Course Syllabus

Department: Science and Technology

Date: 12/12/12

I. Course Prefix and Number: TECH 130

   Course Name: Construction Materials

   Credit Hours and Contact Hours: 3 credit hours / 3 contact hours

Catalog Description including pre- and co-requisites:

This course provides an introduction to the properties and use of materials employed in construction. Topics that will be covered include foundations & soils, wood (light frame & heavy timber), concrete, masonry, steel, roofing, windows & doors, and finishes. Lecture topics may be supplemented with material samples, photographs of built projects, video, guest speakers, and field trips.

Relationship to Academic Programs and Curriculum including SUNY Gen Ed designation if applicable:

The course is required for A.A.S. Architectural Technology & Building Sciences. The course may be taken as a technology elective for A.A.S. Mechanical Technology. Students in other programs may take the course as a general elective.

II. Course Student Learning Outcomes:

Students will:
1. Apply the building code to building planning, design, and construction.
2. Use the CSI MasterFormat to categorize building products and materials.
3. Demonstrate how fire resistance of building materials relates to building planning.
4. Identify and apply the properties of various soil types.
5. Identify foundation types and apply to given construction situations; estimate foundation sizes.
6. Identify the properties of common species of wood and apply to given construction situations.
7. Identify standard lumber products and know their dimensions.
8. Compare and contrast heavy timber construction techniques and light frame wood construction techniques.
9. Select interior and exterior finishes that are appropriate for a given use.
10. Execute fundamental calculations related to building design and construction; for example: calculate R values and U values for building assemblies, determine stair riser height and tread depth.
11. Identify standard masonry products, know their dimensions, and apply knowledge of masonry construction techniques to given construction situations.
12. Identify common steel shapes and apply knowledge of steel construction techniques.
13. Identify and apply concrete construction techniques; explain the theory behind reinforced concrete structural members; explain pre-tensioning and post-tensioning.
14. Identify available roofing materials and apply to appropriate situations; recognize and explain common roof details and construction techniques.
15. Identify the materials and assemblies associated with doors and windows, select window/door types and materials that are appropriate for a given use, and evaluate their strength and energy efficiency.

College Learning Outcomes Addressed by the Course:

☐ writing ☐ computer literacy
☐ oral communications ☐ ethics/values
☒ reading ☐ citizenship
☐ mathematics ☒ global concerns
☐ critical thinking ☒ information resources

III. Assessment Measures:

<table>
<thead>
<tr>
<th>Identified College Learning Outcomes</th>
<th>Specific Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>Homework questions related to textbook chapters will be assigned and evaluated weekly or bi-weekly.</td>
</tr>
<tr>
<td>Global Concerns Information Resources</td>
<td>Selected questions on exams will test the students’ knowledge of construction materials, energy efficiency, and sustainability.</td>
</tr>
</tbody>
</table>

IV. Instructional Materials and Methods

Types of Course Materials:

Textbook

Methods of Instruction:

Lecture, reading assignments, guest speakers, material samples, photographs of built projects, video
V. General Outline of Topics Covered:

A. Introduction
B. Building Codes and Fire Resistance
C. Soils & Foundations
D. Wood
E. Interior and Exterior Finishes
F. Overview of Selected Design Methods and Calculations
G. Masonry
H. Concrete
I. Roofing
J. Glass and Glazing
K. Windows
L. Doors