A. **COURSE INFORMATION**

   | Course number/section: | ENGR-3350.002 |
   | Class meeting time:    | MW 10:00-10:50 |
   | Class location:        | Center for Science, room 115 |
   | Course Website:        | https://bb9.tamucc.edu |

B. **INSTRUCTOR INFORMATION**

   | Instructor:       | Ronald Carlson |
   | Office location:  | EN 219         |
   | Office hours:     | M 1:00 – 2:30, T 11:00 – 12:00, W 1:00 – 2:00, R 2:00 – 3:30 |
   | Telephone:        | (361) 825-3272 |
   | e-mail:           | ronald.carlson@tamucc.edu |
   | Appointments:     | Send an email request with proposed times |

C. **COURSE DESCRIPTION**

   **Catalog Course Description**

   Introduction to metal and non-metallic manufacturing processes; casting, forging, rolling, extrusion, sheet metal forming, cutting tools turning and milling operations, abrasive machining, welding and joining, powder compaction, molding, forming of plastics, surface treatment, human factors and safety.

   **Extended Course Description**

   Students will be prepared to work in a manufacturing environment.

D. **PREREQUISITES AND COREQUISITES**

   **Prerequisites**

   ENGR 1312 - Foundations of Engineering II, ENGR 3320 - Strength of Materials

   and ENGR 2326 - Dynamics

   **Corequisites**

   None

E. **REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES**

   **Required Textbook(s)**

   1) Manufacturing Engineering and Technology, Seventh Edition by Serope Kalpakjian, Steven R. Schmid

   **Optional Textbook(s) or Other References**

   Students will use online resources to supplement the text book.
F. STUDENT LEARNING OUTCOMES AND ASSESSMENT

1. To understand mechanical behavior, testing, and manufacturing properties of Materials
2. To learn about physical properties of materials
3. To learn about fundamentals of metal casting
4. To learn about rolling of metals
5. To learn about forging of metals
6. To learn about extrusion and drawing of metals
7. To understand fundamentals of machining
8. To learn about cutting-tools materials and cutting fluids
9. To learn about abrasive machining and finishing operation
10. To learn about fusion-welding processes

By the end of this course, students should be able to:

1. Calculate the forces involved and power required to machine a part.
2. Determine the surface finish, Ra number, of a part given the surface measurements.
3. Describe the Lost Foam Casting process
4. Fabricate an assembly to test the torque capability of an interference fit.
5. Perform a statistical process control analysis

G. INSTRUCTIONAL METHODS AND ACTIVITIES

Lecture with lab work. Lab work will consist of creating a foam mold that will be used in casing an Aluminum part to be used as a tensile test specimen. Learning to run a band saw, milling machine, lathe, and the tensile testing machine will also be part of the class work.

Students will work in teams during the labs and will design and conduct experiments per the instructor’s directions.
Assignments

Lab work will be assigned every week as related to the topics in class. They are to be worked during the lab time and are usually due at the end of lab session; therefore attendance is essential. **Late assignments will NOT be accepted; if you have a special circumstance let me know without delay.** In the event that you prove (after seeking different sources of help, including instructor) to have difficulty with an assignment, an extension may be obtained from instructor.

**H. MAJOR COURSE REQUIREMENTS AND GRADING**

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exams (2)</td>
<td>10 each</td>
</tr>
<tr>
<td>Homework</td>
<td>20</td>
</tr>
<tr>
<td>Quizes</td>
<td>5</td>
</tr>
<tr>
<td>Reports (3)</td>
<td>10 each</td>
</tr>
<tr>
<td>Final Exam</td>
<td>25</td>
</tr>
</tbody>
</table>

Grades will be assigned using the following scale:
A: 100-90, B: 89-80, C: 79-70, D: 69-60, and F: 59-0.

