

Appropriate Technological Development

ETES 5100/7100

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Course Description:

This course is designed to provide students with an overview of contemporary problems facing the appropriate sustainable technology movement and to encourage the development of specific problem solving techniques to meet world needs. Topics such as affordable and efficient energy systems, waste management and recycling, bioregional development, community and shelter design, technology transfer methodology will be studied and discussed. Each student will have the opportunity to explore in-depth a problem of their choosing and will be given guidance in the identification, definition, and analysis of their chosen problem. Both research and prototype or model construction will be required.

Course Objectives:

1. Describe the philosophical underpinnings and rationale behind appropriate technology and sustainable technological development.
2. Identify contemporary trends in and problems facing appropriate technology and sustainable technological development movements.
3. Clarify the criteria to consider when developing sustainable appropriate technology.
4. Utilize effective problem-solving and design processes in the development and construction of a working prototype of an appropriate technological device that could be utilized to meet specific needs within an underdeveloped region.
5. Determine ways of integrating the ideas and concepts of sustainable appropriate technology within the technology education curriculum.

Textbooks: Appropriate Technology: Tools, Choices, and Implications by Hazeltine & Bull
© 1999 ISBN 0-12-335190-1
Appropriate Technology for Sustainable Living edited by Robert C. Wicklein
© 2001 ISBN 0-07-825813-8

Classroom Culture

Active Learning. I believe in active classroom participation as a foundation for learning. As a teacher, I want to be more of a facilitator than a stand-up lecturer. My job is to help you learn. Philosophically, I expect you to take charge of your own learning. You should expect to share what you have learned with the class. Each session will feature an open forum where alternative opinions are welcome and expected. Further, I believe that challenging college courses should be targeted as close as possible to your needs as an adult learner. I am relying on you to openly represent your learning interests and needs.

Major Course Assignments:

1. Philosophy & Rationale

Prepare a well-documented (researched) report that documents ***your*** philosophy behind and the rationale for sustainable appropriate technology. You should answer the question: *How could I describe and explain the primary issues and concerns for the appropriate sustainable technology movement?* Think of this assignment as the foundation for all future considerations in this topic. Your paper should be no less than three pages in length and no more than five pages in length. It should be well documented (no less than 5 citations and references) and strictly follow APA format guidelines.

This assignment is worth 10% of the final grade.

2. Trends Presentation

Each student will take an active role in this course by leading a class discussion(s) on a specific trend (assigned) impacting on appropriate technology or sustainable technological development. Based on assigned readings or other identified materials you will need to prepare an oral report in conjunction with an electronic presentation (e.g., Power Point ®) and provide copies of your presentation and any other pertinent materials to class members. Each presentation will need to be comprehensive in nature therefore; additional research will need to be done that transcends the assigned reading materials. You will be evaluated based on the background research level, comprehensiveness, and overall quality of the presentation. A copy of your electronic presentation must accompany your oral presentation (computer disk and paper copy).

This assignment is worth 10% of the final grade.

3. AT Design Criteria Planning (teamwork)

Select a specific developing country to research and identify a basic unmet need or problem where an appropriate technological solution could yield positive results. Analyze and identify the principal design criteria to be considered when developing sustainable appropriate technological solutions in developing countries. Serious analysis must be considered when specifying a technological solution within a developing country. What are these design criteria, what does one need to consider before proposing a technological “fix” within a developing country? Work toward a comprehensive review of all design considerations, including: sociological issues, levels of technological literacy, financial limitations, sustainability of technological device(s), and opportunities of success, etc., etc. You will need to include the following sections within your design criteria:

- a) Identified developing country (background, map, photographs, etc.)
- b) Researched basic problem and rationale for technological solution (show clear connection between problem and proposed device)
- c) Identify the appropriate technological device that you propose to solve the problem (specific AT device or tool)
- d) Discuss the design criteria to be considered and connect with the selected AT device (integrating the design criteria with the AT device)
- e) Organization of AT planning document

Connect and apply this assignment with the prototype/model developed in the identified country/region of assignment #4. Present your analysis in the form of a report (4-6 pages) following strict APA format guidelines.

This assignment is worth 20% of the final grade.

