New for 2019

Less emphasis on VBA. Only enough to do project. Do not try to teach programming
- increment
- while loop
- print in new row

Use Excel formulas when possible.
VBA – single step (f8) debug. refresh chart

BIG picture early
1. Noisy channel introduces errors, pictures from Mars
2. Image -> RGB -> Byte -> Bit: need to transmit bits
3. Combinatorial digital logic

HW:
- single page for each problem, similar to test. Take picture and submit.
- previous test q’s

No project

Smart devices, robots and communication systems rely mainly on digital technology in this information age. This course examines the path that information takes from sensors in smart devices, through processors that digitize and process data, communication networks that transmit data packets, and the actuators that inform the human at the receiving end.

Students completing EENG 101 will understand how digital devices, such as smartphones, robots, and networks that generate information & transmit data. The goal is not only to understand how digital devices work, but also why they work that way. Relevant concepts from probability are introduced as needed. Theory is illustrated with projects using Excel with Visual Basic for Applications (VBA). Each student will design a dynamic Excel VBA worksheet that contains colors and random components.

1. Overview. Big picture
2. Excel formulas and simple VBA Macros
4. Combinatorial logic. Logic equations
5. ADC and DAC. Aliasing & Quantization.
7. Random number arithmetic.
9. Test 1
11. Orthogonal signals for multiple user access.
12. Source coding for data compression
13. Source coding for encryption.
14. Channel coding for error correction.
15. Test 2

Grading:
- Homework – 10%
- Project – 10%
- Two exams – 40% each

Materials:
  (First edition not acceptable)
- Laptop running Microsoft Excel 2013 or newer
  - Open-source spread sheet programs do not contain all the features of MS Excel.
  - Bring your laptop to class to try Excel instructions.