



Jigs & Fixtures MFG-423

Course Information:

Semester and year: Summer 2015

Location: MT 146, MT 140, MT 158

Meeting days and times: Lecture 10:40-12:10 M, W, F

Lab 12:10 – 4:30 M, T, W, TH, F

Division Chair: Josh Byrnes

Email: byrnejos@niacc.edu

Phone: 641.422.4202

Instructor contact info:

Instructor: Kevin Losee

Email: loseekev@niacc.edu

Phone: 641.422.4371

Office location: MT 146

Office hours: 7 – 10 am daily,

Prerequisite: Students must obtain a grade of C or better in MFG- 248, CNC Fundamentals, and MFG-248, Machine Theory and Operations II.

Course Description: This course is an interdiction to the design of industrial tools and machining characteristics of tool components. The student is introduced to additional machining skills that will be encountered in typical machine shops in the building of molds, dies, jigs, fixtures, and precision machine parts. Equivalent to 96-171, TLDI-802

Learning Materials:

1. *Jig and Fixture Design* 5th Edition by Edward G. Hoffman
2. *The Machinery's Handbook* 29th Edition by Industrial Press.
3. *Machine Shop Trade Secrets* 1^{2nd} Edition by James A. Harvey
4. Hand tools as specified for Machine Tool Practices & Machinist Pro Calculator

Measurable Course Objectives:

1. Identifies and applies tool design methods at a basic job entry level.
2. Selects and costs out the materials needed to build a tool or die.
3. Performs heat treating process according to tool material specifications.
4. Builds fixed gages as per part print tolerances.
5. Applies location and clamping methods in construction of drill jigs and fixtures.
6. Designs and builds drill jigs and fixtures at a basic job entry level.

7. Performs die operations by utilizing basic die theory.
8. Performs die repair.

Course Units:

1. Purpose of Tool Design
2. Types and Functions of Jigs and Fixtures
3. Supporting and Locating Principles
4. Clamping and Workholding Principals
5. Basic Construction Principals
6. Design Economics
7. Developing the Initial Design
8. Tool Drawing
9. Template Jigs
10. Vise-Held and Plate Fixtures
11. Plate Jigs
12. Angle-Plate Jigs and Fixtures
13. Channel and Box Jigs
14. Vise-Jaw and Fixtures
15. Power Workholding
16. Modular Workholding
17. Welding and Inspection Tooling
18. Low-Cost Jigs and Fixtures
19. Tooling to Numerically Controlled Machines
20. Setup Reduction for Workholding
21. Tool Materials

Grading:

The final grade will be determined by assessing the student's performance on attendance, homework, and tests; with a weight ratio of 66.5% on the ability to produce projects to required tolerances, and 33.5% on tests, quizzes, and attendance.

Grades will be awarded on the basis of the following scale:

95% to 100% = A	90% to 94% = A-	
87% to 89% = B+	83% to 86% = B	80% to 82% = B-
77% to 79% = C+	73% to 76% = C	70% to 72% = C-
67% to 69% = D+	63% to 66% = D	60% to 62% = D-
Below 60% = Failure		

Attendance and Tardiness Policy:

If a student must miss a class he / she will call the instructor at 1-641-422-4371, or toll free at 1-888-GO-NIACC ext.4371 or email him at loseekv@niacc.edu **BEFORE** missing that class in order to be able to make up any missed work, quizzes or tests. Leave a message if the instructor is not available.

If you come late to class in the morning you will not be allowed to take the quiz for that day's class, with a loss of the points for that quiz.

It is the student's responsibility to obtain materials from missed classes.

After any three (3) absences, I will need to talk with Josh Byrnes, Industrial Division Head regarding attendance.

After 5 absences, the best grade that will be given is a "C" – excused or unexcused

The time clock is the device used to keep attendance. If a student forgets to log in or out, the student is responsible to get in touch with the instructor to get it amended. The time clock if used correctly can be used for documentation for any apprenticeships so it is to your advantage to use this feature to the best of your ability.

Late Work Policy:

All work is due as specified by the Instructor, anything late will have a deduction of 10% for one (1) day, 20% for two (2) days late, 50% for anything later than two (2) days.

College Policies:

If you have questions regarding issues such as grade appeals, grievance policies, and academic probation, please refer to the NIACC Student Handbook, which can be accessed at <http://www.niacc.edu/student-life/>.

NONDISCRIMINATION POLICY

It is the policy of North Iowa Area Community College to not discriminate on the basis of age, color, creed, disability, gender identity, genetic information, marital status, national origin, race, religion, sex (including pregnancy), sexual orientation, or veteran's status in its programs, activities, or employment practices as required by the Iowa Code sections 216.9 and 256.10(2), Titles VI and VII of the Civil Rights Act of 1964 (42 U.S.C. § 2000d and 2000e), the Equal Pay Act of 1973 (29 U.S.C. § 206, et seq.), Title IX (Educational Amendments, 20 U.S.C. §§ 1681 – 1688), Section 504 (Rehabilitation Act of 1973, 29 U.S.C. § 794), and the Americans with Disabilities Act (42 U.S.C. § 12101, et seq.).

