ETME 311 JOINING PROCESSES – SPRING 2019

LEC 001 - M 2:10 – 3:00 A.J.M JOHNSON HALL 237
LAB 002 - T, TH 8:00 – 9:50 BARNARD HALL 132
LAB 004 - T, TH 1:10 – 3:00 BARNARD HALL 132
LAB 005 - M, W 10:00 – 11:50 BARNARD HALL 132

Instructor: Luke Mardock

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<tr>
<th>Phone:</th>
<th>406.994.2907</th>
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<tr>
<td>E-mail:</td>
<td><a href="mailto:Lucas.Mardock@montana.edu">Lucas.Mardock@montana.edu</a></td>
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<tr>
<td>Office:</td>
<td>Barnard Hall 132A</td>
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<td>Office Hours:</td>
<td>T,TH 12:00 – 1:00</td>
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**COURSE OBJECTIVE:** Introduction to the modern science of welding technology, as well as a detailed examination of metallurgy and materials properties as related to welding processes. Welding specification and symbols are introduced as well as modern welding code usage. Weld design, set-up, preparation, application, and test are emphasized. Specific hands-on experiences in OAW, SMAW, GMAW, GTAW, common separating processes, as well as destructive and non-destructive testing are included in laboratory. In addition to commonly used welding techniques this course will expose students to other fastening and joining techniques used in industry. Resistance welding, composites, riveting and mechanical fastening and their application will be explored.

**PREREQUISITE:** EMEC 103

**COREQUISITE:** ETME 216

**TOOLS / SUPPLIES:**
- Calculator
- OSHA approved clear safety glasses or impact resistant prescription glasses with side shields.
- OSHA approved hearing protection
- MIG Welding Gloves - available at hardware stores or welding supply stores
- No open toe shoes, no hoodies or loose clothing. You will get a little dirty! A shop coat or apron is appropriate.
- Laboratory notebook, three ring binder, graph paper.


**COURSE TOPICS:** The following topics (but not limited to) will be covered this semester:

1. SMAW (Stick)
2. GMAW (MIG)
3. GTAW (TIG)
4. Plasma Cutting
5. Resistance Welding
6. Oxy/Fuel Cutting/Brazing
7. Mechanical Fasteners
8. Soldering/Brazing
9. Thermite welding
10. Destructive/Non-Destructive testing
Specific Outcome Objectives:

Emphasis is on the application of various joining processes commonly encountered by engineers today. Operating and experiencing welding and joining in our lab section will give valuable insight into processes commonly found in industry today. Course objectives include:

- Develop an understanding of basic joining processes
- Demonstrate proficiency in basic welding/cutting operations
- Gain familiarity with a wide variety of non-welding processes
- Apply joining knowledge for selecting appropriate materials/joining processes for a desired application
- Communicate experimental findings in appropriate written report form
- Learn to make engineering judgments
- Adhere to assignment deadlines
- Demonstrate a high level of honesty and integrity

STUDENT EVALUATION:
Student grades will be based upon the following scale:

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<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>93-100</td>
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<tr>
<td>A-</td>
<td>90-92</td>
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<tr>
<td>B+</td>
<td>87-89</td>
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<tr>
<td>B</td>
<td>83-86</td>
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<tr>
<td>B-</td>
<td>80-82</td>
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<tr>
<td>C+</td>
<td>77-79</td>
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<td>C</td>
<td>73-76</td>
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<tr>
<td>C-</td>
<td>70-72</td>
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<td>D+</td>
<td>67-69</td>
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<tr>
<td>D</td>
<td>63-66</td>
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<tr>
<td>D-</td>
<td>60-62</td>
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<td>F</td>
<td>Below 60</td>
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Grading will be:
1. Lab Assignments 40%
   a. Lab Memos 50%
   b. Lab Coupons 50%
2. Quizzes 20%
3. Exams 20%
   a. Mid-Term Lab Report 50%
   b. Final Exam 50%
4. Attendance and lab participation 20%

C- Policy:
Effective Fall 2005, a “C-“ or better must be achieved for all required courses, in order to earn credit in that course toward graduation. See the following: [http://www.montana.edu/wwwcat/academic/acad6.html](http://www.montana.edu/wwwcat/academic/acad6.html).

