ELEG 3043 Electronics I  
Summer 2021

Instructor: Mohan Ketkar
Section # and CRN: Section Z02 CRN 33019
Office Location: SR Collins Rm. 305
Office Phone: (936) 261-9847
Email Address: maketkar@pvamu.edu
Office Hours: TR 2:30 – 4:00 pm online
Mode of Instruction: Internet
Course Location: Internet using Zoom
Class Days & Times: TWR 9:00 am – 10:20 am
Catalog Description: ELEG 3043. Electronics I. (3-0) Credit 3 semester hours. Operational amplifiers, Diodes and nonlinear circuits. Field effect transistors. Analysis and design of linear amplifiers. Biasing, small and large signal behaviors. Operation of bipolar junction transistors
Prerequisites: Prerequisites: ELEG 3013 and ELEG 3033 or concurrent
Co-requisites: None
(ii) Handouts
(iii) Electronics Circuits books in the library

Course Goals or Overview:
This is a course in electronics, which will introduce students to various electronic devices and circuits. The course will also develop the students’ ability to analyze and design basic electronic circuits. The lecture topics will include linear circuits, operational amplifiers, diodes, circuits, MOS field effect transistors and bipolar junction transistors. In addition, the use of SPICE for circuit analysis will be covered.

Student Learning Outcomes:

<table>
<thead>
<tr>
<th>Program Learning Outcome #</th>
<th>Core Curriculum Outcome Alignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upon successful completion of this course, students will be able to:</td>
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<tr>
<td>1  Understand the characteristics of operational amplifiers and should be able to design electronic circuits using operational amplifiers</td>
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<tr>
<td>2  Be able to understand the operational characteristics of diodes, MOSFETs, and BJTs</td>
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<tr>
<td>3  Be conversant with basic electronic circuits such as rectifiers, inverting amplifiers, non-inverting amplifiers, integrators, differentiators, clipping and clamping circuits</td>
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<tr>
<td>4  Be able to recognize and analyze various MOSFET and BJT amplifier circuits</td>
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<tr>
<td>5  Be able to use PSPICE or MATLAB to solve electronic circuits’ problems</td>
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<tr>
<td>6  Be able to design, construct, test electronic circuit that satisfies multiple constraints</td>
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**ABET PROGRAM OUTCOMES (ABET Criterion 3, Student Outcome 6)**

On completion of course the student should have demonstrated an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

**ASSIGNMENTS:** Problems on the topics discussed in class will be assigned. Assignments should be completed and uploaded on time. Late homework will not be accepted. The completed homework assignments will not be graded but they should be considered as practice sets that will help you to prepare for tests/exams. Solutions to the homework problems will be provided.

**COMPUTER APPLICATION PROBLEMS:**

There will computer applications problems that will involve the use of the MATLAB and/or MULTISIM/PSPICE for solving electronics problems.

**DESIGN PROJECT:**

You will be asked to design an electronic circuit that meets some specifications. You have to select the circuit components, build and test the circuit in the lab (e.g., using Analog Discovery board/development kit). A design project report is also required. The report should include, among other things, the circuit diagram, component values, and design equations, testing methodology, test results and conclusions.

**EXAMS/TESTS:** There will be three in-class tests and a final examination. Your two test scores and the final exam (comprehensive) will count towards the final course grade. The tentative dates for the tests/exams are as follows:

- **Test #1:** Thursday June 17, 2021
- **Test #2:** Thursday July 1, 2021
- **Test #3:** Thursday July 15, 2021
- **Final Exam:** As per University Final Exam schedule August 4-11, 2021

The dates for the tests* and final exam are subject to change. Also please take note that there will be no makeup exam and tests.

**COURSE EVALUATION PROCEDURE:**

The final grade of each student will be determined by the following weights:

<table>
<thead>
<tr>
<th>Items</th>
<th>Value (percentages)</th>
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</thead>
<tbody>
<tr>
<td>Class Attendance &amp; Homework (Not Graded, for Practice Only)</td>
<td>10 %</td>
</tr>
<tr>
<td>Tests (two best test scores)</td>
<td>50 %</td>
</tr>
<tr>
<td>Computer Simulation Assignment</td>
<td>10 %</td>
</tr>
<tr>
<td>Final Exam (comprehensive)</td>
<td>30 %</td>
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<tr>
<td><strong>Total:</strong></td>
<td><strong>100 %</strong></td>
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</table>

Grade Determination:

