



## **COURSE SYLLABUS**

**COURSE TITLE: MECT 143 Materials and Processes**  
**NUMBER/SECTION: 51C**  
**CRN: 35536**

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### **CONTACT INFORMATION**

**Instructor:**

First Name: Andrew  
Last Name: Bell  
Phone Number: 260.481.2288  
Email (Ivy Tech Email): abell118@ivytech.edu  
Blackboard IM ID: abell118  
Office/Campus Location: Tech Center, TC1111  
Office Hours: Tuesday & Thursday 1:00PM – 5:00PM

**Instructor's Supervisor:**

First Name: Karen  
Last Name: Jones  
Phone Number: 260.481.2266  
Email (Ivy Tech Email): kjones82@ivytech.edu  
Blackboard IM ID: kjones82  
Office/Campus Location: Harshman Hall, HM2110  
Office Hours: By appointment only

### **COURSE OUTLINE OF RECORD**

**PREREQUISITES:** Demonstrated competency through appropriate assessment or earning a grade of "C" or better in ENGL 025 Introduction to College Writing II or ENGL 093 Introduction to College Writing and ENGL 032 Reading Strategies for College II or ENGL 083 Reading Strategies for College and MATH 035 Fundamentals of Algebra II or MATH 043 Essentials of Algebra II

**SCHOOL:** Applied Science and Engineering Technology

**PROGRAM:** Mechanical Engineering Technology

**CREDIT HOURS:** 3

**CONTACT HOURS:** Lecture: 2 Lab: 2

**DATE OF LAST REVISION:** Summer, 2011

**EFFECTIVE DATE OF THIS REVISION:** Fall, 2011

**CATALOG DESCRIPTION:** Introduces students to structures, properties, processing, and applications of metals and ceramics commonly used in industry and develop problem solving skills in the areas of material selection, evaluation, measurement and testing.

**MAJOR COURSE LEARNING OBJECTIVES:** Upon successful completion of this course the student will be expected to:

1. Use phase diagrams and metallographic specimens to explain the compositional and property differences between alloys of ferrous and non-ferrous metals, including determining what phases are present, their compositions and amounts.
2. Use stress-strain diagrams to determine material processes of both ferrous and nonferrous metals.
3. Conduct metal property tests using standard methods and instrumentation.
4. Identify brittle and ductile failure types and describe the effect of temperature and surface defects on impact toughness.
5. Communicate with colleagues in their field using common terms of foundry, joining, powder metallurgy, hot/cold working, and ceramic fabrication industries.
6. Describe key processes and variable when working with molten metal.
7. Identify and differentiate between common single-use and multi-use mold processes by describing processes and listing advantages and disadvantages of each process.
8. Describe the common fabrication processes for amorphous and crystalline ceramics.
9. Describe a typical powder metallurgy manufacturing process and explain its advantages and disadvantages.
10. Identify the basic material removal processes: turning, boring, drilling, reaming, milling, sawing, broaching, shaping, and grinding and determine the material removal processes that can effectively execute a given manufacturing task.
11. Determine the basic cold forming processes that can effectively execute a given manufacturing task.
12. Describe and differentiate between the hot working processes of rolling, forging, and extrusion and predict the results of heat treating metal alloys.
13. List advantages and disadvantages of joining process including common fusion and solid-state welding processes and integral, discrete, and shrink/expansion fastener systems.
14. Present data on metal/ceramic materials or processes orally and visually.

**COURSE CONTENT:** Topical areas of study include:

Phase diagrams  
Stress-strain diagrams  
Material property tests and instrumentation  
Material removal processes  
Cold forming processes  
Ceramic fabrication processes  
Hot working processes  
Joining processes for materials  
Manufacturing processes  
Failure testing of materials  
Material property testing

## REQUIRED TEXT & MATERIALS

Title: Manufacturing Engineering & Technology

Author: Kalpakjian

Edition: 6th

Publisher: Pearson Education

ISBN: 9780136081685

### How to Order Textbook/Materials

All books and materials, unless otherwise noted, should be purchased from the Ivy Tech online bookstore. To order the texts required for this class or any other course, go to <http://www.ivytech.bkstr.com>. Students can order all books and materials for all courses from this site – regardless of whether it is an online or on-campus course.

In the future, it is advised that students order textbooks and materials *before* the start of the semester. Students should use a copy of their course schedule to accurately order books and materials. Schedules can print a copy of their course schedule from Campus Connect at <http://cc.ivytech.edu>.

Students who live in Indiana and surrounding states will normally receive their book order within one day from the time the book is shipped from the warehouse. Paying for overnight shipping on textbook orders from the bookstore is normally not a good use of money as it does not ensure overnight processing of the order – it only ensures that once the book order has been processed, it will be shipped out overnight.

## COLLEGE POLICIES

### Academic Honesty Statement

The College is committed to academic integrity in all its practices. The faculty value intellectual integrity and a high standard of academic conduct. Activities that violate academic integrity undermine the quality and diminish the value of educational achievement.