4. AT Prototype / Working Model (teamwork)

Design and develop a working prototype or model of a technological device that you believe will solve the identified problem as identified in assignment #3. You will need to include the following sections within your design/solution:

- a) Design of appropriate technological device (include: design criteria [see assignment #3] and technical drawing including parts list)
- b) Utilization of engineering design notebook techniques (include research documentation, photographs, etc.)
- c) Constructed working prototype or model of the appropriate technological device (device must demonstrate function – no static display)
- d) Organization of all documentation (highlight and separate all appropriate segments)
- e) Presentation of results (written report, technical drawings/parts, prototype/model, oral presentation)

This assignment is worth 25% of the final grade.

5. Unannounced Quizzes.

Four (4) unannounced quizzes will be administered during the semester. Quizzes will be objective in nature and will be specific to the assigned reading scheduled for the date when the quiz is administered. This assignment is designed to encourage students to be fully vested in required reading for this course. Each quiz will be worth 5 points or 5% of your grade.

This assignment is worth 20% of the final grade.

6. Appropriate Technology in the Technology Education Curriculum

Design and develop a curriculum plan that could integrate sustainable appropriate technology concepts and activities within a technology education curriculum. Your curriculum plan should include:

- a) Rationale section describing the suitability of AT within the technology curriculum along with an overall curriculum design structure showing how AT could be integrated into the curriculum.
- b) Specific instructional activity (minimum of 2-3 day activity, preferably more comprehensive) that focuses on an AT topic, requiring students to develop problem solving and critical thinking skills reflective of the AT philosophy (incorporate aspects of assignments 1-4).

Include the following:

- a. Introduction/Description
 - b. Identification of the Problem/Topic
 - c. Goals/Objectives
 - d. Design Constraints
 - e. Documentation for Student Review (what you want them to study)
 - f. Evaluation Matrix
 - g. References/Additional Documentation
- c) Provide all references and documentations that support the curriculum plan
You will be evaluated based on your creativeness and comprehensive explanation of your curriculum design.

This assignment is worth 15% of the final grade.

Evaluation

Assignment	Point Value
Philosophy/Rationale Research Report	10
AT Trends Presentation	10
AT Design Planning	20
AT Prototype/Working Model	25
Unannounced Quizzes	20
AT in the Technology Education Curriculum	15
TOTAL	100

This scale will be used objectively in assigning grades. There is no grading curve in this course. For example, a student with a final percentage of 89.9% will receive a "B" regardless of how "close" it may be to an "A." You are responsible to give yourself whatever "safety zone" you feel is necessary to attain your targeted grade.

Attendance/Participation:

Attendance is crucial especially considering the density of facts, concepts, principles, and procedures covered in each class. Missing even one class could set you seriously behind. Realize that if you are absent, even for valid reasons, you are responsible for the material and assignments discussed in each and every class. In addition, I expect each participant to take an active role by contributing and sharing thoughts and ideas, taking initiative, and seeking to help other members of the class. Each participant is expected to remain open to new ideas and different points of view.

Attendance records will be recorded at the beginning and at the conclusion of each class meeting. *Your grade in this class will be dropped 3% points for the second unexcused absence and you will be removed from the class role after three (3) unexcused absences. In addition, tardiness will result in a 3% point reduction in grade if more than two (2) unexcused tardy attendances occur.* I reserve the right to amend these rules at my discretion.

Late Assignments

I expect assignments to be completed on time. My standard policy regarding assignments is 10% penalty for late assignments turned in within 1 week of due date and 50% penalty for assignments turned in thereafter until the end of the course (defined as the last regular class session). I use this system even in the event of "excusables," such as minor sicknesses or other unforeseen conflicts. However, any exceptions to this policy are made at my discretion.

Honesty

Cheating on class assignments, examinations, or other serious forms of academic activities will result in a grade of an "F" (and a required report to University officials). Persons "borrowing" someone else's work on an assignment will receive a zero on that assignment if it is the first offense. A second offense will be considered a serious form of academic dishonesty. (Borrowee is equally subject to penalties.) Refer to UGA's *A Culture of Honesty: Policies and procedures on academic honesty*.

Withdrawal/Drop Policy

Drop policy is as described in the university catalog, page 32.