ECE 20001 – Fall 2021
Electrical Engineering Fundamentals I

1. General Class Information

- Course Number and Title: ECE 20001 - Electrical Engineering Fundamentals I
- Credit hours: Three (3)
- Pre-requisites: Please check here: https://engineering.purdue.edu/ECE/Academics/Undergraduates/UGO/CourseInfo/courseInfo/UGO?courseid=716&show=true&type=undergrad
- **Section: 004**
- **Location: WALC 2087**
- **Days: MWF**
- **Instructor: Prof. Abolfazl Hashemi**
- **Meeting Times: 2:30pm-3:20pm**

This course covers fundamental concepts and applications for electrical and computer engineers as well as for engineers who need to gain a broad understanding of these disciplines. The course starts by the basic concepts of charge, current, and voltage as well as their expressions with regards to resistors and resistive circuits. Essential concepts, devices, theorems, and applications of direct-current (DC), 1st order, and alternating-current (AC) circuits are subsequently discussed. Besides electrical devices and circuits, basic electronic components including magnetically couples circuits, ideal transformers, diodes and transistors as well as their primary applications are also discussed.

The lectures by Prof. Abolfazl Hashemi will be a summary of all concepts in a concise and easy manner to help students learn all the topics within the timeframe of the semester. If you want to get in depth on any topic you should read the book pdf on Brightspace (D2L), watch pre-recorded back-up videos from Prof. Peroulis on Brightspace and also go to office hours and/or ask questions on Piazza.

Besides attending your regular lectures, you should get connected with this course by:

- The course website on Brightspace: https://purdue.brightspace.com/d2l/login
- The piazza website (see Sec 5): https://piazza.com/purdue/fall2021/ece20001/home
- Regularly attending office hours (posted on the course website and Piazza pinned post)

The "Pinned post" section on Piazza is the main method of communication in this class. You are solely responsible to be on top of the class schedule (at the end of this document, checking emails, reading Piazza pinned posts regularly to stay informed about the course. No excuses like "I didn't know about this quiz/survey or post" will be allowed.

2. Learning Outcomes (ABET accreditation)

The learning outcomes for this class are:

1. An ability to analyze linear resistive circuits.
2. An ability to analyze 1st order linear circuits with sources and/or passive elements.

3. An ability to analyze electronic circuits with ideal transformers, diodes, and transistors.

3. Instructors, Teaching Assistants and Office Hours

Prof. Abolfazl Hashemi abolfazl@purdue.edu	Monday 3:30 – 5:30 on Zoom: https://purdue-edu.zoom.us/my/abolfazl

Please note that instructor office hours may change during the semester. The latest information for office hours can be found on the course website and on Piazza pinned post.

Graduate Teaching Assistants :

GTAs		
Last Name	**First Name**	**Email**
Chandra	Soumyadeep	chand133@purdue.edu
Amici	Michael	mamici@purdue.edu
Lim	Jim	lim316@purdue.edu
Ray	Yudhajit	rayy@purdue.edu
Melican	Logan	lmelican@purdue.edu
Lin Chen	Chang	chen3365@purdue.edu
Gonzalezaguayo	Juan	gonza801@purdue.edu
Zhang	Ciyuan	zhan3375@purdue.edu

Undergraduate Teaching Assistants (listed alphabetically):

UTAs		
Last Name	**First Name**	**Email**
Tanneeru	Manas	mtanneer@purdue.edu
Tao	Baoxuan	tao91@purdue.edu
Xinyi	Gao	gao556@purdue.edu
Yao	Philip	yao207@purdue.edu
Zhao	Yueting Mary	zhao979@purdue.edu
Zhirui	Hou	hou125@purdue.edu
Zhou	Boyu	zhou1012@purdue.edu
Stavrakos	Jack	jstavrak@purdue.edu
Rajan	Manasi	mrajan@purdue.edu
Nor Fakhri Danial	Bin Norazize	nnoraziz@purdue.edu
Ma	Joseph	ma562@purdue.edu
Jiang	Enze	jiang708@purdue.edu

Joshua	Nicklas	jnickla@purdue.edu
Kelley	Daniel	kelle174@purdue.edu
Hill	Evan	hillej@purdue.edu
Gurung	Kris	kgurung@purdue.edu
Gu	Hao	gu244@purdue.edu
Crouse	Clay	crouse1@purdue.edu
Chari	Anand	achari@purdue.edu
Bharat	Agrim	bharata@purdue.edu
Agrawal	Bhavya	agraw111@purdue.edu
Balachander	Mahesh	balacham@purdue.edu
Alwakeel	Mohmmad	malwake@purdue.edu
Agrawal	Rudransh	agraw115@purdue.edu

TA Office hours will be posted on Brightspace (D2L) and also on Piazza. Please check those websites to stay up-to-date on office hours.

