**KISHWAUKEE COLLEGE SYLLABUS**

**AUTOMATED ENGINEERING TECH (MT)**

**SPRING 2013**

Course Title: Fabrication Practices

Prerequisite: None

Number of Credits: Two (2), One (1) Hour Lecture/Discussion and Two (2) Hours Lab a Week

Course Number: MT-216

Course Ref. Number: 5002 (18553)

Classroom Number: A - 421

Day & Time: Friday, 2:00 p.m. - 5:00 p.m.

Start & End Date: 01/18/2013 - 05/17/13

Mid Term Date: Friday 03/08/2013, 2:00 p.m. - 5:00 p.m.

Final Exam Date: Friday 05/17/2013, 2:00 p.m. - 5:00 p.m.

Instructors Name: Mr. Patrick J. Holtz

Office Location: A - 419

Office Hours: By Appointment Only

Work Phone: 815-895-1373

Home Phone: 815-793-4070

E-mail: [pholtz@kishwaukeecollege.edu](mailto:pholtz@kishwaukeecollege.edu) or [patrickh2@frontier.com](mailto:patrickh2@frontier.com)

**Course Description:** This course is a supplement to other automated engineering technology course. This class will enable students to obtain closely supervised hands-on machine tool experience. Operations will include the use of basic machine tools such as the engine lathe, vertical milling machine, drill press, and surface grinder. Students will also be introduced to sheet metal fabrication. Operations will include the use of press brake, shear, iron worker, and spot welder. One hour lecture/discussion and two hours lab a week.

**Expected Learner Outcomes:** Given an engineering drawing of an assembly, the student will:

1. The student will be introduced to the machining profession allowing a self-reflection on his/her suitability for the trade. Field trips to local manufacturing companies and classroom discussions help the student understand what is required of a machinist/toolmaker.
2. The student will be taught the basic concepts of equations, formulas, and trigonometry as applied to machining problems.
3. Technical drawings and blueprints form the basis from which a machinist/toolmaker works to manufacture simple and complex parts. Therefore, the student will learn how to interpret industry-standard drawings and accurately indentify various critical features and specifications.
4. The student will learn how to identify hazards in the workplace. Proper identification of risks associated with working in a machine shop and how to avoid and/or minimize them will be stressed.
5. The student will learn two essential goals in product inspection: how to use and select the proper precision measuring instrument for inspecting work pieces. In addition, hands-on use of an extensive array of standard and special measuring instruments will be emphasized.
6. Using the knowledge from previous classes, the student will work on a variety of bench-working projects in the machine shop. The emphasis is on proper techniques when using hand tools (files, hacksaws, layout procedures, etc.). As well, the student is taught how to prepare a **process sheet** in order to properly plan and organize his/her work.
7. As a machinist/toolmaker, he/she will manufacture parts from a variety of materials. Students will be taught the fundamentals of interpreting technical information related to materials and manufacturing processes. Using handbooks and specification sheets, the student will analyze the different materials found in today’s industry.
8. External Cylindrical Turning: The student will be introduced to the conventional lathe machine. He/she will perform a variety of precise operations using different cutting tools. Proper set-up techniques and tool selection, as well as preparation of **process sheets**, **process planning** and quality assurance are stressed throughout the class with the aid of machining projects.
9. Boring: Using the conventional lathe machine, the student will perform internal machining operations using drawings and **process sheets**.
10. Machining on a Milling Machine: With the aid of **process sheets**, part drawings and a selection of materials, the student will use the conventional milling machine to perform basic operations such as facing, slotting, side milling and gang milling. Learning machine set-up procedures, respecting the specifications on the drawing, working within time constraints and understanding the operations of the milling machine will be the objectives of this class.
11. Thread Cutting on a Lathe: This class contains two objectives. The first is the use of the Machinery Handbook to understand the theory and calculations needed to make and inspect a variety of threads. The second is the practical aspect, whereby the student will machine different thread styles using the conventional lathe machine. The student is taught how to do calculations related to threads, grinding thread cutting tools and inspection.
12. Drilling & Reaming Using a Milling Machine: The student will be taught how to use the conventional milling machine to machine parts with holes. Precision boring, tapping, counterboring, and reaming are just a few of the operations he/she will learn while completing machining projects.
13. Surface Grinding: Machining parts to very precise dimensions usually means the use of precision grinding machines. This class will teach students how to use surface grinders. Proper set-up techniques and respecting tight tolerances will be stressed as well as the theory behind selection of proper grinding wheels.
14. New Types of Work Organization: In today’s modern manufacturing plants, new manufacturing techniques, both equipments and procedures, are used. The student will learn what types of new equipments are being used, in the context of ISO norms and Total Quality Management. He/she will also experience working in a multidisciplinary team on projects. Field trips will highlight some of the theory learned in class.

