

**Dr. Michael Riley**

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**Office Hours: By appointment**

**Course Syllabus**

**Course Number:** CTCT 4140

**Course Title:** Agricultural Structures and Metal Fabrication Technology

**Credit Hours:** 3 Semester hours

**Date Prepared:** August 2015

**Meeting Place:** 114 Wallace- Classroom, 131 Wallace- Lab

**Time:** Tuesday, 4:30-8:00

**Course Description:** Materials selection and construction procedures for carpentry, masonry,

electrical wiring, plumbing, and metal fabrication.

**Course Objectives:**

Upon completion of this course, students will be able to:

1. Demonstrate use measuring instruments in structures and metal fabrication situations.

2. Demonstrate use of carpentry tools for agricultural construction.

3. Calculate a bill of materials for structures and metal fabrication projects. (290-3-3-.24-1.a.4)

4. Select construction and metal fabrication materials.

5. Demonstrate use power carpentry equipment.

1. Demonstrate installation of flooring, wall, and roofing systems in agricultural structures technology.
2. Select and apply wood preservatives.
3. Determine concrete volume yield and ingredients.
4. Determine electrical needs
5. Design and wire basic electrical circuits.
6. Perform basic plumbing procedures.
7. Describe cold and hot metal working processes. (290-3-3-.24-1.a.4)
8. Demonstrate use of oxy-fuel gas welding equipment. (290-3-3-.24-1.a.4)
9. Demonstrate use of shielded-metal arc welding equipment. (290-3-3-.24-1.a.4)
10. Demonstrate use of metal inert gas (MIG) welding equipment. (290-3-3-.24-1.a.4)
11. Design and build agricultural structures and models according to specifications and codes.

(290-3-3-.24.b.4)

**Course Content:**

**I. Course Introduction**

A. Course procedures

B. Laboratory organization

**II. Woodworking/Structures Tools**

1. Hand measuring tools, procedures and safety
2. Hand woodworking tools, procedures and safety
3. Portable power woodworking tools, procedures and safety
4. Stationary power woodworking equipment, procedures and safety

**III. Structures Materials Selection and Construction**

A.          Roof construction and materials

B.       Building types and construction members, truss design principles and types

1. Rafter layout and construction
2. Stair stringer layout and construction

**IV. Building Construction Preparation**

A. Sketching and drawing

B. Building layout and leveling instruments

C. Building site selection and layout procedures

**V. Concrete Construction**

A. Concrete properties, strength, water quality, additives and mixes

B. Concrete volume, forming, reinforcement placement and curing

C. Concrete yield and masonry construction

**VI. Electrical Procedures**

A. Basic electricity, electrical circuits, and electrical components

B. Safety when using electricity

1. **Metalworking Fundamentals**

1. Measuring tools
2. Cold metal working procedures
3. Metallurgy
4. Power tools in metal fabrication
5. Hot metal work procedures
6. **Plumbing Fundamentals**
7. Plumbing materials and supplies
8. Basic plumbing procedures

**IX. Welding Fundamentals**

1. Oxy-fuel gas welding
2. Shielded metal arc welding
3. Plastic welding
4. Plasma arc welding
5. TIG welding
6. MIG welding

**Course Requirements/Evaluation:**

A. Attend all class sessions and participate in all class discussions and laboratory assignments.

B. Complete a mid-term examination.

C. Complete a final examination.

D. Complete a woodworking hand tool project.

E. Complete a woodworking power tool project

F. Complete a series of building construction assignments

G. Complete an electrical wiring project

H. Complete a concrete project

I Complete a plumbing exercise

J. Complete arc welding exercises

K. Complete gas welding exercises

**The final grade for the course will be based on the following:**

Projects and Weighting

|  |  |
| --- | --- |
| Assessment | Points |
| Hand and Power Tool Safety Exam | 50 |
| Safety PPT and Safety Test Assignment | 50 |
| Power tool wood working project | 50 |
| Stationary power tool presentation | 50 |
| Stationary Power Tool Safety Exam | 50 |
| Foundation, Flooring, Walls exam | 50 |
| Rafter and Stair Stringer Exercise | 25 |
| Sketch and Bill of Materials HW | 25 |
| Concrete and Masonry Exercise | 50 |
| Concrete and Masonry HW | 25 |
| Electricity Exercise | 50 |
| Midterm | 100 |
| Electricity Exercise HW | 25 |
| Plumbing Exercise | 50 |
| Oxy-gas welding Setup Exercise | 50 |
| Welding Safety Exam | 50 |
| SMAW/GMAW Exercise | 50 |
| Final Project | 200 |
| -Total Possible points | 1000 |

Any assignment presented or turned in late will be penalized 10% for each class period that it is late.  Late assignments presented or turned in late after two class meetings will not be accepted.

The following grading scale will be used:

90 - 100 % = A

80% - 89.9% = B

70% - 79.9% = C

60% - 69.9% = D

Below 60% = F

**Class Policy Statements:**

Participation:  Students are expected to participate in all class discussions and participate in all exercises. It is the student’s responsibility to contact the instructor if assignment deadlines are not met. Students are responsible for initiating arrangements for missed work.

Attendance/Absences:  **Attendance is required at each class meeting**.  **Attendance will be recorded for each class period. Unexcused absences will result in the following actions: 1 unexcused absence- 5% reduction in final grade, 2 unexcused absences- 15% reduction in final grade, 3 or more unexcused absences- failure of the course.**  If an exam is missed, a make-up exam will be given only for University-approved excuses as outlined in the Student E Handbook. Arrangement to take the make-up exam must be made in advance or immediately after return if absence is due to illness.  **Students who miss any class or lab because of illness need a doctor’s statement for verification of sickness and should clear the absence with the instructor the day they return to class.** **If a lab is missed, the student must make arrangements the day they return to make up the assignment.**  Other unavoidable absences from campus must be documented and cleared with the instructor **in advance to be considered excused**. Arriving more than 10 minutes late to the morning class or the lab without advance approval from the instructor will be considered an absence.

Unannounced quizzes:  There will be no unannounced quizzes.

Accommodations:  Students who need accommodations are asked to arrange a meeting during office hours the first week of classes, or as soon as possible if accommodations are needed immediately.  If you have a conflict with my office hours, an alternative time can be arranged. To set up this meeting, please contact me by e-mail. Bring a copy of your Accommodation Memo and an Instructor Verification Form to the meeting. If you do not have an Accommodation Memo but need accommodations, make an appointment with the Program for Students with Disabilities at 1244 Haley Center, 844-2096 (V/TT).

Honesty Code:  The University Academic Honesty Code and the Student E Handbook Rules and Regulations pertaining to Cheating will apply to this class.

Cell Phone Policy: Cell phone usage will not be permitted in the classroom or laboratory (including text messaging). If an emergency arises, please leave the shop or classroom to use the phone. If a student sends text messages during class, they will be dismissed from the classroom and an unexcused absence will be recorded.

Professionalism:  As faculty, staff, and students interact in professional settings, they are expected to demonstrate professional behaviors as defined in the College’s conceptual framework. These professional commitments or dispositions are listed below:

* Engage in responsible and ethical professional practices
* Contribute to collaborative learning communities
* Demonstrate a commitment to diversity
* Model and nurture intellectual vitality