## 

**Northcentral Technical College**

**Course Number** 10-442-101 **Course Title:** Introduction to Welding

**Syllabus**

**Instructor and Class Information**

**Instructor Name** Matthew Reinders

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Please feel free to email or phone me using the contact information provided. I will try to respond to your message within 48 hours. When leaving a phone message, please speak slowly, include your name, course, return number and reason for calling. All emails should include your name and a detailed, professional message.

**Start Date** 9/1/22

**End Date** 1/19/23

**Meeting Times** Monday through Friday 10:20 am to 11:43 am

**Meeting Location** Ag Room 12; Ag Shop

**Course Information**

**Course Number:** 10-442-101 (23558)

**Course Title:**  Introduction to Welding

**Course Description:** This course highlights the similarities in equipment and technique between the major arc welding processes. Students complete introductory level competencies in the SMAW, GMAW, FCAW, and GTAW processes. Material preparation skills include shearing, sawing, grinding, and thermal cutting.

**Total Credits** 2

**Total Hours** 54

**Type of Instruction:** Lecture and Lab

**Mode of Delivery:** In Person

**Pre/Corequisites*:*** None

**Textbook(s):** None

**Learner Supplies**

**Required Additional Recommended Supplies**

Leather welding gloves Tape measure or pocket rule

Safety glasses with side shields Welding helmet

Leather boots or shoes Safety toe shoes

Clothing that conforms to safety guidelines Earplugs

Pen or pencil Soapstone or marker

**Soft Skills**

Soft Skills are broad outcomes or skills that every graduate of an NTC program is expected to achieve.  These skills go beyond the context of a specific course or program and are the skills employers tell us they expect employees to have.  For you to meet these demands, NTC has identified seven Soft Skills that are important to every area of learning. These Soft Skills are:  Communicate Effectively, Act Responsibly, Work Productively, Work Cooperatively, Demonstrate Integrity, Think Critically and Creatively and Develop Global Awareness. The Soft Skills that will be a focus in this course are:

Communicate Clearly

Work Cooperatively

Think Critically and Creatively

**General Education Outcomes**

The General Education Outcomes from the General Education Assessment Committee are embedded in all of our General Education courses.

**Essential Learning Targets**

1. Use arc, MIG, TIG welders, equipment and materials needed to weld.
2. Apply the use of welding to agricultural related industries.
3. Use micrometer and caliper to measure metals in decimal form to the nearest thousandth.
4. Create sketches and plans of agricultural structures.

**Program Outcomes**

In this course you will develop knowledge and skills in support of the following Program Outcomes:

* Demonstrate industry-recognized safety practices
* Produce SMAW welds.
* Produce GMAW welds
* Produce FCAW welds
* Produce GTAW welds

**Course Competencies**

Competencies are what learners will be able to do as a result of the learning experience. In this course the competencies that you must demonstrate are:

* Compare and contrast the major arc welding processes
* Make surface and fillet welds with the SMAW process
* Make fillet and groove welds with the GMAW short circuit process
* Make fillet welds with the GMAW spray process
* Make fillet welds with the FCAW process
* Make fillet welds with the GTAW process
* Cut steel with the oxyfuel process
* Cut metal with the plasma arc process

**Assessment Information**

Final course grades can be viewed by going to www.ntc.edu, clicking on "myNTC" and following the instructions listed.  For more information on grading and academic procedures please review the NTC Policies and Guidelines on this syllabus.  
  
This course is a performance-based course, designed for your success.  Learning plans will be studied over the course of the semester.  Each learning plan will have assessment activities or Performance Assessment Tasks (PATs) which will evaluate your performance of the course competencies.  Your grade will be based on you being able to demonstrate all course competencies.

In this course your performance will be assessed in the following methods:

Assessments for this course will include required welds and written quizzes. All assessments will have due dates, and must be completed on-time or early. Late quizzes will not be accepted, and all required welds must be complete by the end of class on May 25th.

