

**MUSC 1323 – Audio Electronics**  
Audio Recording Program / Northwest College  
CRN 43514 – Spring 2015  
Spring Branch Campus Rm#209 | Saturday 9:00AM to 3:00PM  
2 Hour Lecture, 4 Hour Lab course / 96 Contact Hours per semester / 16 weeks

**Professor:** David Wells, (713) 718-5615, david.wells@hccs.edu

**Office Hours:** 3:00PM to 4:00PM Saturday in rm 209  
Other times available by appointment only

**Course Description:**

Basic concepts in electricity, Ohm's Law, circuit analysis and troubleshooting audio problems; includes soldering techniques and equipment maintenance.

**Prerequisites:** None

**Course Goal:**

To provide the student with a significantly enhanced potential to be hired by a high-end studio as well as to increase their skill level as an independent recording engineer; to provide tools and knowledge which increase the earning potential of HCC graduates.

**Student Learning Outcomes:**

The student will be able to:

1. Solve circuit problems using Ohm's Law.
2. Demonstrate effective troubleshooting techniques for audio problems.
3. Demonstrate appropriate preventive maintenance routines in recording and sound reinforcement.
4. Utilize proper soldering techniques.

**Learning Objectives:**

Student will:

- 1.1 Describe the atomic properties involved with electricity and how this relates to conductors and insulators.
- 1.2 Demonstrate proper use of terminology associated with basic electronics such as voltage, current, and power.
- 1.3 Construct circuits using series and parallel connections.
- 1.4 Calculate voltage, current, and resistance within circuits by using Ohm's law.
  
- 2.1 Describe current flow and voltage drops within a DC circuit.
- 2.2 Simplify a DC circuit for analysis.
- 2.3 Define properties of AC signals such as amplitude, frequency, and phase.
- 2.4 Describe common AC signal measurement techniques.
- 2.5 Describe common passive circuit elements such as resistors, capacitors, inductors, and transformers.
- 2.6 Summarize units of measurement for passive components and coding schemes for values.

- 2.7 Explain the effect a diode has on DC and AC signals in a given circuit.
- 2.8 List common components found in power supplies and describe their operation.
- 3.1 Identify common measurement devices.
- 3.2 Demonstrate awareness of the potential dangers when using electricity and follow proper safety procedures when connecting or analyzing electronic circuits.
- 3.3 Demonstrate proper choice of components used in electronic devices based on their values and ratings.
- 3.4 Demonstrate proper use of a multimeter and oscilloscope.
- 4.1 Demonstrate proper use of soldering tools.
- 4.2 Demonstrate the ability to solder and de-solder connectors, wires, cables, printed circuit boards and components.
- 4.3 Describe the proper wiring scheme for various cable types.

**SCANS or Core Curriculum Statement:**

The following workplace competencies and foundation skills have been designed into this courses curriculum:

- Participate as a team member
- Works with diversity
- Selects technology
- Reading

**16 Week Calendar**

1/20	Classes begin
2/2	Official Day of Record
2/5	Last day for 70% refund
2/11	Last day for 25% refund
2/13	Priority Deadline for Fall Completion of Degrees or Certificates
2/16	Holiday – President’s Day
3/14	Project due
3/16 – 3/22	Spring Break
3/23	Return from Spring Break
4/3 – 4/5	Easter holiday
4/6	Return from Easter holiday
4/7	Last day for Withdrawals – 4:30PM
4/18	Deadline for all cable assignments
5/10	Last day of Instruction
5/11 – 5/17	Final Exams
5/22	Grades Available to Students

### **Instructional Methods:**

MUSC 1323 is a required course for all audio recording majors.

The class will be comprised of a variety of instructional methods including lectures, class discussions, computer-based simulations, lab assignments, and hands-on demonstrations. As a student wishing to learn about audio electronics, it is your responsibility to read the textbook and handouts, perform the software exercises, submit assignments in a timely fashion, study for exams, participate in classroom activities, and attend every class.

### **Student Assignments:**

Students will be required to complete the following assignments during the semester:

#### **Quizzes:**

Scheduled quizzes and pop quizzes may be given at the beginning or end of class. Quizzes may be multiple choice, true/false, short answer questions and other formats. Appropriate time limits will be assigned for each quiz. Students who are not present when a quiz begins will not be allowed to take the quiz. No makeup quizzes will be given. The lowest quiz grade from each group of five quizzes will be dropped.

#### **Circuits Challenges (software exercises)**

Licensed tutorial software will be used by students to reinforce understanding of the various materials presented in lectures and reading assignments. Completion of all assigned exercises with a grade of 90% each is required.

