San José State University
Department of Physics and Astronomy

Course Name, Section, Semester Code & Units:	**Physics 51-03, Electricity and Magnetism, Spring 2012 Code 20789, 4 Units**
Class location & Time:	SCI 253 TTH 15:00-16:15
Instructor Name: **Contact:** **Website:**	Dr. Nayer Eradat Nayer.Eradat@sjsu.edu (best way to contact) http://www.erbion.com/academic.html
Office Location & Hours:	SCI 264 MW 14:30-15:30 & T 16:15-17:15
Required Textbook & Other equipment / Material	University Physics 13th Edition by Young and Freedman published by Pearson Higher Education. Chapters 21-32. Online homework (see the assignments & grading section)
For Online HW: Website **Course title** **Course ID**	www.masteringphysics.com PHYS51_2012S_SEC03 MPERADAT5103S12
Prerequisites:	PHYS 50 or PHYS 70 & MATH 31 with grades of "C-" or better.

Faculty Web Page and MYSJSU Messaging

PDF of the course materials such as the syllabus, major assignment handouts, etc. may be found on my faculty web page accessible through the Quick Links>Faculty Web Page links on the SJSU home page or on the course website link or go to http://www.erbion.com/academic.html . The syllabus and website are live documents subject to changes as course progresses. **You are responsible for regularly (at least twice a week) checking the messaging system through MySJSU and the website to find out the latest assignments and most up-to-date postings.**

Course Description

This course **is the second** semester in the calculus-based University Physics for s**cience and** engineering majors. Ph**ysics 51** covers electric and magnetic (e.m from here on) fields, dc and ac circuits, electromagnetic waves. Prerequisite: PHYS 050 or PHYS 070, MATH 031, both with grades of "C-" or better. Misc/Lab: Lecture 3 hours/lab 3 hours.

Course Goals and Student Learning Objectives (SLOs)

Upon successful completion of this course, students will have basic understanding of the following concepts and will have some familiarity with real-life applications of them.

Electric field and electric charge
Electric charge, Conductors, insulators, induced charge, Coulomb's Law, Electric field and electric force, E-field calculations, Electric dipoles

Gauss' Law
Electric charge and electric flux, Applications of Gauss' Law, Charges on conductors

Electric potential
Electric potential energy, Electric potential, Equipotential surfaces, Potential gradient

Capacitance and dielectrics
Capacitors and dielectrics, Capacitors in series and parallel, Energy storage in capacitors

Current, resistance and emf
Electric current, Resistivity, Resistance, Emf and circuits, Energy and power in circuits

Direct-current circuits
Resistors in series and parallel, Kirchhoff's rules, Electrical measuring instruments, RC

circuits, Power distribution systems

Magnetic field and magnetic forces
Magnetism, Magnetic field, Magnetic field lines and flux, Motion of charges in a magnetic field, Magnetic forces and torques on a current-carrying wires, Sources of magnetic field, Magnetic field of moving charges, Magnetic field of a current element, Magnetic fields of current-carrying conductors, Forces between parallel conductors, Ampere's law

Electromagnetic induction
Induction experiments, Faraday's law, Lenz's law, Motional emf, Induced electric fields, Displacement current

Inductance
Mutual inductance, Self inductance, Inductors and B-field energy, RL circuit, LC circuit, LRC circuit

Alternating current
Phasors and AC Resistance and reactance, LRC series circuit, Power in AC circuits, Resonance in AC circuits, Transformers

Electromagnetic waves
Maxwell's equations, Palne EM waves and speed of light, Sinusoidal EM waves, Energy and momentum in EM waves, Standing EM waves, The EM spectrum

Other Readings

Any calculus-based general physics book such as Halliday-Resnik-Walker, Cutnell-Johnson, etc. in case you have difficulty understanding the assigned textbook. If you have difficulty with mathematical aspects of the course **have a standard calculus book handy**. A **brief math review** is at the end of the text to refresh your memory.

Classroom Protocol

Lecture:

The lectures are designed to discuss the course material, to work examples, and to answer the questions you may have. There will be small demonstrations during some lectures that are designed to help you with better understanding of the physical concepts. The lectures are interactive. **Students are expected to get involved in the discussions during the class. Reading in advance of the assigned material for each lecture is crucial for active participation in the class and doing well in the quizzes and exams**.

Dropping and Adding

Students are responsible for understanding the policies and procedures about add/drops, academic renewal, etc. Information on add/drops are available at http://slisweb.sjsu.edu/enrollment/lateadd.htm **. Students should be aware of the current deadlines and penalties for adding and dropping classes.**

Assignments and Grading Policy

Quizzes:

There are pop quizzes during the lectures. These quizzes are composed of conceptual questions and short problems based on the suggested reading material for that lecture period. You can miss or drop 3 out of 10 quizzes. **No make up** quiz will be given.