Please note that office hours may change during the semester. The latest office hours information can be found on Piazza.

Unless you have a question related to a private grading or personal matter, please do not email the emails mentioned above. Rather, please post it on Piazza as discussed in Section 5.

4. Textbook, Videos, Technology and Class Notes

This class will be primarily based on in-person lectures, class notes from the in-person lectures and contents of e-textbook pdf that will be made available to you through the class's website. It is important to ensure that you have a reliable internet connection to access the course material. There may be supplementary or backup pre-recorded videos available for those who may miss in-person lectures due to health and other reasons.

5. Class Participation - Piazza.com

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 instructors. Rather than emailing questions to the teaching staff, please post your questions on Piazza. **Unless your question is related to a private personal matter or your personal grading, please post it on piazza and do not email individual instructors.** The class on piazza is structured so you can discuss each homework and topics on each exam. Please post to the relevant thread to ensure a proper response.

To honor and respect one another, it is important to adhere to the netiquette posted on our piazza site.

You will receive an invitation to join piazza. If you register late for the course or if you don't receive the email, please go to piazza.com and register for the class yourself using the link https://piazza.com/purdue/fall2021/ece20001/home.

6. Working in Groups and Peer Reviews

In the real world, most problems are complex and interdisciplinary. This often requires collaboration with engineers from several disciplines. In this class we will form groups of 3-4 students based on the CATME teaming software. Groups will be created in the first week of the class with the CATME algorithm based on availability, prior skills with circuits, GPA etc. It is a course policy that you cannot chose your own team members (as is often the case in the real world). As a result, it is important to complete the needed survey as accurately as possible.

There will be two times this semester your team members will rate you based on your participation, contribution, willingness to learn or going to office hours, hardwork, etc. This will account for 5% of your grade. Emails from CATME system will be sent out on the week of Exams and you will get 2-3 days to rate your group mates.

Of the 5% of your peer review grade, 2% is for each peer review rating. The remaining 1% is for completing both the peer review survey from CATME.

Each team will have a specific UTA assigned to it. The UTA will work directly with the team and help its members learn the material and complete the assignments. We will also have GTA office hours for several hours each day of the week. You may connect with any GTA during any of these hours.

All team members are expected to act professionally at all times, exhibit a collaborative spirit, and work in a way that respects and honors one another. If disagreements or disputes emerge, we expect all team members to focus on resolving the issues asap by following a few key principles: a) listen carefully to understand, b) act professionally, c) respect each other, d) stay calm, e) focus on issues, not personalities, and f) focus on future success vs. past problems. In the unlikely scenario that disputes cannot be addressed in a professional and courteous manner within a team, please email the instructor, Prof. Abolfazl Hashemi (abolfazl@purdue.edu) or contact any TA.

7. Group Work and Individual Homework

Homework assignments will be completed in groups. You will need to work with your group for each homework every week. *This is a course policy and exceptions are, in general, not possible.* If there is a special reason you cannot comply with this policy, please contact the instructor to discuss.

Even though the HW is group work, the submissions will be individual. That way you are seeking help and or helping your teammates learn but no one will be responsible for each other's HW grade.

Homework assignments will be distributed every week on **Brightspace** (D2L) and will be normally due every Monday 11.59 pm ET on **Gradescope**. There are some exceptions to account for holidays and exams, so please check the class schedule (the last section of this document).

Gradescope is an online work submission and grading tool. You must scan your work as a pdf or images and link the answers of each question to the correct questions while submitting. You can access Gradescope via Brightspace link, that way you will not need an additional login to get into Gradescope.

