

SAM HOUSTON STATE UNIVERSITY
COLLEGE OF SCIENCE AND ENGINEERING TECHNOLOGY
DEPARTMENT OF AGRICULTURAL SCIENCES

COURSE SYLLABUS

AGET 4384

(Taught with AGRI 5300)

FUSING AND JOINING METALLIC AND NON-METALLIC MATERIAL

3 CREDIT HOURS

FALL 2016

LOCATION OF CLASS AND LABORATORY:

WILLIAM R. HARRELL AGRICULTURAL ENGINEERING TECHNOLOGY CENTER

Rm100 and LAB

Class Th 1:00 to 1:50

Lab Th 2:00 to 5:50

INSTRUCTOR: Joe E. Muller, Ph.D., Professor – Agricultural Engineering Technology

OFFICE, William R. Harrell Agricultural Mechanization & Technology Center, Rm 100.

CONTACT INFORMATION:

AMC (936) 294 4877

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OFFICE HOURS: as posted or by appointment

COURSE DESCRIPTION: A comprehensive study of the theories, principles, and procedures of bonding and fusing metallic and non-metallic materials by the electric arc, oxy-fuel, and adhesive processes. AGET 4384 is a lecture/laboratory course. Approximately 1 hour lecture and 4 hours laboratory instruction will be held each class day. Technical classroom instruction, laboratory exercises, supervised practice, and field trip experiences will involve selection and utilization of new and emerging technologies and equipment, workplace planning, supervision, and management.

COURSE OBJECTIVES:

The primary objectives of this course are to survey current and emerging technologies in metallic and non-metallic cutting and joining processes and materials utilized in the industry. The opportunity for the development of technical understanding and skills in joining plastics, epoxies and polymers, gas tungsten arc welding (GTAW), gas metal arc welding (GMAW), shielded metal arc welding (SMAW), and plasma arc and oxy-fuel cutting and welding processes will be provided. In addition, safety, welding metallurgy, hardfacing, and destructive and non-destructive weld testing, quality and environmental control; and work placed supervision and management will be covered.

Upon completion of the course, the student should be able to:

1. Discuss the metallurgical properties of common metals and alloys used in the construction and fabrication industry.

2. Discuss and recognize safety and unsafe conditions and concerns with the operation and use of welding and cutting equipment.
3. Discuss the technical theories and safe operational procedures of the oxy-fuel and plasma-arc cutting processes.
4. Discuss the technical theories and safe operational procedures of common plastic and polymer material joining processes.
5. Discuss the technical theories and safe operational procedures of gas tungsten arc welding (GTAW), gas metal arc welding (GMAW), and shielded metal arc welding (SMAW) processes.
6. Discuss the technical theories and safe operational procedures of metal surfacing processes.
7. Interpret welding procedure specifications (WPSs).
8. Discuss industry approved destructive and non-destructive weld testing and failure analysis procedures.
9. Select appropriate cutting or welding process, equipment, consumable supplies and procedures and perform cost analysis for a proposed fabrication or repair job.
10. Safely demonstrate competencies in each of the processes sufficient to gain successfully employment in training, supervision and/or management careers in metallic and non-metallic material construction and fabrication related industries.

TEXTBOOK: (Required).

Welding Principles and Applications, Jeffus, 8th Edition, Delmar Publishing Co.
ISBN# 9781305494695

ADDITIONAL REFERENCES:

The Procedure Handbook of Arc Welding, Lincoln Electric Company
Current Manufacturer's and Distributor's Literature
Modern Welding Technology, Cary & Helzer, 6th Edition, Pearson, /Prentice
Hall Publishing Co.
Welding, Deere and Company, Moline, Illinois

DEPARTMENT OF AGRICULTURAL SCIENCES ATTENDANCE POLICY:

1. Regular and punctual attendance is expected of each student in the Department of Agricultural Sciences at Sam Houston State University.
2. Each faculty member will keep a written record of student attendance.
3. If a student misses four or more classes, the student's grade may be reduced by one letter grade. Additional penalties will be up to the discretion of the professor.
4. Three unexcused or unjustified tardies or early departures are considered one absence.
5. Excused absences must be documented by the student with a letter of confirmation from the sponsoring student organization, professor, doctor, etc. Exemptions will include participation in departmental activities when prior approval is attained from the Department Chair or the sponsoring professor. Excused absences and/or approved participation in departmental activities does not negate students responsibility to complete any missed assignments or tests in a timely manner.

COURSE EVALUATION:

Exams	50 %
Class attendance and performance	10%
Laboratory activities, and assignments	40 %

No exams or assignments will be given at alternative times unless arrangements are made with the professor before the scheduled activity occurs.