ACADEMIC INTEGRITY EXPECTATIONS

One of the most important values of an academic community is the balance between the free flow of ideas and the respect for the intellectual property of others. Researchers do not use one another's research without permission; scholars and students always use proper citations in papers; professors may not circulate or publish student papers without the writer’s permission; and students may not circulate or post materials (handouts, exams, syllabi -- any class materials) from their classes unless they have received prior written permission from the instructor. Any test, paper or report submitted by you and that bears your name is presumed to be your own original work that has not previously been submitted for credit in another course unless you obtain prior written approval to do so from your instructor. In all of your assignments, including your homework or drafts of papers, you may use words or ideas written by other individuals in publications, web sites, or other sources, but only with proper attribution. If you are not clear about academic integrity expectations for completing an assignment or taking a test or examination, be sure to seek clarification from your instructor or teaching assistant (TA) beforehand.
**Plagiarism**
Plagiarism (according to Meriam Webster) is “to steal and pass off the ideas or words of another as one's own.” Indeed, any sentences or paragraph taken verbatim from the writing of (or interviews with) any other person or persons, or from your own writing that has been published or submitted elsewhere, must be placed in quotation marks and their source must be clearly identified. Changing the wording of a sentence or passage slightly does not evade the requirement for citation. More generally, whenever you are drawing an important argument or insight from someone else, even if you reword it into your own words, a reference to the source is required. If you have any questions about using and citing sources, you are expected to ask for clarification. For further details, please see the Statement on Academic Writing and Student Responsibility: http://www.montana.edu/facultyexcellence/TLResources/StudentResponsibilityAcademicWriting.html.

**Student Conduct Code**
Section 420 of the Student Conduct Code (http://www.montana.edu/policy/student_conduct/#descriptexamples) describes academic misconduct as including but not limited to plagiarism, cheating, multiple submissions, or facilitating others’ misconduct. Possible sanctions for academic misconduct range from an oral reprimand to expulsion from the university.

Section 430 of the Student Conduct Code (http://www.montana.edu/policy/student_conduct/#descriptexamples) allows the instructor to impose the following sanctions for academic misconduct: oral reprimand; written reprimand; an assignment to repeat the work or an alternate assignment; a lower or failing grade on the particular assignment or test; or a lower grade or failing grade in the course. More serious sanctions require a Conduct Board hearing.

Students are expected to conduct themselves in accordance with prescribed university regulations. A full review of the “Student Academic & Conduct Guidelines & Grievance Procedures” can be made at the offices of the Dean of Students or at: www.montana.edu/wwwfachb/policy/acguide.html. I expect to be courteous and respectful of everyone else in the class; which includes the manner in which you directly speak and act, being on time, and avoiding disruptive behaviors, profanity, etc.

**Cell Phones and other Personal Communication Devices:** Finish your calls and text messaging before class time so that you can turn these devices off prior to the start of class and lab. The instructor reserves the right to collect cell phones used during class or eject students who do not respect the rules. If cell phones are seen or heard during an exam, a zero will be given to the student on that exam.

**Attendance and Participation:** Each student will start the semester with 30 Attendance and Participation points for the lab. Each unexcused lab absence will result in a 2 point deduction. Each time a student is late to a lab session will result in a 1 point deduction. Role will not be taken at every lecture, but if you miss a class, it is your responsibility to get the notes, assignments, and announcements, or other material that you missed. Lecture presentations will not be made available outside of the classroom setting. Students will be allowed to attend only their section in order to preserve limited resources of space and materials allocated to each lab period. Students are expected to be prepared for each class, including reading the assigned material prior to class. If a quiz is missed due to an excused absence then that quiz can be taken for full credit, within the next week, during the instructor’s office hours. Quizzes may not be taken due to an unexcused absence.

**Special Needs and Accommodations:** Special Needs and Accommodations inquiries can be made at MSU’s Office of Disability, Re-entry, and Veteran Services at: http://www.montana.edu/wwwwres/disability/index.shtml
LAB MEMOS AND REPORTS: Lab memos will be submitted upon completion of each individual process. There will also be a Mid-Term Lab Report. The standards and criteria for both will be posted on D2L. The memos and report will all be submitted on D2L. Submission folders will have a close date and time. The quality of the content, construction, and writing of these documents will be held to a high standard. If additional assistance is needed please avail yourself of the MSU Writing Center (Wilson Hall, Renne Library) or other campus resources.

LAB SESSIONS: The lab component of this course will focus on gaining proficiency in various joining processes. Therefore, attendance and professionalism at all sessions is mandatory in order to receive credit for the lab assignment, unless otherwise specified by the instructor. Also, everyone is to respect the value of each others time and be on time!

Joining Coupons: Coupons, derived from the principles discussed in the course, may be included in the curriculum as the schedule progresses.

Quizzes: Quizzes will be given over pre-assigned reading material.

ABOUT THIS COURSE: ETME 311 is a Junior level course, and requires consistent attendance, diligence with the assignments/labs, and preparation BEFORE each lecture/lab. The goal should be to learn the material that you will need in the future - well enough that you can use it to solve real problems.

Course Schedule: See D2L under Course and Lecture Materials

***Class Schedule will be updated periodically***

NOTE: Students are to read the text chapters prior to the discussion date. Quizzes over the reading material may be given at the beginning of class or online.
All dates are relative to the week of the course. If date changes are required to accommodate material coverage they will be given prior to the dates shown above. When in doubt - be prepared early!