Exams:

The 2 midterm tests and final exam cover **all material encountered in both the lectures and the lab**. No test grades will be dropped. Exams will be **closed book** from the material listed in the syllabus. **You will prepare your own equation sheet and necessary constants two sides of a one page Letter or A4 paper.** Tests are combination of short conceptual questions and longer

problems that will test both basic understanding of the material and problem solving skills. A sample test will be available on the course website.

Homework:

Homework questions and problems are available on the http://www.masteringphysics.com/. **Course title** is **PHYS51_2012S_SEC03** and **course ID** is **MPERADAT5103S12.** If you have purchased a new book, you should have a package that guides you to use the mastering physics website to do homework online (there is a access code and password in the package). If you have a used copy of the book, you need to go to http://www.masteringphysics.com/ click on Young/Freedman University Physics 12e and purchase access to the website. Use the first assignment (Introduction to mastering physics) to become familiar with the system also this assignment helps to bring back your basic skills in math, unit conversion, and scientific notation. Do not leave submission of your homework to the last minute. **Servers can be down or busy during the last hours. Late Homework:** Homework assignments will be available throughout the semester for study. However once the **deadline** passed the associated grade will drop to zero over the course of 48 hours (~2 pts/h). **Remember to review the solution after submission and have a hard copy of the summary for your test preparations.**

Grading:

Category	Contribution	Number Dropped
Midterm 1	15 %	0
Midterm 2	20 %	0
Final Exam	30%	0
Quizzes	10%	3
Home Work	15%	2
Lab	**10%**	**Final grade will be zero without lab!!!!!**

Your grade will be determined by your performance on the quizzes, homework and exams. Plus and minus grading will be used. The letter grades will be roughly assigned based on the following list A: 90s, B: 80s, C: 70s, D: 60s, F: 50s and below. **You must pass the lab associated with this course in order to pass this course. Without completion of the lab you will fail PHYS 51.**

Schedule for lectures, reading, exams and assignments (Q column marks the potential days for quiz)

Date	Day	Quiz	Reading	HW Assigned	Due
Week 1					
Jan 26	TH		Ch21.1-2 & Introduction	OHW1 Tutorial	
Week 2					
Jan 31	T		Ch21: 3-5	HW1	
Feb 2	TH		Ch21: 6-7	OHW2 Tutorial	OHW1
Week 3					
Feb 7	T	Q	Ch22: 1-4	HW2	HW1
Feb 9	TH	Q	Ch22: 5-6	OHW3 Tutorial	OHW2
Week 4					
Feb 14	T	Q	Ch23: 1-2	HW3	HW2
Feb 16	TH	Q	Ch23: 3-5	OHW4 Tutorial	OHW3
Week 5					
Feb 21	T	Q	Ch24: 1-3	HW4	HW3
Feb 23	TH	Q	Ch24 :4-5		OHW4
Week 6					
Feb 28	**T**		**Review Ch21-24**		**HW4**
Mar 1	**TH**		**Midterm1 Ch21-24**	**OHW5** Tutorial	
Week 7					
Mar 6	T	Q	Ch25: 1-3	HW5	
Mar 8	TH	Q	Ch25 :4-5	OHW6 Tutorial	OHW5
Week 8					
Mar 13	T	Q	Ch26: 1-3	HW6	HW5
Mar 15	TH	Q	Ch26 : 4-5	OHW7 Tutorial	OHW6
Week 9					
Mar 20	T	Q	Ch27 :1-4	HW7	HW6
Mar 22	TH	Q	Ch27: 6-9	OHW8 Tutorial	OHW7
Week 10 Spring break					
27-29	**T TH**		**No class**		
Week 11					
Apr 3	T	Q	Ch28:1-3	HW8	HW7
Apr 5	TH	Q	Ch28 : 4-7		OHW8
Week 12					
Apr 10	**T**		**Review Ch25-28**		**HW8**
Apr 12	**TH**		**Midterm 2 Ch25-28**	**OHW9** Tutorial	
Week 13					
Apr 17	T	Q	Ch29: 1-3	HW9	
Apr 19	TH	Q	Ch29 : 4, 5, 7	OHW10 Tutorial	OHW9
Week 14					
Apr 24	T	Q	Ch30 : 2-4	HW10	HW9
Apr 26	TH	Q	Ch30: 5-6	OHW11 Tutorial	OHW10
Week 15					
May 1	T	Q	Ch31 : 1-3	HW11	HW10
May 3	TH	Q	Ch31 : 4-6	OHW12 Tutorial	OHW11
Week 16					
May 8	T	Q	Ch32: 1-3		HW11
May 10	TH	Q	Ch32: 4-5		OHW12
Week 17					
May 15	**T**		**Review**		
May 17	**TH**		**Final: chapters 21-32**	**2:45-5:00**	