<table>
<thead>
<tr>
<th>RANGE</th>
<th>LETTER GRADE</th>
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<tbody>
<tr>
<td>90 % to 100 %</td>
<td>A</td>
</tr>
<tr>
<td>80 % to 89 %</td>
<td>B</td>
</tr>
<tr>
<td>70 % to 79 %</td>
<td>C</td>
</tr>
<tr>
<td>60 % to 69 %</td>
<td>D</td>
</tr>
<tr>
<td>0 % to 59 %</td>
<td>F</td>
</tr>
</tbody>
</table>
## SCHEDULE OF LECTURES, READING ASSIGNMENTS, AND TESTS

<table>
<thead>
<tr>
<th>DATE</th>
<th>LECTURE</th>
<th>SECTIONS OF TEXTBOOK</th>
<th>HW/TEST/EXAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/1, 6/2, 6/3</td>
<td>Signals and Amplifiers</td>
<td>1.1, 1.4, 1.5</td>
<td>HW 1</td>
</tr>
<tr>
<td>6/8, 6/9, 6/10</td>
<td>Operational Amplifiers</td>
<td>2.1 – 2.6</td>
<td>HW 2</td>
</tr>
<tr>
<td>6/15, 6/16</td>
<td>Operational Amplifiers</td>
<td>2.7 – 2.8</td>
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<tr>
<td><strong>Thursday 6/17</strong></td>
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<td></td>
<td><strong>Test # 1</strong></td>
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<tr>
<td>6/22, 6/23, 6/24</td>
<td>Diodes</td>
<td>4.1 – 4.2</td>
<td>HW 3</td>
</tr>
<tr>
<td>6/29, 6/30</td>
<td>Diodes</td>
<td>4.3 -4.7</td>
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<tr>
<td><strong>Thursday 7/1</strong></td>
<td></td>
<td></td>
<td><strong>Test # 2</strong></td>
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<tr>
<td>7/6, 7/7, 7/8</td>
<td>MOSFETs</td>
<td>5.1 – 5.2</td>
<td></td>
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<tr>
<td>7/13, 7/14</td>
<td>MOSFETs</td>
<td>5.3 – 5.4</td>
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<tr>
<td><strong>Thursday 7/15</strong></td>
<td></td>
<td></td>
<td><strong>Test # 3</strong></td>
</tr>
<tr>
<td>7/20, 7/21, 7/22</td>
<td>Bipolar Junction Transistors</td>
<td>6.1, 6.2</td>
<td>HW 4</td>
</tr>
<tr>
<td>7/27, 7/28</td>
<td>Bipolar Junction Transistors</td>
<td>6.3, 6.4</td>
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<tr>
<td>7/29</td>
<td>Review for final</td>
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<tr>
<td><strong>August 4 - 11, 2021</strong></td>
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<td></td>
<td><strong>Final Exam</strong></td>
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</tbody>
</table>

This syllabus may be updated during the semester if needed. The latest syllabus will be enforced.

### Student Support and Success

**John B. Coleman Library**
The library and its partners have as their mission to provide resources and instructional material in support of the evolving curriculum, as a partner in Prairie View A&M University's mission of teaching, research, and service and to support the University's core values of access and quality, diversity, leadership, relevance, and social responsibility through emphasis on ten key areas of service. It maintains library collections and access both on campus, online, and through local agreements to further the educational goals of students and faculty. [https://www.pvamu.edu/library/](https://www.pvamu.edu/library/)

Phone: 936-261-1500

**University Tutoring Center**
The Center offers tutoring via peer tutoring. The services include workshops (i.e., Save My Semester, Recalculate Your Route), seminars (i.e., Tools You Can Use: TI-84), group review sessions (i.e., College Algebra Topic Reviews, GRE Preparation), group study opportunities (i.e., TSIA, HESI, Study Break, Exam Cram), and test-taking strategies (How to take Notes, Study Buddy, 5 Day Study Guide). The Learning Curve is a nationally certified tutoring program through the National Tutoring Association. The peer tutors are trained and certified by the coordinator each semester. Location: J.B. Coleman Library Rm. 307. Phone: 936-261-1561
The Student Academic Success Center
The Student Academic Success Center is designed to help Prairie View students in their second year and beyond navigate towards graduation by providing the following services: Academic Advisement, Targeted Tutorials for Personalized Learning, Campus-Wide Referrals, and Academic & Social Workshops. Location: J.B. Coleman Library Rm. 306. Phone: 936-261-1040

Writing Center
The Writing Center provides student consultants on all aspects of the writing process and a variety of writing assignments. Writing Center consultations assist students in such areas as prewriting, brainstorming, audience awareness, organization, research, and citation. Students taking on-line courses or courses at the Northwest Houston Center or College of Nursing may consult remotely or by email. Location: Hilliard Hall Rm. 121. Phone: 936-261-3724

