education
3. Economic
4. Defense
5. Social
6. Geopolitical

C. Emerging Technologies

1. Medical
2. Nuclear
3. Bio-Technologies/Agricultural
4. Communication (Fiber Optics, etc.)
5. Aerospace
6. Materials (Composites)
7. Ocean Studies

D. Environmental Impacts

1. Appropriate Technologies
2. Pollution
3. Recycling
4. Efficiency
5. Aesthetics
6. Resource Availability
7. Social
8. Conversion Processes

E. Culture

1. Needs
2. Attitudes
3. Beliefs/Values
4. Industrial countries
5. Developing countries

F. Adaptation

1. Input
2. Output
3. Favorable Outcomes
4. Undesirable Outcomes
5. Solutions / Cause

V. Technology in the Future

A. Global Trends

B. Futuristics

C. Alternatives

D. Materials

E. Societal Impacts

F. Personal Impacts

G. Adaptability

H. Evolution

I. Transferable Skills

J. Technology Assessment

XI METHODS OF INSTRUCTION:

Instructional strategies to reinforce content will include:

- Lecture
- Individual reports
- Individual projects
- Laboratory demonstrations
- Group interaction /Seminar
- Discussion / Question and Answer

XII EVALUATION:

Technological Systems

Final Grades

MID-TERM	10%
Construction/Historic homes	10%
2 Reaction Papers	10%
Technology visits (2) One page reaction paper	30%
10 page paper History of technology education	20%
Technology Timeline	20%
	100%

Final course grades are assigned on the basis of total points earned from exams, projects and attendance (class participation). All points earned during the semester will be totaled and a percentage will be determined from the points earned. The final grade will be determined from the following percentages:

Grade Scale:

A	100% - 96%	C+	79% - 76%
A-	95% - 90%	C	75% - 71%
B +	89% - 86%	C-	70%
B	85% - 81%	D	69% - 60%
B-	80	F	59% or less

XII FINAL EXAM DATE:

When the examination schedule for RIC is posted, students will be notified of the date for the final exam.

XIII

Selected Bibliographic Materials

Barbour, I. G. (1980). *Technology, Environment, and Human Values*. New York, NY: Praeger.

Brennan, R. P. (1990). *Levitating Trains & Kamikaze Genes*. New York: Harper

Burke, J. (1978). *Connections*. Boston, MA: Little, Brown, and Company.

Cross, G. and Szostak, R. (1995). *Technology and American Society*. Englewood Cliffs, NJ: Prentice Hall.

Hutchinson, J. & Karsnitz, J. (1994). *Design and Problem Solving in Technology*. Albany, NY: Delmar.

International Technology Education Association. (2000). *Standards for Technological Literacy: Content for the Study of Technology*. Reston, VA: International Technology Education Association.

Marcus, A. I. & Segal, H. P. (1989). *Technology in America: A Brief History*. San Diego, CA: Harcourt Brace Jovanovich.

Schwartz, M. (1990). *Machines, Buildings, Weaponary of Biblical Times*. Old Tappan,NJ: Revell.

Stephenson, L. and Byerly, H. (1995). *The Many Faces of Science: An Introduction to Scientists, Values & Society*. Boulder, CO: Westview.

Tenner, E. (1997) *Why Things Bite Back : Technology and the Revenge of Unintended Consequences*. New York : Knopf

Volti, R. (1995). *Society and Technological Change*. New York, NY: St. Martin's Press.

Web Resources You Should Use

Flight - <http://www.centennialofflight.gov/>

NASA Spin-Offs - http://nasasolutions.com/at_home.html

Construction - <http://www.pbs.org/wgbh/buildingbig/>

Technology - <http://express.howstuffworks.com/default.htm>

City in Space Project - <http://www.cnn.com/SPECIALS/space/station/briefing/>

Unmanned Flight - <http://www.dfrc.nasa.gov/Projects/Erast/helios.html>

History of Technology Link - <http://shot.jhu.edu/links.htm>

Technology in America- <http://www.pbs.org/wgbh/amex/technology/>

Tentative Schedule
Tuesday & Thursday
4:00 - 5:00

TECH 200 Technological Systems

Fall 2009

Schedule TBT : First Class