TEC 275
Power Technology
COURSE SYLLABUS
1.0 Credit Hour
Fall 2010
Berea College
Technology and Industrial Arts
Web Site: http://www.berea.edu/tia/default.asp

Class Meetings:
   Danforth TIA - 112B
   TTR: 9:00am – 11:50am
   Open Lab: As scheduled

Instructor:
   Mark Patrick Mahoney, PhD

Office:
   Danforth Technology and Industrial Arts building
   Room 101C

Office Hours:
   8:00 am – 10:00 am, MWF
   Or by Appointment

Phone:
   (859) 985-3060 (office)
   (860)944-2505 (cellular)

Email:
   mahoneym@berea.edu

Mission:
The objective of the program is to provide students with a broad professional and liberal-arts education necessary for entrance into careers or into professional or graduate schools. Course work is provided in the areas of engineering graphics, manufacturing technology, electricity/electronics, power technology, graphic communication, photography, Appalachian crafts, quality control, computer integrated manufacturing, robotics, and CAD/CAM/CNC. Throughout the program, emphasis is placed on aspects of creativity, quality, originality, and inventiveness in solving problems of design and production.
Description:
A study of the design and operation of power-related devices with provision for in-depth study and research. Topics may include power-conversion systems, power-transfer systems, and alternative energy.

Rationale:
To align student skills with the demands and expectations of the current educational and industrial focus toward science, technology, engineering, and mathematics. Refer to websites for Technology for All Americans (http://www.iteaconnect.org/TAA/TAA.html), International Technology Education Association (http://www.iteaconnect.org), Accreditation Board for Engineering and Technology (http://www.abet.org/), and Association of Technology Management, and Applied Engineering (http://atmae.org/).

Course Objectives:
The student will be able to:
- Define energy and power
- Analyze forms of energy and power
- List major energy and power resources/applications
- Analyze energy and power transfer/conversion systems
- Explain the applications of energy, power, and power transmissions
- Describe the basic principles of alternative energy systems
- Identify and explain varied transportation applications
- Describe various engine designs

Course Content:
The semester will be divided into the following modules:
- Energy
  - Forms of energy
  - Energy transfer and conversions
  - Current and historical applications of energy
  - Environmental concerns
  - Alternative forms/applications
- Power
  - Current and historical applications of power
  - Forms of power/power transmission
  - Mechanical power/power transmission
  - Hydraulic and Pneumatic power/power transmission
  - Electrical power/power transmission
- Transportation applications

Assessment:
Student overall performance will be compiled using the following criteria via rubrics provided as needed:
- Weekly Project Performance:
  - number of projects may vary during quarter due to time and class progression
conducted in both group and individual activities
- all rubrics will examine elements of function, design, creativity and quality
- exploration of all aspects of technology, both individually and combined

- Research Projects:
  - number of research specific projects to be determined by flow of course
  - all topics must be approved by class instructor prior to beginning research

- Presentation Evaluations:
  - may be assessed by both the instructor and fellow students via checklist/notated observations
  - will allow students opportunity to become professionally prepared for their field of study

Grading Scale:

Project/Research Performance:
  1 project = 100 possible points
  4 probable projects = 400 possible points

Project/Research Presentation:
  1 Presentation = 100 possible points

Participation/attendance:
  Full Participation = 100 possible points

Final Exam:
  1 take home exam: 200 possible points

Total possible points = 800
  (may be adjusted per total points obtained)

A = 800 - 725
B = 724 - 650
C = 649 - 575
D = 574 - 500

Required Materials:
Textbook:
Calculator:
  TI 83 or equivalent
Notebook
Writing Utensils
Project Materials
  (advance notice will be given prior to use)
Expectations:

Academic Dishonesty:
Students are expected to be scrupulous in their observance of high standards of honesty in regard to tests, assignments, term papers, and all other procedures relating to class work. Academic dishonesty as used here includes, but is not limited to, plagiarism, cheating on examinations, theft of examinations or other materials from an instructor's files or office or from a room in which these are being copied, copying of an instructor's test material without the permission of the instructor, theft of computer files from another person, or attributing to one's self the work of others, with or without the others' permission. Falsification of an academic record with intent to improve one's academic standing shall also be construed to be academic dishonesty. (Any suspected violation will be reported to the Director of Academic Services and/or the Student Admissions and Academic Standing Committee)

Disability Services:
A Disability Services Coordinator is available to assist students with disabilities in anticipating and planning for their full participation in the academic, labor, and social programs of Berea College. The Coordinator acts as a liaison with other College departments and offices in arranging responses appropriate to the student’s particular situation. Some of the services available to qualifying students with disabilities include: communication with faculty and adviser regarding student needs; accessible classroom and housing; determination of appropriate accommodations; classroom accommodations or modifications; assistance with obtaining recorded textbooks; peer tutors; extended testing time; and information and referral for additional services. Students who have a disability that may prevent them from fully demonstrating their abilities should contact the Disability Services Coordinator, Cindy Reed at (859) 985-3212, or e-mail cynthia_reed@berea.edu, to discuss accommodations necessary to ensure full participation in this course. Upon request, this syllabus can be made available in alternative forms.

Non-Discrimination Policy:
It is the policy of Berea College not to discriminate on the basis of race, color, religion, national or ethnic origin, age, sex, disability, or sexual orientation in its educational programs, admissions practices, scholarship and loan programs, athletics and other school-administered activities or employment practices. This policy is in compliance with the requirements of Title VII of the Civil Rights Act of 1962, Title IX of the Educational Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1990, regulations of the Internal Revenue Service, and all other applicable federal, state and local statutes, ordinances and regulations. Questions or complaints regarding discrimination should be referred to the office or committee responsible for the activity concerned, e.g. sports, student labor, academic courses. In addition, the College has appointed compliance officers under provision of law regarding sex and handicap discrimination. The Vice President for Business and Administration is Section 504 Coordinator. Questions or complaints in the area of handicap discrimination should be referred to Steve Karcher in 230 Lincoln Hall, at ext.3131. Dreama Gentry is Title VII/Title IX Coordinator. Sex discrimination questions or complaints may be directed to her at the GEAR UP office in the Middletown School, 439 Walnut Meadow Road, via email at dreama_gentry@berea.edu, or by phone at 985-3853.
Technology Commitment:

Student are expected to demonstrate an acceptable competence in the use of education technology as a tool to help future students learn and to have conceptual understanding of how knowledge, skills and dispositions related to educational and information technology are integrated across the curriculum, instruction, assessments and evaluations.

Attendance:

It is extremely imperative that you attend every scheduled class meeting on time and prepared. The following guidelines have been developed to aid in that condition:

- A reduction of one letter grade will be administered for each additional absence beyond the maximum allotment of three course absences (unexcused) during the duration of the course.
- After six absences, no credit will be earned for the course (excused or unexcused). Special circumstances to this rule must be presented to and approved by the instructor prior to the attaining the absence maximum.
- Arriving late to class (more than 5 minutes after the start of class) on three occasions is equivalent to an absence regardless work preformed and/or extended time committed.
- To avoid penalty of an absence, a student must be actively engaged in the class activity and not just simply present.
- If a student were to arrive to class and be unable to participate due to reasons either not discussed or considered inappropriate by the institution, a penalty of an absence will be administered.
- The student must remain in the class throughout the duration of the class unless otherwise excused by the instructor.
- If a student is to be absent (excused), proper notification must be made at least 24 hours in advance with appropriate documentation using the communication medium provided.
- In the case of an emergency, later notification is acceptable; however documentation will be required within three days of the absence to be excused.
- Material, Exams and/or Projects that are missed by a student due to an unexcused absence will not be re-submitted or allowed to be “made up.”