Engineering Cluster proposal (2014)

1. What is the theme you propose for your group of courses? In what ways do you think this theme speaks to issues important to our freshman population?¹ To the University’s mission?

The theme for this cluster is material, people, and systems. Industrial engineering is concerned with how to optimize the operations of systems that include people, material, and processes in terms of cost quality and productivity. Also computer engineering is concerned with design of computer systems and human interfaces for these systems. This cluster develops the basic understanding of the students of the basics needed to succeed as an engineer.

2. List the three courses (prefix, number, title, units)²

   CHEM 1101 General Chemistry 5 units
   ENGR 1011 Engineering: An Introduction 3 units
   PSYC 1000 General Psychology 5 units

3. Explain how the theme will be used to integrate course content in each course. (Describe the contribution of each discipline’s perspective on the theme that will help create a coherent learning experience for the students.)

   The Chem 1101 develops the basic understanding of material properties
   Engr 1011, develops an understanding of systems and the effect of engineering designs on environment and sustainability
   PsyC 1005 Provides student with an understanding of human behavior

4. Explain how each course in the proposed learning community will support student learning of each of the lower division general education area learning outcomes and General Education requirements (passed by Academic Senate February 17, 2004). Please use the GE course application forms to address this question. (If the course has already been approved for GE credit, and the current application form was used, please attach a copy. If the course has not yet been approved for GE credit, the use of the application form will permit review for GE credit, even if the cluster application is not selected.)

   (http://www.csuhayward.edu/ge/subcommitte/ge/learningoutcomes.htm).

5. **Please note:** for mixed area learning communities, courses must meet learning outcomes in each area covered by the learning community. For example, a learning community with a course in humanities, one in social science, and one in science must demonstrate that the learning outcomes in humanities, social science, and science are met by the relevant courses.

¹ Average age 18; our most highly diverse class of students; mostly urban, approximately 25% of whom are not native English speakers, and more than 60% of whom take developmental math and/or composition their first year.
² Courses may be new (in which case new course requests must be completed and approved by the college) or may be revised existing courses. Course content and assignments must be appropriate for freshman: either 1000 level or introductory 2000 level courses. Faculty must recognize that many students will be completing remedial work in composition and/or math.
6. Attach course outlines for the three courses. Each course outline should indicate how the theme would be used in the course and any student activities that cross all three courses. (For example, will there be common reading(s) in the three courses? Will there be common assignments, or assignments on which students work the entire year? Will students keep a cluster portfolio? Etc.)
Approved by Department Chairs:

[Signatures]

[Department] [Date]

Approved by College Dean/Associate Dean from each participating college³

[Signature] [Date]

[Signature] [Date]

[Signature] [Date]

Signatures of three faculty members: Ideally, the person who will teach the courses will participate in the cluster planning. However, recognizing the staffing difficulties departments face, the faculty member who plans the cluster must agree to provide a thorough orientation to the expectations and methods developed for the learning community to the actual instructor. We each agree, if selected, to meet on for six hours during the following three days for an end-of-Spring workshop on interdisciplinary curriculum, pedagogy and course integration.

[Signature] [Date]

[Signature] [Date]

[Signature] [Date]

³ While Colleges do not approve courses for GE, College approval assures support for departmental participation.
Chemistry 1101-01: General Chemistry, Fall 2013
Department of Chemistry and Biochemistry
California State University East Bay

Lecture instructor: Patrick Huang
Email: patrick.huang@csueastbay.edu
Office hours: MWF 12:00 – 1:00 pm in SC-S407 and by appointment

Lectures: MWF 8:15 – 9:05 am in VBT124

Lab section 1A: Neil Kilcain, MW 9:20 – 11:50 am in SC-S437
Lab section 1B: Kara McDonnell, MW 9:20 – 11:50 am in SC-N437
Lab section 1C: Robert Dillis, MW 2:40 – 5:10 pm in SC-N437
Lab section 1D: Richard Fronko, TTh 12:00 – 2:30 pm in SC-S421
Lab section 1E: Anni Mai and Joshawna Nunnery, MW 9:20 – 11:50 am in SC-N447

Course description
- Fundamental principles of chemistry, chemical structure, bonding, equilibrium, dynamics, and reactions. The lab portion of the course includes the study of chemical and physical behavior of elements and compounds, and qualitative and quantitative analysis.