Student Counseling Services
The Student Counseling Services unit offers a range of services and programs to assist students in maximizing their potential for success: short-term individual, couples, and group counseling, as well as crisis intervention, outreach, consultation, and referral services. The staff is licensed by the State of Texas and provides assistance to students who are dealing with academic skills concerns, situational crises, adjustment problems, and emotional difficulties. Information shared with the staff is treated confidentially and in accordance with Texas State Law. Location: Owens-Franklin Health Center Rm. 226. Phone: 936-261-3564

Testing
The Department of Testing administers College Board CLEP examinations, the HESI A2 for pre-nursing majors, LSAT for law school applicants and MPRE for second-year law students, the Experiential Learning Portfolio option, the Texas Success Initiative (TSI) Assessment, which determines college readiness in the state, and exam proctoring, among other service such as SAT and ACT for high school students. Phone: 936-261-3627

Office of Disability Services
As a federally mandated educational support unit, the Office of Disability Services serves as the repository for confidential disability files for faculty, staff, and students. For persons with a disability, the Office develops individualized ADA letters of request for accommodations. Other services include learning style inventories, awareness workshops, accessibility pathways, webinars, computer laboratory with adapted hard and software, adapted furniture, proctoring of non-standardized test administrations, ASL interpreters, ALDs, digital recorders, livescribe, Kurtzweil, and a comprehensive referral network across campus and the broader community. Location: Evans Hall Rm. 317. Phone: 936-261-3585

Veteran Services
Veterans Services works with student veterans, current military and military dependents to support their transition to the college environment and continued persistence to graduation. The Office coordinates and certifies benefits for both the G.I. Bill and the Texas Hazlewood Act. Location: May Hall Rm. 118. Phone: 936-261-3563

Office for Student Engagement
The Office for Student Engagement delivers comprehensive programs and services designed to meet the co-curricular needs of students. The Office implements inclusive and accessible programs and services that enhance student development through exposure to and participation in diverse and relevant social, cultural, intellectual, recreational, community service, leadership development and campus governance. Location: Memorial Student Center Rm. 221. Phone: 936-261-1340

Career Services
Career Services supports students through professional development, career readiness, and placement and employment assistance. The Office provides one-on-one career coaching, interview preparation, resume and letter writing, and career exploration workshops and seminars. Services are provided for students at the Northwest Houston Center and College of Nursing in the Medical Center twice a month or on a requested basis. Distance Learning students are encouraged to visit the Career Services website for information regarding services provided. Location: Evans Hall Rm. 217. Phone: 936-261-3570
University Rules and Procedures

Disability Statement (Also See Student Handbook):
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Evans Hall, Room 317, or call 936-261-3585/3.

Academic Misconduct (See Student Handbook):
You are expected to practice academic honesty in every aspect of this course and all other courses. Make sure you are familiar with your Student Handbook, especially the section on academic misconduct. Students who engage in academic misconduct are subject to university disciplinary procedures.

Forms of Academic Dishonesty:
1. Cheating: deception in which a student misrepresents that he/she has mastered information on an academic exercise that he/she has not mastered; giving or receiving aid unauthorized by the instructor on assignments or examinations.

2. Academic misconduct: tampering with grades or taking part in obtaining or distributing any part of a scheduled test.

3. Fabrication: use of invented information or falsified research.

4. Plagiarism: unacknowledged quotation and/or paraphrase of someone else’s words, ideas, or data as one’s own in work submitted for credit. Failure to identify information or essays from the Internet and submitting them as one’s own work also constitutes plagiarism.

Nonacademic Misconduct (See Student Handbook)
The university respects the rights of instructors to teach and students to learn. Maintenance of these rights requires campus conditions that do not impede their exercise. Campus behavior that interferes with either (1) the instructor’s ability to conduct the class, (2) the inability of other students to profit from the instructional program, or (3) campus behavior that interferes with the rights of others will not be tolerated. An individual engaging in such disruptive behavior may be subject to disciplinary action. Such incidents will be adjudicated by the Dean of Students under nonacademic procedures.

Sexual Misconduct (See Student Handbook):
Sexual harassment of students and employers at Prairie View A&M University is unacceptable and will not be tolerated. Any member of the university community violating this policy will be subject to disciplinary action.

Title IX Statement
Prairie View A&M University (PVAMU) is committed to supporting students and complying with the Texas A&M University System non-discrimination policy. It seeks to establish an environment that is free of bias, discrimination, and harassment. If you experience an incident of sex- or gender-based discrimination, including sexual harassment, sexual assault or attempted sexual assault, we encourage you to report it. While you may talk to a faculty member about an incident of misconduct, the faculty member must report the basic facts of your experience to Ms. Alexia Taylor, PVAMU’s Title IX Coordinator. If you would like to speak with someone who may be able to afford you privacy or confidentiality, there are individuals who can meet with you. The Title IX Coordinator is designated to handle inquiries regarding non-discrimination policies and can assist you with understanding your options and connect you with on- and off-campus resources. The Title IX Coordinator can be reached by phone at 936-261-2123 or in Suite 013 in the A.I. Thomas Administration Building.