Cheating on papers, tests, or other academic works is a violation of College rules. No student shall engage in behavior that, in the judgment of the instructor of the class, may be construed as cheating. This may include, but is not limited to, plagiarism or other forms of academic dishonesty such as the acquisition without permission of tests or other academic materials and/or distribution of these materials and other academic work. This includes students who aid and abet as well as those who attempt such behavior.

### Copyright Statement

Students shall adhere to the laws governing the use of copyrighted materials. They must insure that their activities comply with fair use and in no way infringe on the copyright or other proprietary rights of others and that the materials used and developed at Ivy Tech Community College contain nothing unlawful, unethical, or libelous and do not constitute any violation of any right of privacy.

## **ADA Statement**

Ivy Tech Community College seeks to provide reasonable accommodations for qualified individuals with documented disabilities. If you need an accommodation because of a documented disability, please contact the Office of Disability Support Services.

If you will require assistance during an emergency evacuation, notify your instructor immediately. Look for evacuation procedures posted in your classroom.

## **Ivy Tech Growing Greener**

Ivy Tech Community College–Northeast is committed to the development and implementation of a comprehensive sustainability plan. We're emphasizing our responsibility to go green. To that end, we are asking students, faculty, and staff to actively participate in energy conservation measures and proper recycling on campus. The recycling bins located in classrooms and offices are for paper and paper products only. Ivy Tech participates in single-stream recycling for other items. All aluminum, glass, and plastic beverage containers can co-mingle in the same recycling bins located in the hallways. Please remember to empty the liquid from your containers before depositing them in the bins. Any materials that cannot be recycled should be placed in garbage cans. It is also important to turn off lights and computers when leaving a room. Together, we can make an impact on conserving our limited resources. Remember to reduce, reuse, and recycle!

## **ATMAE – Requirements**

Students wishing to graduate from a School of Applied Science and Engineering or the School of Technology, from Ivy Tech Community College Northeast must complete at least 12 semester hours of Management and/or Technical training. This requirement is concurrent with the college requirement that each student must complete 15 semester hours at this institution. Students transferring to Ivy Tech Community College Northeast and entering into the School of Applied Science and Engineering or the School of Technology must also meet the 12 semester hours of Management and/or Technical training. Credits considered for transfer may be from another Ivy Tech ATMAE accredited campus or obtained from an ATMAE accredited institution.

## **Breathe Easy**

Ivy Tech–Northeast is committed to providing a healthy, comfortable and productive environment for the students, faculty and staff of this campus. The use or sale of any tobacco product is prohibited on college-owned, operated, or leased property or vehicles at any time. The policy applied to all Ivy Tech–Northeast facilities and grounds, regardless of location. Smoking, including the use of an e-cigarette, shall not be permitted in any enclosed space and is also prohibited outdoors on all college campus property, including parking lots. This policy applies to all students, faculty, staff and visitors. **Tickets and fines will be issued to violators.**

# COURSE POLICIES & PROCEDURES

## Method of Instruction

The format of the class includes: Lectures, Labs and Team Projects. Lectures will be derived from the Text Book and additional information that the instructor may feel is pertinent. The weekly PowerPoint slides will be posted on Blackboard.

Labs will be conducted at Ivy Tech either in the class room or an appropriate lab. Each student will create and maintain a "Lab Book". The Lab Book will capture all of the lab results, calculations, and observations for all of the labs completed during the semester. Lab Books will be turned-in prior to the end of the class.

Team Projects will require some contact with other team members during the class and between classes. Each Team will be responsible to present to the class Team Presentations as defined by the instructor.

## Due Dates & Deadlines

The Syllabus and Course Calendar are 2 important tools to help students understand the course, student and instructor expectations, and deadlines. Both documents can be found under the "Start Here" button in the course within Blackboard.

Students are required to submit work on time for a chance to receive credit. Deadlines for each week/assignment are summarized on the course calendar. Students should check the calendar frequently for deadlines and to be aware of what to expect next. Deadlines are subject to change.

Students are responsible for timely assignment submission. Should a computer system or network go down, students must still turn in work in a timely manner. Don't wait until the last minute. Plan ahead by seeking alternative means for submitting work before needed. Local libraries and all Ivy Tech Community College campuses can serve as alternative resources. Contact the closest/most convenient campus or other public lab for schedules and Internet availability. Not having access to the required software on a home or work computer is **not** a legitimate excuse for turning in homework late.

## Attendance Policy – Don't Get Dropped from Class!

Registered students are expected to arrive on time. Come to class prepared for scheduled activities. *NOTE: Failure to attend is not an official class withdrawal. Students wanting to withdraw must complete and sign an official Drop/Add form and return it to the registrar **by Saturday November 9<sup>th</sup>**, otherwise a Grade of "F" for the class will be entered on the student's grade record.*

## Make-Up Policy

A missed test or other graded material may be made-up only at the discretion of the instructor. If you miss a class you will need to contact the instructor via email or phone. There is no make-up for quizzes, labs, homework or exams without the instructor's approval. You are responsible to provide all group project team information to your team prior to any presentation.