**Accrued Points**

Your work order grades and quiz grades will be totaled as detailed below. The welding skill grades are weighted so that they make up about three quarters of your grade. Classroom work makes up about 25%. If you want to track your grades, you can enter points in the *Points Earned* column.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Assessment | Points  Possible | Points Earned |
| Welding Skill  (Work Orders) | INTRO-1 | 20 |  |
| INTRO-2 | 20 |  |
| INTRO-3 | 20 |  |
| INTRO-4 | 20 |  |
| INTRO-5 | 20 |  |
| INTRO-6 | 20 |  |
| INTRO-7 | 20 |  |
| ***TOTAL*** | ***140*** |  |
| Classroom  (Quizzes) | QUIZ #1 | 10 |  |
| QUIZ #2 | 10 |  |
| QUIZ #3 | 10 |  |
| QUIZ #4 | 10 |  |
| QUIZ #5 | 10 |  |
| QUIZ #6 | 10 |  |
| ***TOTAL*** | ***60*** |  |
| ***Course Total: 200 Points*** | | | |

***Weld Skill Assessment (Required Welds)***

Developing acceptable welding skills is necessary to earn a satisfactory grade in this class. You may attempt to master weld competencies continually until you reach the desired level of quality. Each weldment will be graded on the following scale with related criteria:

|  |  |  |  |
| --- | --- | --- | --- |
| Grade | Point Value | Grade | Grading Rationale |
| 5 | 5.0 | A | No defects, weld size meets print spec. |
| 5- | 4.6 | A- | 1 minor defect |
| 4+ | 4.4 | B+ | 2 minor defects |
| 4 | 4.25 | B | 3 minor defects |
| 4- | 4.0 | B- | 4 minor defects |
| 3+ | 3.9 | C+ | 5 minor defect |
| 3 | 3.75 | C | 1 major defect and any number of minor defects |
| 2 | 3.25 | D | 2 or more major defects |

|  |  |  |
| --- | --- | --- |
| Definition of Defects | | |
| Minor Defects | Undercut | 1/32” or less in depth, and 10% or less of total weld length |
| Convexity | 1/16” or less |
| Concavity | 1/16” or less |
| Porosity | sum of diameters of holes equals less than 3/8” per inch of weld |
| Undersize | 1/16” or less |
| Oversize | 1/16” or less |
| Unequal Leg | 1/16” or less |
|  | | |
| Major Defects | Undercut | 1/16” or greater in depth, and more than 10% of total weld length |
| Convexity | 1/8” or greater |
| Concavity | 3/32” or greater |
| Porosity | sum of diameters of holes equals 3/8” per inch of weld or more |
| Undersize | 1/8” or more |
| Oversize | 1/8” or more |
| Unequal Leg | 1/8” or more |

***Classroom Assessment (Written Quizzes)***

Written quizzes will be used to evaluate comprehension, retention, and application of key concepts. Each quiz has a point value which contributes to your overall total points earned. Weld Skill Assessments will be graded the same day of submission. Quizzes are accessible through Blackboard, and will be scored automatically. See the Learning Plans Section of this syllabus for due dates and other instructions.

**Course Grading Information**

**Letter grade = % or Points needed to achieve grade**

**\*All competencies must be met to earn a C or above**

|  |  |
| --- | --- |
| A | 93 - 100% of possible points earned, and meets all course competencies |
| A- | 90 - 92% of possible points earned, and meets all course competencies |
| B+ | 88 - 89% of possible points earned, and meets all course competencies |
| B | 82 - 87% of possible points earned, and meets all course competencies |
| B- | 80 - 81% of possible points earned, and meets all course competencies |
| C+ | 78 - 79% of possible points earned, and meets all course competencies |
| C | 70 - 77% of possible points earned, and meets all course competencies |
| D | 60 - 69% of possible points earned, and does not meet all course competencies |
| F | 0 - 59% of possible points earned, and does not meet all course competencies |

Letter grades on chart represent NTC's grading scale. \*Please note there are no C-, D+ or D- grades.

