Course Description:
3 hours. This course teaches students how to design and manufacture microcontroller-based embedded computer systems. Course topics include printed circuit board design and fabrication, I/O interface design, I/O peripheral devices, and data communication interfaces. Real-time operating systems and their integration into an embedded system will be examined. Design projects involve the construction and programming of a microcontroller-based embedded system. Two lectures and one three-hour laboratory per week. Additional course fee is required.

Prerequisite: ENGE 311 Electronic Devices and Circuits and ENGE 320 Microprocessor Architecture.

Required Texts:
None.

Course Web Page:
https://engr.georgefox.edu/ENGE420/

Course E-mail list:
This term we will be using Piazza for class discussion. The system is highly catered to getting you help fast and efficiently from classmates, and the instructor. Rather than emailing questions to the teaching staff, I encourage you to post your questions on Piazza. If you have any problems or feedback for the developers, email team@piazza.com.

Course Structure and Assignments:
This course is designed to model the structure of an engineer working at a small embedded systems company that is involved the design of a new embedded systems product. The course will involve training in how to design and build the hardware and software for an embedded system and introduce the student to some product ideation and development techniques. Each student will be working to develop a new product. To facilitate these learning outcomes, there will be a number of assignments in product development, hardware design, and software design. These assignments will have frequent due dates and the students will be judged by their ability to complete these assignments in a timely manner. Grading will be highly subjective.
Engineering Your Soul:

The third mission objective of the George Fox University Engineering program states:

GFU Engineers will understand responsible service from a Christian worldview that emphasizes integrity in every aspect of this service, motivates individuals to a life of responsible service to humankind, and recognizes the need for a life of continued learning.

As one step towards the fulfillment of this objective, the engineering faculty is excited to present another Engineering Your Soul reading. Each semester, we collectively identify an influential Christian writing to be read and reflected upon by all engineering faculty and students throughout the term. Each faculty member will uniquely integrate the book’s content and assess student involvement.

There are 4 EYS discussion meetings during the year. There are also 4 reflections due and students are encouraged to comment on the posts of others. An EYS Piazza “course” has been setup, http://piazza.com/georgefox/fall2018/eyss/home, where all students can submit reflections and comments. To receive credit for a reflection,…

- tag your post with the folders for the due date and the course(s) you attend.
- each reflection (not a summary!) should be 1-2 paragraphs.
- do not post anonymously because a search will not pick up your name. If you would prefer to remain anonymous, send a private note to me in Piazza, and I’ll post it for you.
- your reflection must be submitted by 11:59 pm on the days indicated on the EYS schedule.

Each reflection, response to a reflection, or meeting attendance rewards you with 1 credit. You can earn up to 3 credits for each reading cycle. 8 credits are required to obtain a full EYS score for the semester.