There will be several problems in each homework set. You need to work individually, meet up with your assigned group and work on it every day; **or** you can divide and conquer and then discuss as a group to get everyone up to speed or any other method you decide as a group. **Do not start the night before!** You must show all steps you took to get to the answer. If you just write the correct answer, you get zero for that problem. **Also box the final answer.**

Working the homework is the only way to learn the material. Students who do not work the homework typically do not perform well in class.

Late homework will NOT be accepted (absolutely no exceptions) since the solutions will be posted right after the submission deadline. However, **the lowest two homework scores will be dropped**; no explanations required. This will allow a small buffer for late registration, illness, or hectic times of the semester. Solutions to the homework assignments will be posted on the course website.

Only email us if you miss more than 2 HWs and want an excuse for the 3rd one, you must provide evidence for all three excuses to get make-up options for the 3rd HW make-up. Thus it is very important to utilize the two drops very wisely.

Your homework grade will count for 15% of your class grade and 5% of your grade is on peer reviews. Thus it is important to be on top of your collaboration, learning, contributions towards every HW so you earn a decent peer review.

8. Quizzes

Every Wednesday (except on weeks with National Holidays and exam week as indicated on schedule) is Quiz Day. The quiz can be found active from 8am to 11:59pm and you can sit for the quiz within that time on Brightspace. Quizzes do not have any point/grade value. Thus it is not mandatory to complete. This is just there to help you know how well your learning of the material is at a certain week. If you are doing well, then great! If you are not then you need to improve your learning by putting more effort into solving more problems, going to office hours and attend lectures more consistently.

9. Group Assignment

There will be one group assignment towards the end of the semester. You will get 1 month to do the assignment with your group. The due date will be around Week 15 or 16. More details on the project will be discussed in the 2nd half of the semester. You will only submit one assignment per group by scanning the work as a pdf and submitting on Gradescope and it will be 10% of your grade.

10. Exams/Final Exam

We will have two (2) exams during the semester and one final exam. Each of the first two exams will be approximately 1-hour long and will be conducted in-person evening exam as posted on your

schedule at the end of this syllabus. Two midterm exams will be 10 MCQ each. The exams will not be open book but any formulas you need will be given to you at the back of exam.

The final exam will be approximately 2-hours long. More details will be posted on Piazza during the semester. The final exam will be 16-20 MCQs.

Receiving unauthorized aid or accessing websites as mentioned above during an exam will result in an 'F' for the exam or the whole course at the instructors' discretion. In addition, we will report such cases to the Dean of Students and request additional disciplinary action to be taken.

Please read this carefully: The most important assets in your professional life are your name, integrity, and character. Promise yourself to never risk them no matter what!

If you have a scheduling conflict with any exam you should discuss this with the instructor at least two weeks ahead of time. An oral or written makeup exam may be given at the discretion of the instructor. An unexcused absence will result in a zero for the missed exam. Students missing an exam without permission from the instructor will receive a zero. If you have three exams in one calendar day during Final Exams Week, you are allowed to reschedule one of them. Again, you should discuss this with the instructor at least two weeks ahead of time.

A written request to regrade a test must be filed with the instructor within one week after the test results have been posted. No such requests will be honored after the one-week deadline has passed.

11. Grading

Your final class grade will be the highest grade as calculated from the following two methods:

Method 1		Method 2	
Group Homework	15%	Group Homework	15%
Peer Reviews (x2)	5%	Peer Reviews(x2)	5%
Exam 1	20%	Exam with lowest grade	5%
Exam 2	20%	Other Exam	25%
Group Assignment (x1)	10%	Group Assignment (x1)	10%
Final Exam	30%	Final Exam	40%
Total	**100%**	**Total**	**100%**

There are several BONUS opportunities that you may partake to boost your grade at the end of :

1) Submitting proof of Course Evaluation completion at the end of semester will earn you a 1% BONUS
2) There are several educational research surveys that will be sent to you via your emails directly which will earn you a total of 2% BONUS upon successful completion of all 4 surveys. There will

be two pre-surveys sent between Week 1 to 3 and two- post surveys on Week 15. Please email head GTA if you run into issues.