1. At the discretion of the professor, up to a 10 % penalty may be assessed for late exams or assignments. At the discretion of the professor, a 100% essay make-up exam may be given.
2. Final Exam is comprehensive.

LABORATORY ACTIVITIES AND REQUIRED SUPPLIES:

Each student is required to wear safety glasses, appropriate clothes, shoes and other PPE for welding and follow other industry safety procedures. Students will keep the laboratory clean and in order. Lab will not be dismissed until all tools and equipment is returned to the proper storage location and the floor is properly clean and swept.

ACADEMIC DISHONESTY AND DISRUPTIVE CONDUCT: Students will refrain from behavior in the classroom or lab that intentionally or unintentionally disrupts the learning process and, thus, impedes the mission of the university. Students are prohibited from making offensive remarks, sleeping, talking at inappropriate times, wearing inappropriate clothing, or engage in any other form of distraction. Inappropriate behavior in the classroom shall result in a directive to leave class. Students who are especially disruptive also may be reported to the Dean of Students for disciplinary action in accordance with university policy.

All students are expected to engage in all academic pursuits in a manner that is above reproach. Students are expected to maintain complete honesty and integrity in the academic experiences both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action. The University and its official representatives may initiate disciplinary proceedings against a student accused of any form of academic dishonesty including, but not limited to, cheating on an examination or other academic work which is to be submitted, plagiarism, purchasing papers, collusion and the abuse of resource materials. Any such action will result in failing that exam, research paper, assignment, or the entire course, and a letter of explanation placed in the student's file.

Cellular telephones, text messengers, any communication function on laptop computers, and/or any other similar devices must be turned off before class or lab begins. Arrangements for handling potential emergency situations must be arranged before the class or lab period begins at the discretion of the instructor. The use of any device that performs communication functions during any test period is prohibited. Such devices may not be used even for their calculator functions.

Failure to comply with this policy could result in expulsion from the classroom or lab, or with multiple offenses, failure of the course. These devices should not be present during a test or should be stored securely in such a way that they cannot be seen or used. Even the visible presence of such a device during a test period may result in a zero for that test. The use of these devices during a test is considered de facto evidence of cheating and could result in a charge of academic dishonesty (see student code of conduct) <http://www.shsu.edu/students/guide/StudentGuidelines2010-2012.pdf#page=29>).

TOBACCO POLICY: In order to promote a healthy, safe, and aesthetically pleasing work, educational, and living environment, Sam Houston State University (SHSU) will endorse a smoke free and tobacco free environment. Tobacco products include cigarettes, cigars, pipes, smokeless tobacco, and all other tobacco

products. This policy applies to all faculty, staff, students, employees of contractors, and visitors of Sam Houston State University on the premises of the university.

VISITORS IN THE CLASSROOM:

Unannounced visitors to class must present a current, official SHSU identification card to be permitted in the classroom. They must not present a disruption to the class by their attendance. If the visitor is not a registered student, it is at the instructor's discretion whether or not the visitor will be allowed to remain in classroom.

STUDENT ABSENCES ON RELIGIOUS HOLY DAYS POLICY:

Section 51.911(b) of the Texas Education Code requires that an institution of higher education excuse a student from attending classes or other required activities, including examinations, for the observance of a religious holy day, including travel for that purpose. A student whose absence is excused under this subsection may not be penalized for that absence and shall be allowed to take an examination or complete an assignment from which the student is excused within a reasonable time after the absence.

University policy 861001 provides the procedures to be followed by the student and instructor. A student desiring to absent himself/herself from a scheduled class in order to observe (a) religious holy day(s) shall present to each instructor involved a written statement concerning the religious holy day(s). This request must be made in the first fifteen days of the semester or the first seven days of a summer session in which the absence(s) will occur. The instructor will complete a form notifying the student of a reasonable timeframe in which the missed assignments and/or examinations are to be completed.

STUDENTS WITH DISABILITIES POLICY:

It is the policy of Sam Houston State University that individuals otherwise qualified shall not be excluded, solely by reason of their disability from participation in any academic program of the university. Further, they shall not be denied the benefits of these programs nor shall they be subjected to discrimination. SHSU adheres to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations for students with disabilities. Any student with a disability that affects his/her academic performance should contact the Office of Services for Students with Disabilities in the SHSU Lee Drain Annex (telephone 936-294-3512, TDD 936-294-3786) to request accommodations. All disclosures of disabilities will be kept strictly confidential. NOTE: No accommodation can be made until you register with the Services for Students with Disabilities. For a complete listing of the university policy, see:

<http://www.shsu.edu/dept/academic-affairs/documents/aps/students/811006.pdf>

INSTRUCTOR EVALUATIONS:

You will be asked to complete a on-line course/instructor evaluation form toward the end of the semester.