**Required Texts:** Machinist Ready Reference, compiled by C. Weingartner. Machine Tool Practices, Kibbe, 8th edition.

**Required Student Materials:** Texas Instruments, TI-30X IIS calculator, 6 inch steal rule (quick-reading 10ths, aircraft quick-reading 100ths, 32nds and 64ths). Safety glasses.

**Additional Student References:** Machinist’s Ready Reference, C. Weingartner.

**Additional Information:** The first meeting will include a project planning and safety discussion. Students will be required to prepare a complete sequence of operations to be submitted with each completed project.

**Additional Aids:** Working drawings and project planning sheets.

**Lab Clean-up:** Each student he/she shall be responsible for replacing the tools back to their proper location. Additional clean-up assignments will be assigned after the class roster has been made up.

**Breakdown of Course Requirements:**

1. Lab Projects/Evaluation: 150 2@75 pts. Each (Fit, Form, and Function)
2. Project Process Sheets: 110 11@10 pts. Each
3. Quizzes 30 2@15 pts. Each
4. Mid Term: 100
5. Final: 100
6. Participation \_25

515 Total Points

**Final Grade Determination:** Grade reports will not be mailed out. Please check KishSOS, My Student Info, under Academic Profile, Grades, for grade reports.

515 - 463 = A

462 - 412 = B

411 - 360 = C

359 - 309 = D

308 - below = F

**Attendance Policy:** Due to the structure of this class, students will be expected to be on time for every class. Five (5) points for each absence in excess of two (2) will be deducted from the final grade total unless arrangements are made between the instructor and the student prior to the next class meeting.

**Make-up Policy for Tests and Other Course Requirements:**

1. Homework should be turned in on time. Work turned in on time will receive full credit.
2. Illness or absence due to family trips, medical leave, etc. will be dealt with separately. Makeup assignments/tests not completed due to illness will be accepted for full credit when turned in within a reasonable time frame (the following class meeting), which will be determined on an individual basis.

**Learning Skills Center (A-300):** Tutoring and testing is available to all Kishwaukee students free of charge. Students must present their Kishwaukee College student ID when using any Learning Skills Center services. No appointment is necessary for assistance in English. For more information on the Learning Skills Center go to [www.kishwaukeecollege.edu/learning\_skills\_center](http://www.kishwaukeecollege.edu/learning_skills_center)

The Writing Center (A-306) answers your writing-related questions regardless of the class or assignment. No appointment is necessary, and students can get help individually or in small groups. Also available are workshop opportunities for any size group.

**Withdrawal Policy:** A “W” will not be given as a final grade. The student is responsible for officially withdrawing from the class according to procedures described in the college catalog. Any student that does not officially withdraw from the class will receive a letter grade. The last day for withdrawal for this course can be found at “MY CLASS SCHEDULE” on KishSOS. The last day to withdraw from this course is Monday, April 29, 2013.

**Class Cancellations:** Class cancellations due to inclement weather will be announced on local radio stations or posted on the College Web site: [www.kishwaukeecollege.edu](http://www.kishwaukeecollege.edu). Students may also call the College at (815) 825-2086. Class cancellations due to instructor absence will be posted on the classroom door and posted at [ww.kishwaukeecollege.edu/class\_cancellations.](http://www.kishwaukeecollege.edu/class_cancellations) Room changes will be announced in advance whenever possible and posted on the classroom door.