**Learning Plans - Course Schedule**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Learning Plan 1 – Types of Joints & Welds** | | | | |
| **Graded** | **Learning Activities** | | **Mode** | **Due** |
|  | **PP 1** | Types of Joints and Welds | Blackboard Self-study | 8/29/2014 |
| **PP 2** | Fillet Weld Symbols |
| **PP 3** | Groove Weld symbols |
|  | **PQ** | Types of Joints & Welds Practice Questions |
| **X** | **Q** | QUIZ #1 Joints, Welds and Symbol |
|  |  |  |  |  |
| **Learning Plan 2 – SMAW** | | | | |
| **Graded** | **Learning Activities** | | **Graded** | **Graded** |
|  | na02125_bs00184_ | Hobart SMAWB DVD 1 Topic 2 | Blackboard  Self-Study | 9/12/2014 |
| Hobart SMAWB DVD 1 Topics 4 – 7 |
| X |  | INTRO – 1 | Shop  Work | \* |
| X | INTRO - 2 |
|  | **PQ** | SMAW Practice Questions | Blackboard  Self-Study | 9/12/2014 |
| X | Q | QUIZ #2 – SMAW |
|  |  |  |  |  |
| **Learning Plan 3 – GMAW** | | | | |
| **Graded** | **Learning Activities** | | **Graded** | **Graded** |
|  | na02125_bs00184_ | Hobart GMAWB DVD 1 Topic 2 | Blackboard  Self-Study | 9/05/2014 |
| Hobart GMAWB DVD 2 Topic 7 & 8 |
|  | Hobart GMAWB DVD 3 Topics 22 & 23 |
| X |  | INTRO – 3 | Shop  Work | \* |
| X | INTRO – 4 |
|  | **PQ** | GMAW Practice Questions | Blackboard  Self-Study | 9/05/2014 |
| X | **Q** | QUIZ #3 – GMAW |
|  |  |  |  |  |
| **Learning Plan 4 – FCAW** | | | | |
| **Graded** | **Learning Activities** | | **Graded** | **Graded** |
|  | bs00184_ | Hobart FCAWB DVD 1 Topic 2 | Blackboard  Self-Study | 9/12/2014 |
| Hobart FCAWB DVD 1 Topic 5 |
| X | na02125_ | INTRO – 5 | Shop  Work | \* |
|  | **PQ** | FCAW Practice Questions | Blackboard  Self-Study | 9/12/2014 |
| X | **Q** | Quiz #4 – FCAW |
|  |  |  |  |  |
| **Learning Plan 5 – GTAW** | | | | |
| **Graded** | **Learning Activities** | | **Graded** | **Graded** |
|  | bs00184_na02125_ | Hobart GTAWB DVD 1 Topics 2 & 6 | Blackboard  Self-Study | 9/5/2013 |
| Hobart GTAWB DVD 2 Topics 7 & 10 |
| X |  | INTRO - 6 | Shop  Work | \* |
|  | **PQ** | GTAW Practice Questions | Blackboard  Self-Study | 9/5/2013 |
| X | **Q** | Quiz #5 – GTAW |
|  |  |  |  |  |
| **Learning Plan 6 – Thermal Cutting** | | | | |
| **Graded** | **Learning Activities** | | **Graded** | **Graded** |
|  | bs00184_ | Wall Mountain Torch Cutting | Class |  |
| Hypertherm Cutting Institute | Blackboard  Self-Study | 9/6/2013 |
|  | **PQ** | Thermal Cutting Practice Questions |
| X | na02125_ | INTRO – 7 |  | \* |
| X | **Q** | Quiz #6 – Thermal Cutting | Blackboard | 9/6/2013 |

\*Due by 9/6/2013

**Technical Skills Attainment**

In addition to assessing each course competency, your instructors will assess your ability to demonstrate each program outcome. This assessment, called Technical Skill Attainment (TSA), is important because it objectively measures your ability to meet industry-recognized skills. When you complete the TSA for your program, you will demonstrate what you know and can do. You can then share this information with prospective employers. Your instructors will tell you how and when your program TSA will be done.

**Attendance and Participation**

Consistent attendance and participation in this course is essential for your success.  Demonstrating these behaviors will help you meet NTC's Core Abilities and will help prepare you for future employment.  As your instructor, I will make reasonable allowances for personal illness, legitimate absences which accommodate the Americans with Disabilities Act (ADA) and absences for sincerely held religious beliefs.  Whenever possible, please contact me prior to an absence to make arrangements for missed course work.  Unexcused or excessive absences, however, will have a negative impact on your success in this course.