#### **Lab Exercises:**

A variety of laboratory exercises will be performed in class to reinforce understanding of the various materials presented in lectures and reading assignments. Grading of labs is based on student participation and achieving desired outcomes. Additionally, students will construct cables outside of class time. Minimally acceptable construction quality is required for each cable or that cable will be rejected without credit until its quality meets acceptable standards. An acceptable cable will demonstrate the student's attention to detail, quality of construction and use of the proper assembly and soldering techniques. Due to the fact that our industry requires these specific skills, **ALL FOUR ASSIGNED CABLES MUST BE TURNED IN AND JUDGED ACCEPTABLE OR A GRADE OF ZERO WILL BE ASSIGNED TO THIS CATEGORY.**

#### **Project:**

Each student will construct an electronic project from a commercially available kit. This kit must contain at least one active device (a transistor or integrated circuit) and a printed circuit board to which components are soldered. Grading is determined by the quality of construction, attention to detail, the student's ability to correctly follow assembly instructions and full functionality as intended by the designer and noted in the kit's documentation, which must be submitted with the kit when it is presented for grading. Due to the fact that our industry requires certain specific skills, **A FULLY FUNCTIONAL AND PROPERLY CONSTRUCTED KIT MUST BE TURNED IN AND JUDGED ACCEPTABLE OR A GRADE OF ZERO WILL BE ASSIGNED TO THIS CATEGORY.**

Amateur Radio Testing and Licensing:

It has been shown that licensed participants in Amateur Radio (ham radio) exercise and refine more advanced electronic skills in a pathway to lifelong learning. A requirement for this course is to successfully pass the examination for the Technician class (entry level) Amateur Radio license, granted by the Federal Communications Commission of the United States government. Students already licensed will satisfy this requirement by upgrading to the next higher class of license. Examinations will be administered by a credentialed team of three Volunteer Examiners as required by law. The examination will be conducted in the classroom at HCC Spring Branch campus at dates and times to be announced. Extra credit will be given to those who upgrade to a higher class of license than this section requires. Links to study materials will be provided on my learning web.

**Assessments:**

Quizzes	30%
Circuits Challenges	20%
Lab Exercises and cables	20%
Project	20%
<u>Amateur Radio Licensing</u>	<u>10%</u>
TOTAL:	100%

Projects and cables turned in after the due date will be reduced in grade 10 points for every week or portion thereof in which the assignment is late.

**Instructional Materials:**

*Understanding Basic Electronics*, Second Edition, by Banzhaf, published by ARRL  
*Basic Circuits Challenge*, simulation software by ETCAI, available on my learning web  
*DC Circuits Challenge*, simulation software by ETCAI, available on my learning web  
*AC Circuits Challenge*, simulation software by ETCAI, available on my learning web  
Numerous handouts available on the professor's learning web  
(Professor's learning web is at <http://learning.hccs.edu/faculty/david.wells/>)

**HCC Policy Statement - ADA**

Any student with a documented disability (e.g. physical, learning, psychiatric, vision, hearing, etc.) who needs to arrange reasonable accommodations must contact the Disability Services Office at the respective college at the beginning of each semester. Faculty is authorized to provide only the accommodations requested by the Disability Support Services Office.

## **HCC Policy Statement – Academic Honesty**

A student who is academically dishonest is, by definition, not showing that the coursework has been learned, and that student is claiming an advantage not available to other students. The instructor is responsible for measuring each student's individual achievements and also for ensuring that all students compete on a level playing field. Thus, in our system, the instructor has teaching, grading, and enforcement roles. You are expected to be familiar with the University's Policy on Academic Honesty, found in the catalog. What that means is: If you are charged with an offense, pleading ignorance of the rules will not help you. Students are responsible for conducting themselves with honor and integrity in fulfilling course requirements. Penalties and/or disciplinary proceedings may be initiated by College System officials against a student accused of scholastic dishonesty. "Scholastic dishonesty": includes, but is not limited to, cheating on a test, plagiarism, and collusion.

Cheating on a test includes:

- Copying from another students' test paper;
- Using materials not authorized by the person giving the test;
- Collaborating with another student during a test, with or without their knowledge, without express authorization from the professor;
- Knowingly using, buying, selling, stealing, transporting, or soliciting, in whole or in part, the contents of any quiz or test;
- Bribing another person to obtain a copy of any quiz or test.

Plagiarism means the appropriation of another's work and the unacknowledged incorporation of that work in one's own written work offered for credit.