Class Attendance Policy (See Catalog for Full Attendance Policy)
Prairie View A&M University requires regular class attendance. Attending all classes supports full academic development of each learner whether classes are taught with the instructor physically present or via distance learning technologies such as interactive video and/or internet.
Excessive absenteeism may result in a student’s course grade being reduced or in assignment of a grade of “F”. Absences are accumulated beginning with the first day of class during regular semesters and summer terms.

**Student Academic Appeals Process**
Authority and responsibility for assigning grades to the students rests with the faculty. However, in those instances where students believe that miscommunication, errors, or unfairness of any kind may have adversely affected the instructor's assessment of their academic performance, the student has a right to appeal by the procedure listed in the Catalog and by doing so within thirty days of receiving the grade or experiencing any other problematic academic event that prompted the complaint.

**TECHNICAL CONSIDERATIONS**

**Minimum Recommended Hardware and Software:**
- Intel PC or Laptop with Windows 7; Mac with OS X; Smartphone or iPad/Tablet with Wi-Fi
- High speed Internet access
- 8 GB Memory
- Hard drive with 320 GB storage space
- 15” monitor, 800x600, color or 16 bit
- Sound card w/speakers
- Microphone and recording software.
- Keyboard & mouse
- Most current version of Google Chrome or Firefox

**Note:** Be sure to enable Java & pop-ups in the Web browser preferences

**Participants should have a basic proficiency of the following computer skills:**
- Sending and receiving email
- A working knowledge of the Internet
- Proficiency in Microsoft Word (or a program convertible to Word)
- Proficiency in the Acrobat PDF Reader
- Basic knowledge of Windows or Mac O.S.

**Netiquette (online etiquette):**
Students are expected to participate in all discussions and virtual classroom chats as directed. Students are to be respectful and courteous to others on discussions boards. Foul or abusive language will not be tolerated.

**Technical Support:**
Students should go to https://mypassword.pvamu.edu/ if they have password issues. The page will provide instructions for resetting passwords along with whom to contact if login issues persist. For other technical questions regarding Canvas, call the Center for Instructional Innovation and Technology Services at 936-261-3283

**Communication Expectations and Standards:**
Emails or discussion postings will receive a response from the instructor, usually in less than 48 hours. Urgent emails should be marked as such. Check regularly for responses.

**Discussion Requirement:**
Online courses often require minimal to no face-to-face meetings. However, conversations about the readings, lectures, materials, and other aspects of the course can take place in a seminar fashion. This will be accomplished by the use of the discussion board. The exact use of discussion will be determined by the instructor.

**It is strongly suggested** that students type their discussion postings in a word processing application and save it to their PC or a removable drive before posting to the discussion board. This is important for two reasons: 1) If for some reason your discussion responses are lost in your online course, you will have another copy; 2) Grammatical errors can be greatly minimized by the use of the spell-and-grammar check functions in word processing applications. Once the post(s) have been typed and corrected in the word processing application, it/they should be copied and pasted to the discussion board.
COVID-19 Campus Safety Measures

To promote public safety and protect students, faculty, and staff during the coronavirus pandemic, PVAMU has adopted policies and practices to limit virus transmission.

- **Self-monitoring** - Students should follow CDC recommendations for self-monitoring. Students who have a fever or exhibit symptoms of COVID-19 should participate in class remotely and should not participate in face-to-face instruction.

- **Face Coverings** - Face coverings (cloth face covering, surgical mask, etc.) are recommended in classrooms, teaching laboratories, common spaces such as lobbies and hallways, public study spaces, libraries, academic resource and support offices, and outdoor spaces where 6 feet of physical distancing is difficult to reliably maintain.

- **Physical Distancing** - Physical distancing should be maintained between students, instructors, and others in course and course-related activities where possible.

- **Personal Illness and Quarantine** - Students required to quarantine are to participate in courses and course-related activities remotely and must not attend face-to-face course activities. Students should notify their instructors of the quarantine requirement. Students under quarantine are expected to participate in courses and complete graded work unless they have symptoms that are too severe to participate in course activities. Students experiencing personal injury or illness that is too severe for the student to attend class qualify for an excused absence. To receive an excused absence, students must provide appropriate documentation to the Office for Student Conduct, studentconduct@pvamu.edu.