Students who do not attend the first session of class or who do not complete the first assignment in Blackboard by the deadline will be considered a "No Show" and will be removed from the course. If you wish to drop this course once it is underway, you may withdraw within the first 80% of the course. Please follow the information under the NTC Student Guidelines and Procedures (website is listed below) to officially withdraw from the course. If you cease to attend and do not “officially” withdraw from this course before it is 80% complete you may receive an “F” for this course.)

**TC Student Guidelines and Procedures**

**Please review all of the NTC student guidelines and procedures found at this website:**http://www.ntc.edu/current-students/guidelines-procedures

**Student Behavior Guidelines:**

Academic Honesty   
Children on Campus   
Computer Use Policy   
Discrimination and Harassment

Drugs and Alcohol

Safety and Security

Student Code of Conduct

Student Due Process   
Tobacco-Free Campus Drugs and Alcohol

**Student Academic Procedures:**

Academic Achievement

Academic Appeal

Academic Probation

Academic Retake

Add/Drop a Class

Apply for Graduation

Auditing a Course

Challenge Test

Changing Career Programs

Exceptions/Overrides  
Grades

Grading System

Graduation Requirements

Refunds

Transcripts

Work/Life Experience Credits

**General Information:**

Academic Calendar

College Accreditation

Emergency School Closing

Equal Opportunity

Parking

Privacy & Access to Student Records (FERPA)

Privacy: Release of Student Information to Other Colleges

Public Assembly

Refunds  
Religious Accommodations for Students

Student Accident Insurance

Student Bill of Rights  
Student Catalog

Student Handbook   
Student Printing Procedure  
Veteran Benefits

**Academic Support**   
Please visit the following sites to learn more about these services.   
**Tutoring:** http://www.ntc.edu/current-students/tutoring   
**Learning Center:** http://www.ntc.edu/current-students/learning-center.html   
  
**Special Needs/ADA Accommodations**   
NTC is committed to providing reasonable accommodations that allow students with disabilities to fully participate in the technical college environment. If you are a student with a documented disability and believe you could benefit from academic accommodations, please contact the Student Success Center at 715.803.1469 or visit our website http://www.ntc.edu/current-students/disability-services   
  
**NTC Student E-Mail**   
Email is NTC’s official communication tool with students. Please check your NTC email often. All college and course communication will be through NTC student email and Blackboard. Please use professional communication at all times.   
  
**Help Desk Information**   
NTC has a Help Desk to provide technical support. Requests for help may include login and password problems, course software use, software technical problems, and browser questions. If you have questions or need assistance when you are working on your course, you can contact the NTC Student Help Desk by calling 715-803-1160, press option #2, or 1-888-682-7144, Ext. 1160, press option #2. You can also submit a help ticket online at http://www.ntc.edu/helpdesk. Please provide the following information: name of course, your student ID number, what you were trying to do, any error messages you may have received, and how to contact you.   
  
**Course Revisions**   
In this syllabus, I have provided course information and a tentative schedule to guide your learning. I do, however, reserve the right to revise this information so that I may offer you the most current content and effective educational experiences. I will communicate any syllabus or schedule changes to you in a timely manner to support your success in this course.

**Safety Guidelines/Regulations**

Work performed in the lab must be executed in accordance with the safety standards as set forth by the NTC Welding program and the specific safety precautions for each task. Students are required to wear the appropriate personal protective equipment when in the lab area or working on activities that may pose a hazard to themselves or others. It is the duty of all students to watch out for safety throughout the area and bring any unsafe practices they might observe to the attention of the instructor.  
  
Students are required to know the location of all fire exits, fire extinguishers, eyewash and shower stations, emergency evacuation routes, and a procedure to obtain help in an emergency.  
  
Tools belong to NTC and are not to be taken from the Welding lab. All tools are to be used safely and with respect. Tools are to be returned to their proper storage space at the end of each class. Supplies are provided by NTC, and are to be used with discretion. Wasting supplies will not be tolerated.  
  
Good housekeeping is important to safety in any operation, and the welding industry is no exception. Students are expected to keep their work areas neat and orderly, minimizing potential safety hazards. You are responsible for removing ALL welding supplies and material from your booth, as well as sweeping off the table and floor, and properly storing machine components such as the work and electrode leads. In addition to cleaning your booths, you will be assigned general shop clean-up tasks which must be completed daily.