Syllabus
BENG499-002 Fall 2014 Engineering World Health

Instructor: Jeffrey Leaf
Office: Engineering Building, room 3707
Email: jleaf@gmu.edu

Teaching Assistants:
None.

Sections
CRN: 81573

Textbook
Additional course information found at http://sites.google.com/site/bengeqrepair and on Blackboard.

Teaching Assistant
None

Office Hours
After class, by appointment. Other times may be arranged by appointment.

If you cannot attend the provided office hours, please feel free to contact me via email at jleaf@gmu.edu with questions that you have, or to schedule an alternate meeting time.

Note when contacting Mr. Leaf:
Correspondence will only be answered if directed to jleaf@gmu.edu. The subject line will read: 81573, (your last name, first initial), topic of email. Anything else will be ignored.

Course Goals

• Being aware of differences in working in hospitals in rural Guatemala
  • Workers who may not speak English
  • Rural way of life in Guatemala
    • Cleanliness
    • Food
    • Living conditions
  • Lack of easy access to materials needed for repairs
• Being able to use all of the tools in their toolkit
  • Knowing what each one does
  • Knowing when to use each
• Becoming a Critical Thinker
• Knowing what questions to ask to troubleshoot equipment problems
• Knowing how to find the answers to those questions
• Being aware of the equipment that may be found
  • Function
  • Methods to achieve the function
  • Possible sources of failure
  • Knowing how to relate Item 3 to the particular piece of equipment
• Knowing the technical systems that may be encountered
  • Electrical
    • Control systems
    • Sensing
    • Motors
  • Hydraulic
    • Tubing
    • Fittings
    • Valves
      • Shut-off
      • Check
  • Pneumatic
    • Snoop for leaks
    • Tubing
    • Valves
    • Fittings
  • Mechanical
    • Bearings/bushings
    • Lubrication/friction
      • Coefficient between materials
    • Rotating equipment
      • Gears
        • Spur
        • Helical
        • Worm
      • Sprockets and chains
      • Pulleys and belts
  • Slides
  • Heat transfer
    • Radiators
    • Heat sinks
      • Thermal grease

**Evaluation and Grading**

Grading:

94.00  A        74.00  C
90.00  A-       70.00  C-
87.00  B+       60.00  D
84.00  B        <60   F
80.00  B-
The grade earned for the course will be comprised of the following components:

- Mastery of techniques 30%
- Equipment Presentations 30%
- Assignments 20%
- Participation 20%

**NOTE:** Students are expected to follow directions. Graded work includes 20% of the point value for following directions. You will not earn full credit for the assignment if directions are not followed.

**Pet Peeves**

- Interfering with other students listening and learning in class
- Cell phones going off in class
- Students on computers in class
- Students not turning in assignments and giving lame excuses
- Students groveling and grubbing for points

**So don’t.**

**Exam and Honor Code Policy**

No make-up exams will be given unless pre-arranged. If verifiable and unpreventable circumstances occur, notify me before the beginning of the test. Don’t take a road trip right before an exam.

All work submitted must be the original work of the student whose name appears on the submittal. The Mason Honor Code will be strictly enforced.

**Schedule**

- Class 1  Intro
- 2  Culture
- 3  Soldering
- 4  Desoldering
- 5  Bridges/Measurements
- 6  Build an LED Flashlight
- 7  Build a Defibrillator Tester
- 8  Troubleshooting
- 9  Power Supplies
- 10  Power Supplies
- 11  Troubleshooting
- 12  Mechanics
- 13  Mechanics
- 14  Friction
- 15  Lubrication
Attendance

Attendance in class is mandatory. Failure to attend class will adversely affect your final grade. You are responsible for all material covered in class. **Note: classroom notes are extremely important.**

Homework

Homework may be assigned each class, covering the material discussed in class and to prepare for the next class. Homework is due by the beginning of the next class. If you have a problem with the submission deadline you must speak to me in advance to make alternate arrangements. All assignments will be found on Blackboard.

Homework is essential to learning the material. You should make an honest and conscientious effort on all of the homework assignments.

Homework assignments will be accepted up to one (1) week late for up to half-credit. Any scanned sketches or photos will be submitted in PDF format only.

Each homework problem will be graded according to the following scale:

0  No significant effort was demonstrated to complete the assignment or solve the problem.
5  A partial effort was demonstrated to complete the assignment or solve the problem.
10 A significant effort was demonstrated to complete the assignment or solve the problem.

Do not forget that 20% of grading is to demonstrate that you can follow directions.

Homework Submittal

Homework is to be submitted to Blackboard unless specified otherwise. **Note: Written assignments should be written and saved in a word processor, then pasted in the appropriate block or uploaded in Blackboard.**

Disclaimer: This syllabus is subject to change. Students will be notified in advance of changes in time to adjust.