



Course Syllabus - Guitar Manufacturing using Science, Technology, Engineering, & Mathematics (STEM) Concepts

Sinclair Community College

Course Number: MET1151 Section: 220 Term: 12FA

Credits: 3.0

Room	Meeting Days	Meeting Time
13 123	T	05:30PM - 09:10PM

Faculty Information:

Instructor(s):	Singer, Thomas	Division:	Science, Mathematics and Engineering
Department:	Mechanical Engineering Technology	Alternate Number:	
Phone Number:	512-2838	Alternate Email:	thomas.singer@sinclair.edu
Use Course Mail:	Yes	Office Hours:	Posted on office Door & by appointment
Office Location:	11429		

Prerequisites: NONE

Other Prerequisite(s): NONE

Course Description:

This course looks at the design elements, manufacturing and assembly of solid-body electric guitars. Science, Technology, Engineering & Mathematics (STEM) concepts that relate directly to guitars are used to help students make an applied learning connection. Two classroom, two lab hours per week.

Course Objectives/Competencies:

General Education Outcomes:

- Articulate ideas or problems
- Exhibit openness to alternative ideas
- Use appropriate problem solving methods
- Analyze information

Course Outcomes:

Computer Aided Drafting (CAD) design and manufacturing

Develop a headstock on a CAD system and have it manufactured to the design specifications.

Assessment Method: Performance appraisals

Performance Criteria: Headstock design does not fail under string tension

Integrated math problems

Solve math problems on fretboard layout.

Assessment Method: Locally developed exams

Performance Criteria: 0% or better on completing the fret layout problems

Playable instrument

Apply design and assembly skills to achieve a playable instrument.

Assessment Method: Portfolios

Performance Criteria: 70% or better on the grading matrix relating to playability and aesthetics

Course Outline:

Wood species and the environment Components of a guitar Headstock design features Chemistry of finishes Math applications in a guitar Physical science aspects of the guitar Mechanical systems

Course Requirements:

Students are expected to participate in all scheduled course activities, complete assigned readings prior to scheduled course activities,

and complete and submit all assigned work by the deadline. For in-person sections, attendance is expected at each class meeting.

Class Policies:

Policies for this specific course are listed below. Please see the section on Sinclair Policies for additional information on institution-wide policies. Students are expected to participate in all scheduled course activities. For in-person sections, attendance will be taken at the beginning of each class period. It is the responsibility of students who come in late to notify the instructor of their attendance for that class period. Please notify the course instructor in advance by phone or Angel email if you will not be in class.

Evaluation/Grades:

Exams and Assignments	Points/Percentage	Grading Scale
Homework and Lab Exercises	40	100 to 90 = A
Quizzes	10	89.9 to 80 = B
Midterm Exam	25	79.9 to 70 = C
Final Exam	25	69.9 to 60 = D 59.9 to 0 = F
		Must have C or better to continue

Course Schedule:

Course Schedule for MET1151 - 220		
Week	Material to be covered	Assignments Due
1	Overview, shop safety, guitar cost	Guitar Kit price list Dropbox
2	CAD tools for headstock design Select Bodies , start headstock design	Guitar Video Review - Dropbox W2 Guitar Bodies - Research project Dropbox
1	Body modification, Finish headstock design	Video File review - Dropbox W3
4	Swirl painting chemistry – Case Study	Case Study Video File review - Dropbox W4
5	Neck assembly Neck fabrication	Video File review - Dropbox W5
6	Neck fretting and math behind fret positions, Neck and Body finishes	Video File review - Dropbox W6
7	midterm	
8	The basics Guitar setup and maintenance	Applied Math of the Guitar Dropbox
9	Soldering and electronics	Video File review - Dropbox W9
10	Hardware Installation	Video File review - Dropbox W10
11	Hardware Installation	
12	Pickup assembly, Neck attachment	Video File review - Dropbox W12
13	Intonation basics,	Powerpoint File review - Dropbox W13
14	Final assembly , Stings, String Nut	
15	Class Photo, final intonation	Intonation
16	Final guitar evaluation	Final guitar evaluation

Sinclair Policies:

Sinclair Academic Policies

Visit the links below to view Sinclair policies regarding adding or dropping a course, withdrawing from college, late registrations, change of schedule, administrative withdrawal, student behavior guidelines, safety and security, and other academic policies. Understanding these policies is the responsibility of every student.

- Policies for Academic Progress, Academically Dismissed Students, FERPA Records, Fresh Start <http://www.sinclair.edu/services/registration/Policies/>
- Add/Drop a Course <http://www.sinclair.edu/services/registration/Registration/AddorDropClasses/>
- Honor Code and Plagiarism Policies: <http://www.sinclair.edu/about/learning/gened/hc/>
- Student Handbook <http://www.sinclair.edu/student/leader/handbook/>
- Policies, Procedures & Services <http://www.sinclair.edu/catalog/pub/2012/policiesandprocedures.pdf>
- Disabilities Policy & Procedure Guidelines for Students <http://www.sinclair.edu/support/disability/policies/>

Attendance

Students are expected to be present at all class sessions. It is the students' responsibility to read and understand the class attendance policy or

the SinclairOnline course participation policy that will be defined in the syllabus for each course. It is the faculty member's responsibility to define attendance or participation requirements and to monitor and record the students' fulfillment of these requirements. It is a program's prerogative to have specific policies across multiple sections due to the unique requirements of that program. Attendance for traditional classes or participation for SinclairOnline classes may affect final grades, financial aid eligibility, and V.A. benefits.

Sinclair Semester Dates

Click the link below to view important semester dates such as registration deadlines, payment deadlines, start and end dates for the semester as well as the last day to withdraw with a refund and the last day that withdrawal is allowed.

<http://www.sinclair.edu/stservices/rsr/dates/index.cfm>