University Policies

Academic integrity

Students should know that the University's Academic Integrity Policy is available at http://www.sjsu.edu/senate/S07-2.htm . Your own commitment to learning, as evidenced by your enrollment at San Jose State University and the University's integrity policy, require you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The website for Student Conduct and Ethical Development is available at http://www.sjsu.edu/studentaffairs/ .

Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person's ideas without giving proper credit) will result in a failing grade and sanctions by the University. For this class, all assignments are to be completed by the individual student unless otherwise specified. If you would like to include in your assignment any material you have submitted, or plan to submit for another class, please note that SJSU's Academic Policy F06-1 requires approval of instructors.

Campus Policy in Compliance with the American Disabilities Act

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with the DRC (Disability Resource Center) to establish a record of their disability.

Student Technology Resources

Computer labs for student use are available in the Academic Success Center located on the 1st floor of Clark Hall and on the 2nd floor of the Student Union. Additional computer labs may be available in your department/college. Computers are also available in the Martin Luther King Library.

A wide variety of audio-visual equipment is available for student checkout from Media Services located in IRC 112. These items include digital and VHS camcorders, VHS and Beta video players, 16 mm, slide, overhead, DVD, CD, and audiotape players, sound systems, wireless microphones, projection screens and monitors.

Learning Assistance Resource Center

The Learning Assistance Resource Center (LARC) is located in Room 600 in the Student Services Center. It is designed to assist students in the development of their full academic potential and to motivate them to become self-directed learners. The center provides support services, such as skills assessment, individual or group tutorials, subject advising, learning assistance, summer academic preparation and basic skills development. The LARC website is located at http:/www.sjsu.edu/larc/ .

SJSU Writing Center

The Writing Center in Clark Hall 126 offers tutoring services to San Jose State students in all courses. Writing Specialists assist in all areas of the writing process, including grammar, organization, paragraph development, coherence, syntax, and documentation styles. For more information, visit the Writing Center website at http://www.sjsu.edu/writingcenter or call 408-924-2308.

Peer Mentor Center

The Peer Mentor Center is located on the 1st floor of Clark Hall in the Academic Success Center. The Peer Mentor Center is staffed with Peer Mentors who excel in helping students manage university life, tackling problems that range from academic challenges to interpersonal struggles. On the road to graduation, Peer Mentors are navigators, offering "roadside assistance" to peers who feel a bit lost or simply need help mapping out the locations of campus resources. Peer Mentor services are free and available on a drop –in basis, no reservation required. Website of Peer Mentor Center is located at http://www.sjsu.edu/muse/peermentor/ .

SPRING 2012

Monday	*January 2*	*New Year's Day Observed - Campus Closed **(N)***
Monday	*January 16*	*Dr. Martin Luther King, Jr. Day - Campus Closed **(K)***
Tuesday	January 24	Spring Semester Begins
Tuesday	January 24	Pre-Instruction Activities: Orientation, Advisement, Faculty Meetings and Conferences **(P)**
Wednesday	January 25	First Day of Instruction – Classes Begin
Monday	February 6	Last Day to Drop Courses Without an Entry on Student's Permanent Record **(D)**
Monday	February 13	Last Day to Add Courses & Register Late **(A)**
Tuesday	February 21	Enrollment Census Date **(CD)**
Monday-Friday	March 26-30	Spring Recess *(*SPRING RECESS*)*
Friday	*March 30*	*Cesar Chavez Day Observed - Campus Closed **(CC)***
Tuesday	May 15	Last Day of Instruction – Last Day of Classes
Wednesday	May 16	Study/Conference Day (no classes or exams) **(SC)**
Thursday-Friday	May 17-18	Final Examinations **(exams)**
Monday-Wednesday	May 21-23	Final Examinations **(exams)**
Thursday	May 24	Final Examinations Make-Up Day **(MU)**
Friday	May 25	Grade Evaluation Day **(E)**
Saturday	May 26	Commencement **(C)**
Monday	*May 28*	*Memorial Day - Campus Closed **(M)***
Tuesday	May 29	Grades Due From Faculty - End of Spring Semester **(G)**
Tuesday	May 29	End of Academic Year

Final Exam Schedule