Course Syllabus

Department: Science & Technology

Date: 01-15-2013

I. Course Prefix and Number: TECH 104

Course Name: Materials and Processes II

Credit Hours and Contact Hours: 2 credit hours and 4 contact hours
Catalog Description including pre- and co-requisites: supporting data required for grade prerequisite of ‘C’ or higher. A continuation of TECH 101. Topics include mechanical, physical, and chemical properties of plastics, ceramics, and composites and processes such as extrusion, injection molding, and thermoforming. Additional topics covered are, CNC machining, inspection, and quality control.
Pre-requisite: None.

Relationship to Academic Programs and Curriculum including SUNY Gen Ed designation if applicable:
This course is primarily a required course for the A.A.S. in Mechanical Technology program. Other students from other programs may also take the course if they have the appropriate background.

II. Course Student Learning Outcomes: State the student learning outcome(s) for the course (e.g. Student will be able to identify…)
Upon completion of the course the student will be able to:

1. Identify various plastics, ceramics, and composites
2. Discuss the properties of plastics, ceramics, and composites
3. State the various processes used to form plastics, ceramics, and composites
4. Carry out a quality control analysis
5. Develop a basic CNC code for a lathe or a milling machine

College Learning Outcomes Addressed by the Course: (check each College Learning Outcome addressed by the Student Learning Outcomes)

☒ writing ☒ computer literacy
☐ oral communications ☐ ethics/values
☒ reading ☐ citizenship
☐ mathematics ☒ global concerns
☐ critical thinking ☐ information resources
III. Assessment Measures (Summarize how the college and student learning outcomes will be assessed): For each identified outcome checked, please provide the specific assessment measure.

<table>
<thead>
<tr>
<th>List identified College Learning Outcomes(s)</th>
<th>Specific assessment measure(s)</th>
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</thead>
<tbody>
<tr>
<td>eg: writing</td>
<td>eg: student will complete a research paper</td>
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<tr>
<td>Writing</td>
<td>Student will complete a set of lab reports</td>
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<tr>
<td>Reading</td>
<td>Student will answer specific test questions correctly</td>
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<tr>
<td>Computer Literacy</td>
<td>Student will complete a lab report on a CNC programming project</td>
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<tr>
<td>Global Concerns</td>
<td>Student will complete a series of papers</td>
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IV. Instructional Materials and Methods

Types of Course Materials:
No textbook is required for this course. Instructor notes are the main source of information for the course content.
A course website is maintained on the internet for lecture power points, course calendar, and other course related material.

Methods of Instruction (e.g. Lecture, Lab, Seminar ...):
Mainly lectures are used to convey the knowledge to the student using power point presentations, supplemented with models and material samples.
Weekly lab sessions are used to reinforce the theory taught in the classroom by allowing the students to carry out hands-on activities with machine tools, CNC programming, and other equipment.
Field trips are taken when feasible and time permitting to see actual equipment in operation.

V. General Outline of Topics Covered:
Introduction to polymers
Polymerization techniques
Mechanical properties of plastics
Physical properties of plastics
Chemical properties of plastics
Commodity plastics
Engineering plastics
Processing of plastics
Injection molding
Thermoforming
Extrusion