Individuals having questions or complaints related to compliance with this policy should contact Shelly Schmit, EEO/AA Officer, 500 College Drive, Mason City, Iowa 50401, or via telephone at 641-422-4211. Inquiries may also be directed to the Director of the Office for Civil Rights, U.S.

Department of Education, Citigroup Center, 500 West Madison, Suite 1475, Chicago, Illinois 60661, phone: 312-730-1560, fax: 312-730-1576.

DISABILITY SERVICES

North Iowa Area Community College strives to provide an accessible environment for students, faculty, and staff. A student needing accommodations should register with NIACC Disability Services and speak to Lisa Vance, the Disability Services Counselor, in the Student Access Office, AB106. For additional information, contact us at 1-888-466-4222, Ext. 4413, and ask for a brochure regarding Disability Services or to request a meeting with the Disability Services Counselor. You may also contact Lisa Vance directly at 641-422-4296 or vancelis@niacc.edu. Our website is <http://www.niacc.edu/student-life/disability-services/>.

If you have concerns regarding equal access to NIACC's services, programs, and activities you may contact NIACC Disability Services or learn more about filing a grievance at <http://www.niacc.edu/student-life/disability-services/policies-procedures/grievance-procedure/>.

A Disability Services Student Handbook can be found on our website at <http://www.niacc.edu/student-life/disability-services/disability-services-student-handbook/> or can be provided in hard copy (or an alternate format), upon request, and lists contact information for NIACC's ADA Coordinator and ADA Compliance Officer, along with other helpful information.

INCLEMENT WEATHER

NIACCAAlerts is a free service that alerts you immediately when a decision is made to close campus or delay classes due to weather conditions. This is your best and most accurate means of communication. Sign up here: <http://www.niacc.edu/about/campus-safety/niaccalerts/>

Cancellation or Delay of Classes: The decision to cancel, delay, or dismiss classes early will be made by the NIACC President (or designee). In these cases, the message will go FIRST on NIACCAAlerts, then to all area media by 6:00 a.m. Sometimes, due to staff availability or changing weather conditions, there may be a delay in making announcements.

All announcements will be provided to local media and posted on the Official NIACC Facebook and Twitter pages.

Community Education Centers and Buena Vista University: The NIACC Education Centers and BVU will follow the same announcement as on-campus, unless specified differently.

On-Campus Evening Classes: Any decision regarding on-campus evening classes (those starting after 6:00 p.m.) shall be made as early as possible. NIACCAAlerts will be used, as well as announcements on area media.

Off-Campus Evening Classes: Decisions regarding off-campus attendance centers are local decisions that are made by the local K-12 superintendents.

Special Events and Auditorium Events: Such events will not be included in the general announcement issued by the College, unless specified. Sponsoring organizations will be responsible

for announcements of cancellations. EXCEPTION: If it is announced that the campus is closed, all activities are canceled.

All decisions on driving are left up to the student and will not be decided by the instructor.

Disclaimer Statement:

I reserve the right to alter this course's syllabus, policies, grading scale, texts, and calendar as needed at any time during the semester. I will alert you to any changes.

Academic Integrity Policy:

According to the Student Conduct Code, (see the NIACC Student Handbook, found at <http://www.niacc.edu/student-life/>) academic dishonesty, including but not limited to:

- cheating
- plagiarism
- knowingly furnishing false information to the college
- forgery
- alteration or misuse of college documents or records

shall be subject to disciplinary procedures.

Class Recording and Social Media Policies:

It is not permissible to record or photograph any part of this class, the instructor or other students in the class or to upload them to any website including Facebook, YouTube or similar sites, unless prior permission from the instructor and the students involved.

Academic Resources:

While some academic resources may be available Independent Student Learning Center, machining specific instruction is probably best by contacting either myself or Randy Bonde.

Technical Support:

NIACC's Helpdesk can help with technical problems related to NIACC passwords, logging in to lab computers, MyNIACC, E-mail, ANGEL (online course management system), NIACC wireless, WebAdvisor, lab computers, office computers for staff, software issues, and more. NIACC Technology Services does not repair nor support personal computers. For many problems you may get the fastest results if you call our toll-free number below (24 hours – seven days per week).

On campus: 641-422-4357 Toll free: 866-614-5020 helpdesk@niacc.edu

<http://www.niacc.edu/student-life/technology-services/help-desk/>

Classroom Policies:

All Lab projects are Due on July 23, 2015 at 4:00 pm.

All safety glasses will be have clear lens and will conform to ANSI Z87.1 standards and be worn within the lab at all times.

All students will use the provided lockers to store safety glasses in. This way your safety glasses will available for your use when entering the lab.

If you fail to have safety glasses, the college bookstore has them for sale. NO SAFETY GLASSES – NO LAB.

There are to be no active cell phones in the classroom or lab.