Blackboard
- Course announcements and supplementary materials will be posted on the Blackboard system (https://bb.csueastbay.edu). Please make sure that your Blackboard communication preferences (e.g., your email address) are set correctly.

Required course materials
- Lecture text and online homework: N.J. Tro, “Chemistry: A Molecular Approach” 3rd custom edition, Pearson Education. This text is customized for CSUEB and comes with the online homework system from Pearson Mastering Chemistry. There are several options for the text and Pearson online site:
  1. Buy the hardcopy text from the student bookstore. This will come with an access code to register for the Pearson site where homework assignments are completed and submitted.
  2. Buy the Pearson site access code and electronic text from the Pearson website.
  3. Buy the Pearson site access code only, and use the text on reserve at the library.
- Lab manual: E.J. Slowinski, W.C. Wolsey, and R.C. Rossi, “Chemical Principles in the Laboratory”, 10th edition, Brooks/Cole. This manual is used for the General Chemistry sequence (Chem 1101, 1102, 1103). The options are:
  1. Buy the hardcopy text from the student bookstore.
  2. Buy the entire text or individual experiments online and print them out. These are available at: http://www.cengagebrain.com/shop/isbn/9780840048349.
  3. Use the text on reserve at the library.
- A bound (not spiral) notebook with lined pages for the lab. One with numbered pages is preferable; however, you can also number the pages by hand in a consistent corner. The same notebook can be used for Chem 1102 and 1103.
- A scientific calculator.
• Safety goggles are required for the lab.

**Required homework and optional practice problems**

• The course uses the online homework system from Pearson Mastering Chemistry. See the Pearson handout for registration instructions. Students are responsible for registering and resolving any access issues in a timely manner. For assistance, refer to the knowledge base or contact the 24/7 technical support (http://www.pearsonmylabandmastering.com → Students → Support).

• Homework assignments are due on the days listed on the lecture schedule at 11:59 pm. Points will be deducted from late assignments (10% per day late).

• At the end of the quarter, the total homework score will be scaled to a maximum of 60 points and added to the point total for the course.

• Optional practice problems from the textbook will also posted on Blackboard. Answers are in the back of the textbook. These problems are not collected or graded, but it is **highly recommended** that you work through these problems.

**Lecture, midterms, and final exam**

• Please read the relevant sections of the text **before** attending the lecture on the material. This will give the lectures context and significantly help with achieving the course learning outcomes.

• Students are responsible for all material covered in lecture, including any alterations made in the syllabus or schedule.

• All midterms must be taken as scheduled during the lecture period. Students who miss a midterm should notify the lecture instructor as soon as possible. If the absence is excused, the final exam weight will be scaled up to account for the missed midterm. Only **one** excused absence from a midterm is permitted; an unexcused absence will receive a zero score.

• If the final exam is missed for any reason, a grade of WU (unofficial withdrawal) will be entered.

**Laboratory, reports, and quizzes**

• Please read the lab material beforehand and understand the objective, procedures, and any hazardous materials to be used that day.

• **Advance study assignments (ASAs):** Complete and turn in at the beginning of the lab period on the day of the experiment.

• **Notebooks:** Record all experiments in a lab notebook (see required course materials above). Use only blue or black ink; cross out mistakes with a single line. If the pages are not numbered, number them by hand in a consistent corner. Reserve the first few pages for a Table of Contents.

  1. Before the experiment: Write i) the title and date of the experiment, ii) objective (one to two sentences), iii) the procedure, in your own words (this can be a short outline, diagrams, or flow chart).

  2. During the experiment: Record any observations, data, calculations, and deviations from the procedure.

  3. After the experiment: Write conclusions from the results.

The lab instructor will check notebooks during the lab period.

• **Report sheets:** Due at the beginning of the following lab period. Points will be deducted for late reports (10% per day late).