Your final class letter grade will be determined based on the following *approximate* cut-offs (range includes minus and plus grades as well) :

Grade cut-offs	%
A range	85-100
B range	75-84.99
C range	60-74.99
D range	50-59.99
F range	0-50

The plus/minus grading scheme will be used within each grade range. Depending on the average class performance, these cutoffs may be modified up to, typically, 5% in either direction.

12. Calculator Policies

You may not use graphic calculators in exams and quizzes in this class; only simple calculators like the TI-30X IIS or CASIO equivalent are allowed. During Exams, NO electronic devices are allowed other than the simple calculator.

13. Alternate Plan for Lecture delivery

In case of health safety if Purdue decides to go fully online again in the middle of the semester, we may flip the lectures into Zoom lectures and zoom proctored online quiz exams. Everything else should remain the same except you may have to do group work/collaborations over online platforms.

14. Academic Guidance in the Event a Student is Quarantined/Isolated

If you become quarantined or isolated at any point in time during the semester, in addition to support from the Protect Purdue Health Center, you will also have access to an Academic Case Manager who can provide you academic support during this time. Your Academic Case Manager can be reached at acmq@purdue.edu and will provide you with general guidelines/resources around communicating with your instructors, be available for academic support, and offer suggestions for how to be successful when learning remotely. Importantly, if you find yourself too sick to progress in the course, notify your academic case manager and notify the instructor via email. We will make arrangements based on your particular situation. The Office of the Dean of Students (odos@purdue.edu) is also available to support you should this situation occur.

15. Attendance Policy

Students are normally expected to attend all in-person class. Students should stay home and contact the Protect Purdue Health Center (496-INFO) if they feel ill, have any symptoms associated

with COVID-19, or suspect they have been exposed to the virus. In the current context of COVID-19, in-person attendance will not be a factor in the final grades, but the student still needs to inform the lead TA of any conflict that can be anticipated and will affect the submission of an assignment or the ability to take an exam. Only the lead TA can excuse a student from a course requirement or responsibility. When conflicts can be anticipated, such as for many University-sponsored activities and religious observations, the student should inform the lead TA of the situation as far in advance as possible. For unanticipated or emergency conflict, when advance notification to the lead TA is not possible, the student should contact the lead TA as soon as possible by email. When the student is unable to make direct contact with the lead TA and is unable to leave word with the instructor's department because of circumstances beyond the student's control, and in cases of bereavement, quarantine, or isolation, the student or the student's representative should contact the Office of the Dean of Students via email or phone at 765-494-1747. Our course Brightspace includes a link on Attendance and Grief Absence policies under the University Policies menu.

16. Classroom Guidance Regarding Protect Purdue

The Protect Purdue Plan, which includes the Protect Purdue Pledge, is campus policy and as such all members of the Purdue community must comply with the required health and safety guidelines. Required behaviors in this class include: staying home and contacting the Protect Purdue Health Center (496-INFO) if you feel ill or know you have been exposed to the virus, properly wearing a mask in classrooms and campus buildings, at all times (e.g., mask covers nose and mouth, no eating/drinking in the classroom), disinfecting desk/workspace prior to and after use, maintaining appropriate social distancing with peers and instructors (including when entering/exiting classrooms), refraining from moving furniture, avoiding shared use of personal items, maintaining robust hygiene (e.g., handwashing, disposal of tissues) prior to, during and after class, and following all safety directions from the instructor.

Students who are not engaging in these behaviors (e.g., wearing a mask) will be offered the opportunity to comply. If non-compliance continues, possible results include instructors asking the student to leave class and instructors dismissing the whole class. Students who do not comply with the required health behaviors are violating the University Code of Conduct and will be reported to the Dean of Students Office with sanctions ranging from educational requirements to dismissal from the university.

Any student who has substantial reason to believe that another person in a campus room (e.g., classroom) is threatening the safety of others by not complying (e.g., not wearing a mask) may leave the room without consequence. The student is encouraged to report the behavior to and discuss next steps with their instructor. Students also have the option of reporting the behavior to the Office of the Student Rights and Responsibilities. See also Purdue University Bill of Student Rights.

