**Northeastern University**

**Department of Civil and Environmental Engineering**

Instructor’s Assessment

CIVE 2260 Civil Engineering Materials

**Semester / Year:** Spring / 2013 **Instructor: S.W. Cranford Date:** 05/21/2013

Expectations regarding this course assessment:

1. Before the start of the course, review the most recent instructor assessment for recommendations on how to improve the course.
2. Grade summaries will be based on up to three exams.
3. *Questions to be asked on the in-class evaluation:*  Listed in item 3 below.
4. This assessment form is based on the set of topics and learning outcomes listed in the course syllabus. Do not change this part of the syllabus without action from the discipline group. If there is a change, notify the Undergraduate Studies Committee so that this form can be modified.
5. Complete the form and save it as a Word document with filename like this: IAssess\_2260 \_2013\_Fall

**1. What course improvements did you make? How successful were they? Relate them to recommendations made in previous course assessments.** *Expand the table as necessary.*

|  |  |
| --- | --- |
| 1. | Attempted to introduce material (through lecture slides) in addition to the course booklet/manual. Otherwise continued with the status quo, as only took over the course from Prof. Schulte-Grahame 2/3 through the semester.  |
| 2. |  |
| 3. |  |

**2. Your response to student comments and/or TRACE evaluation:** *Respond to serious criticisms and suggestions. Expand table as necessary.*

|  |  |  |
| --- | --- | --- |
|  | **Student Comment** | **Your Comment(s)** |
| 1. | Stop reading the course booklet verbatim.  | Did not read the course material word for word; attempted to introduce more ancillary topics. |
| 2. | Course material too piecewise. | Attempted to link topics to previous things we covered rather than treat each chapter independently. |
| 3. |  |  |

**3. Student questionnaire summary**

*Does not apply*

**4. Grade Summary**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Exam 1 question #** | **Topic** | **Average score** (0 to 100) | **% students with adequate achievement****(>70%)** | **Comment on any item with poor achievement** |
| 1.1 | Concrete Vocabulary | 70% | 62% |  |
| 1.2 | Standards | 75% | 93% |  |
| 1.3 | Communications | 89% | 85% |  |
| 1.4 | Green Materials Question | 90% | 88% |  |
| 1.5 | Moisture content, volume, specific gravity | 56% | 34% | Students not familiar with the equations; difficulty in translating the “word problem”.  |
| 1.6 | Specific Surface Area | 75% | 85% |  |
| 1.7 | Abram’s Law | 92% | 98% |  |
| 1.8 | Compressive Strength | 84% | 82% |  |
| 1.9 | Grain Size Distribution | 80% | 82% |  |
| 1.10 | Fineness Modulus | 72% | 71% |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Exam 2 question #** | **Topic** | **Average score** (0 to 100) | **% students with adequate achievement****(>70%)** | **Comment on any item with poor achievement** |
| 2.1 | Vocabulary | 81% | 94% |  |
| 2.2 | Metal Chemistry | 44% | 25% | Question regarding adding carbon to steel to change workability. Many students misinterpreted and talked about steel treatment.  |
| 2.3 | Crosslinks | 75% | 78% |  |
| 2.4 | Shear Strain | 90% | 95% |  |
| 2.5 | Rheological Models | 84% | 80% |  |
| 2.6 | Torque | 67% | 60% | Misunderstanding of polar inertia, torque radius, and torsion concepts.  |
| 2.7 | Thermal Changes  | 83% | 88% |  |
| 2.8 | Metal Compression  | 80% | 78% |  |
| 2.9 | Elasto-Plastic Stress-Strain | 70% | 59% |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Exam 3 question #** | **Topic** | **Average score** (0 to 100) | **% students with adequate achievement** | **Comment on any item with poor achievement** |
| 3.1 | Vocabulary | 77% | 69% |  |
| 3.2 | Key Property of Asphalt | 82% | 73% |  |
| 3.3 | Comparisons | 90% | 88% |  |
| 3.4 | Asphalt designations | 74% | 63% |  |
| 3.5 | Tension vs. compression in wood | 58% | 39% | Misinterpretation of what was asked. |
| 3.6 | Shear in wood | 97% | 97% |  |
| 3.7 | Tree Identification | 95% | 94% |  |
| 3.8 | Superpave Testing | 84% | 73% |  |
| 3.9 | Wood Selection | 90% | 81% |  |
| 3.10 | Wood Cutting | 79% | 52% |  |
| 3.11 | Asphalt Design | 89% | 92% |  |

**5. Here are the topics listed on your syllabus.** Based on your grade summaries, report the fraction of students that showed ability to apply knowledge and to identify, formulate, and solve problems. In the column “Basis for assessment” report the particular item(s) in the grade summary that support this assessment; or if the topic is not covered in the grade summary, state the basis of your assessment.

|  |  |  |  |
| --- | --- | --- | --- |
| **Topic**  | **Percentage of students showing ability to apply knowledge and solve problems** | **Basis for assessment** | **Comments** |
| 1. Introduction to materials engineering concepts, including economic considerations, mechanical and nonmechanical properties, production and construction issues.
 | 80% | Midterm 1, homework assessment |  |
| 1. Chemical composition of typical materials, and how atomic and molecular interactions affect macro-level properties.
 | 80% | Midterm 2, homework assessment |  |
| 1. The production of steel, aluminum, description of various steel types and strengthening mechanisms, welding of steels, corrosion, and mechanical testing of steel.
 | 80% | Midterm 2, homework assessment |  |
| 1. The classification and properties of aggregates as used in material composites such as Portland cement concrete and asphalt cement concrete.
 | 80% | Midterm 1, homework assessment |  |
| 1. Portland cement composition and properties, including baseline characteristics, hydration and admixtures to influence behavior.
 | 80% | Midterm 1, homework assessment |  |
| 1. Portland cement concrete proportioning, mixing, handling, curing; properties of hardened concrete and testing methods; alternative concrete types used in special cases; masonry types, grout, mortar and plaster.
 | 80% | Midterm 1, homework assessment |  |
| 1. Asphalt cement physical, chemical and mechanical properties, as well as common testing methods
 | 85% | Midterm 3, homework assessment |  |
| 1. Asphalt cement concrete, including proportioning, properties and testing
 | 85% | Midterm 3, homework assessment |  |
| 1. Wood and its physical properties; classifying and grading of wood; mechanical properties; other wood products (laminated wood); testing.
 | 85% | Midterm 3, homework assessment |  |
| 1. Types of plastic and composite products and applications; physical and mechanical properties; geosynthetics; testing.
 | 85% | Midterm 3, homework assessment |  |

**6. Assessment of Program-Level Outcomes not Covered in Topic Assessment**

What percentage of students achieved the following learning outcomes?

|  |  |  |  |
| --- | --- | --- | --- |
| **Learning Outcome** | **Percentage achieving** | **Basis for this rating**  | **Comments?** |
| An ability to learn independently | n/a | n/a | No basis in the portion of the class I taught. Homework did not reflect independent learning. |
| A knowledge of historical and contemporary issues | 80% | Class discussion | Good appreciation for the historical context of building materials, as well as contemporary issues (carbon footprints, green materials, sustainability, etc.) |

**7. Recommendations for improving this course.** Expand the table as needed.

|  |  |
| --- | --- |
| 1. | I recommend a total re-working of this course. |
| 2. | Potential introduction of a group research project (in lieu of a couple of the homeworks) to allow independent research.  |
| 3. |  |