**Emergency Procedures/Safety:** Yellow and red *Emergency Information Flip Charts* are located in each classroom. These are quick reference sheets with telephone numbers to reach emergency assistance and a brief description of the correct actions to take in the event of a tornado, fire or other emergency on campus.

**Graduation Requirements for Transfer Students:** All students intending to graduate with an A.A., A.S., A.E.S., or A.F.A. are required to submit a Degree Portfolio. The Degree Portfolio is a way for the institution to measure its effectiveness in preparing students for successful completion of a degree at the transferring institution. Save your work throughout your career at the college in order to facilitate the portfolio compilation. Submit a completed application for graduation from the college the semester that you plan on graduating prior to submitting the Degree Portfolio. The specific requirements (along with the rubrics used for assessment) for the Degree Portfolio can be found at [www.kishwaukeecollege.edu/portfolio](http://www.kishwaukeecollege.edu/portfolio).

**Academic HONESTY:** Academic honesty is essential in a college community. In order to evaluate student work, faculty must be able to trust that the work is original with a student and not the work of someone else. Plagiarism, cheating, or other dishonest actions will not be tolerated, and the penalties for such actions are at the discretion of the instructor. A complete explanation of the policy and procedures surrounding academic honesty are outlined in the Kishwaukee College Catalog.

**Copyright:**  As a Kishwaukee College Student, you may have software made available to you by the college for course use. Please understand that copyright law may prohibit copying these materials. Violation of copyright laws can lead to prosecution for a criminal offense

**Assistive Resources Center/Disability Services:** Any student having a documented disability or special learning need and wanting to request accommodations, should contact the Coordinator in A 317 or at (815) 825-2086 Ext. 3960, (815) 825-9106 (TTY), or send an email to [awilson@kishwaukeecollege.edu](mailto:awilson@kishwaukeecollege.edu). The student’s disability must impact their ability to participate in the educational environment and be documented by an appropriate professional prior to accommodations being approved.

**Student Email:** Your Kishwaukee College e-mail account will be the only way to receive official notices from the college. If you choose to forward your e-mail to another account, please be advised that all communication from and within the college will use your Kishwaukee student e-mail. When communicating with instructors or employees of the college, you are required to use your Kishwaukee e-mail address.

**Tentative Course Outline:**

Week 1, Jan. 18: Project planning and safety discussion. Projects will include a Brass Hammer and Bench Vice. Brass Hammer requires (3) process sheets. Bench Vice requires (7) process sheets.

Week 2, Jan. 25: Lab/Process Sheets. Brass Hammer/Bench Vice

Week 3, Feb. 01: Lab/Process Sheets. Brass Hammer/Bench Vice

Week 4, Feb. 08: Lab/Process Sheets. Brass Hammer/Bench Vice

Week 5, Feb. 15: Lab/Process Sheets. Brass Hammer/Bench Vice

Week 6, Feb. 22: Lab/Process Sheets. Brass Hammer/Bench Vice

Week 7, Mar. 01: Lab/Process Sheets. Brass Hammer/Bench Vice

Week 8, Mar. 08: Mid Term. Conventional Lathe Machine Set-up

Week 9, Mar. 15: Spring Break - no classes

Week 10, Mar. 22: Lab/Process Sheets. Brass Hammer/Bench Vice

Week 11, Mar. 29: Spring Friday - no classes - offices closed

Week 12, Apr. 05: Lab/Process Sheets. Brass Hammer/Bench Vice

Week 13, Apr. 12: Lab/Process Sheets. Brass Hammer/Bench Vice

Week 14, Apr. 19: Lab/Process Sheets. Brass Hammer/Bench Vice

Week 15, Apr. 26: Lab/Process Sheets. Brass Hammer/Bench Vice

(Withdrawal Deadline 04/29/13)

Week 16, May. 03: Lab/Process Sheets. Brass Hammer/Bench Vice

Week 17, May. 10: Lab/Process Sheets. Brass Hammer/Bench Vice

Week 18, May. 17: Final Exam. Milling Machine/Surface Grinder Set-up

**Course outline is subject to change.**

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