Related Considerations:

1. *A listing of recommended safe practices for the specific class or laboratory setting (other PPE or safety behavior) can be found at the links below.*
    - Overarching SOP for Classrooms, Instructional Laboratories, and Experiential Courses
2. *References Supporting Protect Purdue Compliance:*

- Office of the Dean of Students Protect Purdue Compliance Plan: Ask, Offer, Leave, Report

Office of the Dean of Students Managing Classroom Behavior and Expectations

17. Accessibility

Purdue University strives to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, you are welcome to let the lead TA know so that we can discuss options. You are also encouraged to contact the Disability Resource Center at: drc@purdue.edu or by phone: 765-494-1247. More details are available on our course Brightspace under Accessibility Information.

Please note that any DRC letter may take up to 2-5 business days to process. Student must send DRC letters at least a week in advance before you want your accommodation. For very serious time sensitive issues contact instructor, Prof. Abolfazl Hashemi at abolfazl@purdue.edu, to discuss.

18. Nondiscrimination Policy

Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life. More details are available on our course Brightspace table of contents, under University Policies.

19. Academic Honesty Policy

Academic integrity is one of the highest values that Purdue University holds. Individuals are encouraged to alert university officials to potential breaches of this value by either emailing integrity@purdue.edu or by calling 765-494-8778. Check https://www.purdue.edu/odos/osrr/academic-integrity/index.html for more information.

In addition, the Purdue Honors Pledge applies to this course. The statement as written by our own students is **"As a boilermaker pursuing academic excellence, I pledge to be honest and true in all that I do. Accountable together - we are Purdue."**

Based on the above, we expect every member of the Purdue community to practice honorable and ethical behavior in and outside of the classroom. Any actions which might unfairly improve a student's score on homework or examinations will be considered cheating, and will not be tolerated.

A few examples of cheating include:

- Submitting homework that is not your own work or work conducted while working with your team.
- Sharing results or notes during exams. This includes accessing any websites including the ones like Chegg during exams, even if no aid is obtained.
- Continuing work on your exam after the exam time is over.

- Hacking or attempting to hack the class electronic tools/websites.
- Requesting a regrade on an exam that has been altered.

Cheating on homework, quizzes or exams will result in a zero score for the assignment/exam, or a failing grade for the course, at the instructors' discretion. In addition, we will report the case to the Dean of Students and request additional disciplinary action to be taken.

20. Mental Health Statement

If you find yourself beginning to feel some stress, anxiety, and/or feeling slightly overwhelmed, try WellTrack. Sign in and find information and tools at your fingertips, available to you at any time.

If you need support and information about options and resources, please contact or see the Office of the Dean of Students. Call 765-494-1747. The hours of operation are M-F, 8 am- 5 pm.

If you find yourself struggling to find a healthy balance between academics, social life, stress, etc. sign up for free one-on-one virtual or in-person sessions with a Purdue Wellness Coach at RecWell. Student coaches can help you navigate through barriers and challenges toward your goals throughout the semester. Sign up is completely free and can be done on BoilerConnect. If you have any questions, please contact Purdue Wellness at evans240@purdue.edu.

If you're struggling and need mental health services: Purdue University is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of mental health support, services are available. For help, such individuals should contact Counseling and Psychological Services (CAPS) at 765-494-6995 during and after hours, on weekends and holidays, or by going to the CAPS office of the second floor of the Purdue University Student Health Center (PUSH) during business hours.

21. Additional Wellness Resources

TaskHuman offers 1-on-1 live video calls with coaches who help you focus on wellness topics such as anxiety, mindfulness, reducing stress, clean eating, time management, in-home workouts, relationship tensions, and nearly a thousand more topics. You can log on at any time to access experiences as diverse as working through heightened anxiety to a personalized yoga session with carefully vetted providers.Using this link gets you access to all the perks: https://taskhuman.com/referral/purdue. Learn more here: https://engineering.purdue.edu/ECE/TaskHuman.

Don't see a topic you want or have other questions? Contact Brooke Parks, Lead Instructional Specialist in ECE, at brookeparks@purdue.edu.

22. Basic Needs Security:

Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact the Dean of Students for support. There is no appointment needed and Student Support Services is available to serve students 8 a.m.-5 p.m.

Monday through Friday. Considering the significant disruptions caused by the current global crisis as it related to COVID-19, students may submit requests for emergency assistance from the Critical Needs Fund

23. Class Schedule

The course schedule may need to be modified due to unexpected issues. Please check our Brightspace website, Piazza, and read your email to make sure you have the latest information.