**G. COURSE CONTENT/SCHEDULE**

<table>
<thead>
<tr>
<th>WEEK</th>
<th>TOPIC</th>
<th>CHAPTER(S)</th>
<th>ASSIGNMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan. 18</td>
<td>Structure of Metals</td>
<td>Chapters 1, 2</td>
<td>Read chapters 1 &amp; 2</td>
</tr>
<tr>
<td>Jan. 23</td>
<td>Mechanical Behavior and Testing of Materials</td>
<td>Ch. 1, 2, and 3</td>
<td>Read chap. 3</td>
</tr>
<tr>
<td>Jan. 30</td>
<td>Metal Alloys heat treatment, production, properties</td>
<td>Ch. 4 &amp; 5</td>
<td>Read chapter 4, 5</td>
</tr>
<tr>
<td>Feb. 6, 13</td>
<td>Non-Metallic materials</td>
<td>7, 8, &amp; 9</td>
<td>Read chapters 7, 8, and 9</td>
</tr>
<tr>
<td>Feb. 20</td>
<td>Exam 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feb. 27, March 6</td>
<td>Metal casting processes, Cast Aluminum Lab</td>
<td>10, 11, &amp; 12</td>
<td>Read chapters 10, 11, and 12</td>
</tr>
<tr>
<td>March 13</td>
<td>Spring Break – No classes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mar. 20 - April 3</td>
<td>Machining Processes</td>
<td>21 to 27</td>
<td>As assigned</td>
</tr>
<tr>
<td>April 10</td>
<td>Exam 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>April 17</td>
<td>Special Machining, Welding</td>
<td>Chapters 28 - 31</td>
<td>As assigned</td>
</tr>
<tr>
<td>May 2</td>
<td>Last day of classes</td>
<td></td>
<td>Review</td>
</tr>
<tr>
<td>May 4 - 10</td>
<td>Final Exam</td>
<td></td>
<td></td>
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</tbody>
</table>
Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.

* Exam 1, & 2 Dates are tentatively given within that week, not necessarily on Monday. Exact day of Exam is given one week in advance. No exam makeup is given unless for legitimate cause (a scheduled vacation, wedding, or airline flight is not a legitimate cause).

NOTE1: Last day to drop a class April 7
NOTE2: No holiday closings
NOTE3: The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.

H. COURSE POLICIES

Attendance/Tardiness
Absences are discourage and detrimental to learning and to your grade. However, it is the student's responsibility to obtain class notes, handout materials, etc. when a scheduled lecture is missed. Grading for Attendance will be deducted after the first absence. Starting with the second absence a 1% deduction will apply. If you accumulate 6 absences you have a zero (half a letter grade) for this grading category.

Late Work and Make-up Exams
Late work, scheduled exam absences or No-show on lab/project will not be accepted unless there exists legitimate excuses (illness, death in the immediate family, etc.) and adequate documentation is furnished. If a make-up were to be needed it could be a degree higher in difficulty.

Cell Phone Use
Cell phone use is prohibited once class begins. They are to be silenced and put away where they are not seen. If a call is expected take it out of the class. Anyone that interrupts class due to cell phone will be asked to leave.

Laptop Use
May be permitted if used for class work.

Food in Class
No food is permitted. Only bottled water with a cap or seallable lid. Failure to comply will result in the student being asked to leave to correct the issue.

Missed Exam
You will receive a zero for a missed exam, unless you have accommodations with Instructor or have a legitimate excuse. You are to communicate any issues immediately.
Participation
To be announced in class when extra points are given.

I. COLLEGE AND UNIVERSITY POLICIES

- **Academic Integrity (University)**
  University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a failing grade.

- **Classroom/Professional Behavior**
  Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

- **Statement of Civility**
  Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

- **Deadline for Dropping a Course with a Grade of W (University)**
  The grade of W will be assigned to any student officially dropping a course. Please consult with the instructor before you decide to drop to be sure it is the best thing to do. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Should dropping the course be the best course of action, visit the Office of the University Registrar for the Course Drop Form that must be submitted. No student is eligible to receive a W without completing the official drop process by this deadline. Please consult the Academic Calendar (http://www.tamucc.edu/academics/calendar/) for the last day to drop a course.

- **Grade Appeals (College of Science and Engineering)**
  As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a
student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at http://www.tamucc.edu/provost/university_rules/index.html, and the College of Science and Engineering Grade Appeals webpage at http://sci.tamucc.edu/students/GradeAppeal.html. For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

- **Disability Services**
  The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.

If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

[http://disabilityservices.tamucc.edu/](http://disabilityservices.tamucc.edu/)

- **Statement of Academic Continuity**
  In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

**J. OTHER INFORMATION**

- **Academic Advising**
  The College of Science & Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. Meetings are by appointment only; advisors do not take walk-ins.
Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

GENERAL DISCLAIMER

I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.