Collusion means the unauthorized collaboration with another person in preparing written work offered for credit. Possible punishment for academic dishonesty may include a grade of zero or F in the particular assignment, failure in the course, and/or recommendation for probation or dismissal from the College System. (See the Student Handbook)

## **Class Attendance**

Poor attendance records often correlate with poor grades. Research proves that attendance is the single most important factor in student success. Students are expected to attend all lecture and labs and are responsible for all materials missed due to absence. Roll will be taken shortly after the beginning of each class. Any student who is not present or does not answer when the roll is called will be counted absent. The student is responsible for making sure the professor updates the record if any correction is required. No correction will be made after that class session ends.

Since information discussed in this class is vitally important for a successful career, a student may be dropped if absences exceed four classes (12 hours of class time, 12.5% of the total contact hours). **Absence includes tardiness and leaving early.** Students may be dropped by the professor or automatically by the online attendance system, but the professor is not required or responsible for dropping a student for any reason.

### **HCC Course Withdrawal Policy**

If you feel that you cannot complete this course, you will need to withdraw from the course prior to the withdrawal deadline. Before you withdraw from your course, please take the time to meet with the instructor to discuss why you feel it is necessary to do so. The instructor may be able to provide you with suggestions that would enable you to complete the course. Your success is very important. Beginning in fall 2007, the Texas Legislature passed a law limiting first time entering freshmen to no more than **SIX** total course withdrawals **throughout** their educational career in obtaining a certificate and/or degree. Financial Aide will be limited at three withdrawals or failed courses.

To help students avoid having to drop/withdraw from any class, HCC has instituted an Early Alert process by which your professor *may* “alert” you and HCC counselors that you might fail a class because of excessive absences and/or poor academic performance. It is your responsibility to visit with your professor or a counselor to learn about what, if any, HCC interventions might be available to assist you – online tutoring, child care, financial aid, job placement, etc. – to stay in class and improve your academic performance.

If you plan on withdrawing from your class, you **MUST** contact a HCC counselor or your professor prior to withdrawing (dropping) the class for approval and this must be done **PRIOR** to the withdrawal deadline to receive a “W” on your transcript. \*\*Final withdrawal deadlines vary each semester and/or depending on class length, please visit the online registration calendars, HCC schedule of classes and catalog, any HCC Registration Office, or any HCC counselor to determine class withdrawal deadlines. ***Remember to allow a 24-hour response time when communicating via email and/or telephone with a professor and/or counselor. Do not submit a request to discuss withdrawal options less than a day before the deadline.*** If you do not withdraw before the deadline, you will receive the grade that you make in the class as your final grade.

### **Repeat Course Fee**

The State of Texas encourages students to complete college without having to repeat failed classes. To increase student success, students who repeat the same course more than twice, are required to pay extra tuition. The purpose of this extra tuition fee is to encourage students to pass their courses and to graduate. Effective fall 2006, HCC will charge a higher tuition rate to students registering the third or subsequent time for a course. If you are considering course withdrawal because you are not earning passing grades, confer with your instructor/counselor as early as possible about your study habits, reading and writing homework, test taking skills, attendance, course participation, and opportunities for tutoring or other assistance that might be available.

**Instructor Requirements:** Communication between the instructor and students will additionally utilize the students’ HCC email account. Students are unconditionally required to verify that their HCC email account is accessible and to check their email on a regular basis. Information and assignments will occasionally be communicated via email. Failure to check email will not be an excuse for any student to be unaware of course information, assignments or requirements.

Cell phones and all other electronic devices shall either be surrendered to the instructor to place in holding until the class is over or shall be turned off. Violators who will not comply with this policy as well as those who are disruptive in any other way are required to leave for the duration of that class. Northwest College policy as determined by the leadership team has ruled that “vaping” (use of electronic cigarettes) is regarded under the same policy as smoking and is permitted only in smoking areas.

**Program/Discipline Requirements:** None for this course.

**HCC Grading Scale:**

90 to 100 = A

80 to 89 = B

70 to 79 = C

60 to 69 = D

0 to 59 = F

NOTE: A grade of C or higher is required in all courses in the Audio Recording Technology program to qualify for a degree or certificate.

**EGLS3: Evaluation for Greater Learning Student Survey System**

At Houston Community College, professors believe that thoughtful student feedback is necessary to improve teaching and learning. During a designated time, you will be asked to answer a short online survey of research-based questions related to instruction. The **anonymous** results of the survey will be made available to your professors and division chairs for continual improvement of instruction. Look for the survey as part of the Houston Community College Student System online near the end of the term. **For the Regular Term 16 week classes, the EGLS3 is generally available in weeks 13, 14, and 15.**

All students in this course are **required** to complete the survey and print the acknowledgement receipt at the end. The receipt is to be turned in to the instructor prior to final exam week and will be counted as a quiz grade. The score will be 100 for completion and 0 if the assignment is not completed.