Syllabus

BENG 499-600 Fall 2015 Engineering World Health
Time: W – 7:20 PM – 10:00 PM
Location: 3905

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

Teaching Assistants:
None.

Sections
CRN: 81835

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

Teaching Assistant
None

Office Hours
Before and 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: Course CRN#, (your last name, first initial), topic of email. Anything else will be ignored.

Course Goals

1) Being aware of differences in working in hospitals in rural Guatemala
   a) Workers who may not speak English
   b) Rural way of life in Guatemala
   c) Cleanliness
d) Food  
e) Living conditions  
f) Lack of easy access to materials needed for repairs  

2) Being able to use all of the tools in the toolkit  
a) Knowing what each one does  
b) Knowing when to use each  

3) Becoming a Critical Thinker  
a) Knowing what questions to ask to troubleshoot equipment problems  
b) Knowing how to find the answers to those questions  

4) Being aware of the equipment that may be found  
a) Function  
b) Methods to achieve the function  
c) Possible sources of failure  
d) Knowing how to relate Item 3 to the particular piece of equipment  

5) Knowing the technical systems that may be encountered  
a) Electrical  
b) Control systems  
c) Sensing  
d) Motors  
e) Hydraulic  
f) Tubing  
g) Fittings  
h) Valves  
   i) Shut-off  
   ii) Check  
   i) Pneumatic  
   j) Snoop for leaks  

6) Mechanical  
a) Bearings/bushings  
b) Lubrication/friction  
c) Coefficient between materials  
d) Rotating equipment  
e) Gears  
   i) Spur  
   ii) Helical  
   iii) Worm  

7) Sprockets and chains  
8) Pulleys and belts  

9) Slides  
10) Heat transfer  
a) Radiators  
b) Heat sinks
c) Thermal grease

**Evaluation and Grading**

Grading:

- 94.00 A
- 90.00 A-
- 87.00 B+
- 84.00 B
- 80.00 B-
- 77.00 C+
- 74.00 C
- 70.00 C-
- 60.00 D
- <60 F

The grade earned for the course will be comprised of the following components:

- Mastery of techniques: 20%
- Equipment Presentations: 40%
- Testing: 20%
- Participation: 10%
- Culminating Activity: 10%

**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, Tools
2 Soldering/desoldering/splicing
3 Electronics
4 Electronics
5 Electronics/Power Supplies
6 Sensing/Troubleshooting
7 Specific Hospital Equipment
8 Specific Hospital Equipment
9 Specific Hospital Equipment
10 Specific Hospital Equipment
11 Culture/Trip Info
12 Mechanics
13 Mechanics
14 Wrap up

**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.**

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