ECE 20001 Fall 2021 Schedule

Piazza link: https://piazza.com/purdue/fall2021/ece20001/home

Week		Date	Lesson #	Topic	DUE on D2L	Backup Video Lecture #
1	M	8/23	1	Intro | General circuit elements, charge, current, and voltage	CATME Team Survey + Educational Research Surveys for BONUS	1-2
	W	8/25	2	Power, independent and dependent sources, open and short circuits		3-4
	F	8/27	3	Source connections, Resistance and Ohm's law, Kirchhoff's laws		5-10
2	M	8/30	4	Resistor combinations; voltage/current division;	HW 1	11-12
	W	9/01	5	Nodal Analysis	Quiz 1	17-21
	F	9/03	6	Mesh Analysis		22-23
3	M	9/06		Labor Day (No Classes)	HW 2 (Tue)	
	W	9/08	7	Additional examples for Nodal and Mesh	Quiz 2	17-23
	F	9/10	8	Dependent source circuits and Equivalent resistance		13-16
4	M	9/13	9	Linearity and Superposition; Source transformations	HW 3	24-26
	W	9/15	10	Thevenin's and Norton's theorems	Quiz 3	27-29
	F	9/17	11	Thevenin's and Norton's theorems: additional examples, DC Max Power Transfer		27-29

5	M	9/20	12	Review Exam 1 and extra time for Exam 1 topics	HW 4	
	W	9/22	13	Capacitance and capacitors;	**Quiz 4**	30-33
	F	9/24	14	Inductance and inductors; Inductor/Capacitor combinations		34-36,38,39
6	**M**	**9/27**	**8:00 PM**	**EXAM 1: Location ELLT 116 | Lessons 1-12 and HWs 1-4**	Peer Review 1	
	W	9/29	15	First-order circuits: zero input response;		40-43
	F	10/01	16	First-order circuits: step response		44-46
7	M	10/04	17	Linearity/Response classification & waveform generation	HW 5	41
	W	10/06	18	First-order circuits: applications	**Quiz 5**	44
	F	10/08	19	AC circuits: complex forcing function		47-50
8	**M**	**10/11**		**October Break (Mon and Tue)**		
	W	10/13	20	Phasors: Ohm's phasor law, KVL & KCL	**Quiz 6**	51-53
	F	10/15	21	Impedance/admittance of 2-terminal devices		54-59
9	M	10/18	22	Sinusoidal steady-state (SSS) analysis	HW6	60-64
	W	10/20	23	Frequency response	**Quiz 7**	74
	F	10/22	24	Instantaneous, average power and effective value		65-70
10	M	10/25	25	Max Power Transfer	HW 7	71-73
	W	10/27	26	Review Exam 2 and extra time for exam 2 topics	**Quiz 8**	
	F	10/29	27	Magnetically coupled circuits		75-78

11	**M**	**11/01**	**8:00 PM**	**EXAM 2: Location ELLT 116 | Lessons 13-26 and HWs 5-7**	Peer Review 2	
	W	11/03	28	Magnetically coupled circuits: applications		75-78
	F	11/05	29	Ideal Transformers and examples		75-78
12	M	11/08	30	Semiconductor Introduction	HW 8	79
	W	11/10	31	Carriers in doped semiconductors	Quiz 9	80-81
	F	11/12	32	Energy bonding model		82
13	M	11/15	33	pn junction I	HW 9	83-85
	W	11/17	34	pn junction II	Quiz 10	86-88
	F	11/19	35	Diode circuits and applications I		89-90
14	M	11/22	36	Diode circuits and applications II	HW 10	91-93
	W	**11/24**		**THANKSGIVING VACATION (W-F)**		
	F	**11/26**		**THANKSGIVING VACATION**		
15	M	11/29	37	MOSFET transistor structure and operation		94-98
	W	12/01	38	MOSFET IV	Quiz 11	99-101
	F	12/03	39	MOSFET circuits and examples	BONUS Post Surveys	102
16	M	12/06	40	Transistors applications I:digital	HW 11	109-110
	W	12/08	41	Transistors applications II:analog		103-108
	F	12/10	42	REVIEW Final Exam		