ETEE 1340 ELECTRONICS TECH 1 (INT. TO CIRCUITS)

• Circuit analysis constitutes the main pillars of Electrical/Electronics/Computer Engineering & Tech.

• Based on mathematical techniques and is used to show the behavior of the electrical circuit model and ideal circuit components. (Algebra & Pre-Calc. required)

• Designed to provide a general knowledge of electrical and electronic applications. Emphasis is on electrical safety, power generation, DC circuits, metering instruments, and circuit-use applications.

• Laboratory hands-on experiments include circuit design, construction, operation, testing, and basic troubleshooting.

PROBLEMS WITH “TRADITIONAL” CURRICULUM

• Traditional lectures might be “boring” and disconnected from the labs in the STEM fields.

• This becomes more devastating for the first year students.

We, faculty members should be proactive and student friendly especially for the following red-flags from the first-year students:

• Adjustment problems
• Academic difficulties
• Incongruence “lack of fit within the institution”
• Isolation both from one another and from the life of the campus community. (Leaving College by Vincent Tinto, 1987)
OUR CLIENTS ARE NOW MOSTLY GEN Z STUDENTS

THE TYPICAL CLASSROOM EXPERIENCE IS ANYTHING BUT ENGAGING

85% research online and 33% watch lessons online to educate themselves. [J. Walter Thompson-JWT www.jwt.com]

52% use YouTube or other social media sites for a typical school research assignment. [PEW Research Center]

8% of students check their phones during class
92% of students send text messages during class
8 seconds average attention span, down from 12 seconds in 2000
79% of Gen Zers who feel emotional distress when separated from their mobile devices (University of Maryland Research)

59% of students experience boredom in class
54% of students report not doing their readings out of class.


HOW TO TURN NEW FRESHMAN INTO FUNCTIONING AND SUCCESSFUL LEARNERS?

• Let the students feel that we care about them
• Encourage them to speak up
• Let them love their major(s)
• Convince them how important to graduate (timely)
• Understand their weakness

Did you know

• That the first semester of the freshman year in college is the most critical time in determining a student’s future success in college.
1ST YEAR EXPERIENCE COURSES SERVE AS A POWERFUL TOOL IN AIDING:

• Student Retention
• Engagement
• Satisfaction

Success in Higher Ed

Enhanced with: HIGH IMPACT PRACTICES (HIPs)
  • Applied research projects and
  • Active Learning

APPLIED RESEARCH AREAS THAT HAVE ENHANCED ACTIVE LEARNING IN & OUT OF CLASSROOM

• Using different aspects of Green Technologies for Env. Protection
• Energy efficient transportation - Houston-Dallas Bullet Train
  • Solar-Wind-HFC Microgrid
• How can we generate 80% of our energy from Renewables?
• 2021 – Commercially available totally autonomous cars on US HWs
• Millions of PEVS charged by massive wind farms at night
RESEARCH COMPONENT OF THE COURSE WILL BE ASSESSED BASED ON THE FOLLOWING RUBRICS

1. Research Project Proposal: Each student should clearly define the problem to be solved and the theory behind the proposed solution for the problem.

2. Project Design and Implementation: Each student should explain in detail the work to be performed in the development during preliminary and final phase of the project. Students should identify exactly what product or system will be delivered at the conclusion of ETEE 1340 Applied Research Project.

Pilot Projects from Spring 2018
(22 students) 11 Projects

- Advancements in AI
- How to Harness EVs as Flexible Loads
- Energy Efficient Transportation & e-Trains
- Kinetic Energy Absorbing Roads
- e-Sensors &Combustion/Engine Control
- Development of Evs, Env & Econ Impacts
- Crystal Set Radio Design
- Portable Handheld Radio Design
- Cadavers & Smartphones,...
STUDENT DESIGN & RESEARCH SKILLS ARE ASSESSED BASED ON THE FOLLOWING 7-CRITERIA:

1. Research project definition from research project proposal
2. Circuit design and simulation
3. Actual Circuit Operation, Measurement, and Troubleshooting
4. Meeting w advisor/TA for scholarly discussions (Minimum 5 instructor/TA-student meetings are required after the research proposal is accepted).
5. Construction skills for a working electrical circuit or system.
6. Presenting the research problem and the project implementation in the last week of classes.
7. A minimum 5-7 pages of Project Technical Report written in APA or IEEE Format. Students should incorporate figures, tables, schematics, or graphics into technical report and the presentation material. Students should use graphics that relate to the subject and to the text. Student should also use advanced graphics and/or other software package tools (MultiSim) to support the theory & the practice.

CONCLUSION

• HIGH IMPACT PRACTICES (HIPs)
  • Applied research projects and
  • Active Learning by engaging students to course material/hands-on projects

Reg Pecen, Ph.D.
Quanta Endowed Professor
Department of Engineering Technology
Sam Houston State University
Fred Pirkle Engineering Technology Center Box 2088
Huntsville, TX 77341
V. 936-294-4137
e-mail: reapcen@shsu.edu  www.shsu.edu/etec

THE TYPICAL STUDENT'S ATTENTION SPAN

THE IMPACT OF ACTIVE LEARNING