## **Last Day to Withdraw**

If a student wishes to withdraw from this course, students are responsible for completing an official withdrawal form with the registrar. The last day to withdraw from this course is 11:59 p.m. **Saturday, November 9.**

## **Lab**

The lab is owned by the college. You are guests in this lab. As such I expect that you will conduct yourself accordingly. Drinks with a sealed cap are allowed (i.e. water or soda bottles). Drinks with an open top are not allowed (i.e. coffee cups or soda cans). Non-messy food items are allowed. If you have a spill or make a mess you are expected to clean it up. You must **log-on** using your campus connect username and password. Please notify the instructor of any problems.

## **Grades**

All grades will be maintained in Blackboard's online grade book. Students are responsible to track their progress by referring to the online grade book.

## **Right of Revision**

The college reserves the right to change any statements, policies or scheduling as necessary. Students will be informed promptly of any and all changes.

# **COURSE COMMUNICATION**

## **Instructor Commitment**

Ivy Tech Community College instructors are committed to responding to students within two business days. If a student sends communication, but does not receive a response, they should double-check that the correct communication method was used and that the correct location is being checked for a reply.

**Messages:** all students must use the messages function of the course for course-related communications. Using messages, students can send and receive information from within the course. Messages can *only* be sent and received from within the course in Blackboard. Please check messages frequently.

To access messages (send and receive):

1. Log into Blackboard & enter the course.
2. Click on 'Communication & Tools', then Messages.
3. There are two folders: Inbox and Sent. The Inbox folder will contain all received messages (so look there for messages from the instructor or other students). The Sent folder will contain sent.
4. At the top left corner, above the folders, is the button to start a Create Message.
5. After clicking on Create Message, clicking on the "To" button students can select the name of the person to write. Use the right-facing arrow to move the person into the "recipient" box.

6. Then, type a message and click on the Submit button when ready to send it.

**Email:** all students must use the email function of the course for course-related communications. Students can send email from within the course in Blackboard, but will not receive responses inside the course. All emails are received in the Campus Connect email system. Students can also use the Campus Connect email system to send email.

To access email from within the course:

1. Log into Blackboard & enter the course.
2. Click on 'Communication & Tools', then send email.
3. Please DO NOT use the MESSAGES feature inside Communication & Tools.
4. Select "All Instructor Users" to email the instructor.
5. To send an email to another member of the class, choose Select Users and choose the name(s) from the list. Use the right-facing arrow to move the person into the "recipient" box.

To access Campus Connect, go to: <http://cc.ivytech.edu>.

**Black Board IM:** all students are encouraged to download and use the Black Board Instant Messenger. This communication tool can used to gain access to fellow students and the instructor quickly and in a less formal way.

To download the BB IM from within the course:

1. Log into Blackboard & enter the course.
2. Click on 'Communication & Tools'
3. Click on 'Blackboard IM'
4. Download the Blackboard IM
5. Launch the BB IM, and you can then select a course and person you would like to IM.

**Telephone:** you may wish to contact the instructor via the telephone. If you get the voice mail response, leave your name, phone number and message and the instructor will get back with you as soon as possible.

## ASSIGNMENTS & GRADING

### How is my grade calculated?

Grades in this course are determined by the following criteria:

Discussions	5%
Lab Notebook	10%
Projects & Presentations	15%
Homework	15%
Midterm Exam	25%
Final Exam	30%

Rubrics will be defined as needed for gradable material.

## Grading Scale

90% - 100%	A
80% - 89%	B
70% - 79%	C
60% - 69%	D
Below 60%	F

## ADDITIONAL SUPPORT

### Optional Campus Support

Students are welcome to use the services and equipment available at the most convenient Ivy Tech Campus. Services include academic advising, equipment, libraries, and tutoring. Please locate the most convenient Ivy Tech campus by reviewing the information at <http://ivytech.edu/campuses/>.

#### Library

The Ivy Tech Library is available to students on- and off-campus, offering full text journals, books, and other resources essential for course assignments. The Library can be accessed from the “Library” tab in Blackboard or from the “Library” tab in Campus Connect.

#### Click for Help

Log into Blackboard at <http://online.ivytech.edu> and visit the “Click for Help” tab for information about computer downloads. This tab provides students with important computer information, including security software, viewer software for users without Microsoft products, adobe reader, flash player, java, and more.

#### Disabilities Services

Students with questions or needs for disabilities support services should contact their local Disabilities Support Services director/coordinator. In the future, it is recommended that students contact Disabilities Support Services at least 30 days before the start of the semester. *The contact information listed here is for the disabilities support director/coordinator at the instructor’s local campus.* For information about disabilities support services at another campus, please visit: <http://ivytech.edu/dss/> or Campus Connect (<http://cc.ivytech.edu>).

#### Disabilities Support Contact:

First Name:	Todd
Last Name:	Nichols
Phone Number:	260.481.2210
Email (Ivy Tech Email):	wnichols3@ivytech.edu
Blackboard IM ID:	wnichols3
Office/Campus Location:	Harshman Hall Room 1710
Office Hours:	Mon - Fri 8:00 AM - 5:00 PM



## **SCHEDULE OF ACTIVITES**

\*Schedule of activities is subject to change