• A separate lab grade will not be assigned. Instead, the total number of lab points is carried over to the lecture, and the lecture instructor assigns an overall grade. The lecture instructor reserves
the right to re-scale student lab points to a common average in order to compensate for variations in point assignments by different lab instructors.

- **Lab attendance is mandatory.** Students who miss a lab experiment should notify the lab instructor as soon as possible. If the absence is excused, credit for the lab experiment can be granted if the lab assignment can be completed using substitute data from the lab instructor.
- If you are late to lab and miss the lecture, safety, and chemical waste removal instructions, you will not be allowed to participate and will earn zero points for the experiment.
- All lab quizzes must be taken as scheduled during the lab period. Students who miss a quiz should notify the lab instructor as soon as possible. If the absence is excused, the average of the remaining quiz scores will be assigned in place of the missed quiz.
- Only one excused absence from a lab experiment or lab quiz is permitted; an unexcused absence will receive a zero score.

**Grading**

- Scores from lab assignments, quizzes, and midterms will be posted on Blackboard. Any issues with a posted score must be raised within five days from the date the score become available.
- Scores from individual homework assignments are posted on the Pearson Mastering Chemistry website as soon as an assignment is submitted. The total homework score, scaled to a maximum of 60 points, will be transferred over to Blackboard at the end of the quarter.
- The point breakdown is as follows:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>60</td>
</tr>
<tr>
<td>Midterms 2×100</td>
<td>200</td>
</tr>
<tr>
<td>Final</td>
<td>200</td>
</tr>
<tr>
<td>Lab quizzes 6×20</td>
<td>120</td>
</tr>
<tr>
<td>Lab advance study assignments (ASA) 11×5</td>
<td>55</td>
</tr>
<tr>
<td>Lab notebooks 12×2</td>
<td>24</td>
</tr>
<tr>
<td>Lab reports 12×15</td>
<td>180</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>839</strong></td>
</tr>
</tbody>
</table>

- The letter grade for the course will be assigned based on the total accumulated points relative to the class average. Similar point totals will be assigned similar grades.

**Cheating and plagiarism**

- Students caught cheating will receive a zero score on the assignment or exam and an Academic Dishonesty Report will be filed.

**Disabilities**

- If you have a documented disability and wish to discuss academic accommodations, or if you will need assistance in the event of an emergency, please contact the instructor within the first week of class.

**General education learning outcomes (physical science area B1)**

- Students should be able to demonstrate broad science content knowledge in the physical sciences such as the nature and structure of matter, Earth's place in the Universe, or the conservation of energy and matter.
- Students should be able to demonstrate the application of quantitative skills (such as statistics, mathematics and the interpretation of numerical graphical data) to physical science problems.
Students should be able to demonstrate a general understanding of the nature of science, the methods applied in scientific investigations, and the value of those methods in developing a rigorous understanding of the physical world. Students should be able to identify the difference between science and other fields of knowledge. Students should be able to distinguish science from pseudoscience.

Specific learning outcomes

- Chapter 1
  Identifying physical and chemical changes and properties
  Converting between temperature scales (Fahrenheit, Celsius, Kelvin)
  Applying the formula for the density of a substance
  Reporting experimental measurements
  Working with significant figures
  Converting units

- Chapter 2
  Applying the law of definite proportions and law of multiple proportions
  Working with atomic numbers, mass numbers, isotope symbols
  Determining the charge of ions
  Calculating atomic mass
  Using the mole concept
  Converting between moles and number of atoms
  Converting between mass and amount (in moles)

- Chapter 3
  Classifying substances: atomic elements, molecular elements, and molecular and ionic compounds
  Writing chemical formulas, using chemical formulas as a conversion factor
  Naming ionic compounds, molecular compounds, and acids
  Calculating formula mass and molar mass, using molar mass as a conversion factor
  Calculating mass percent composition, using mass percent composition as a conversion factor
  Obtaining empirical formula from experimental data
  Calculating molecular formula from empirical formula
  Balancing chemical equations

- Chapter 4
  Using reaction stoichiometry as a conversion factor
  Determining the limiting reactant, calculating theoretical and percent yield of a reaction
  Calculating and using molarity as a conversion factor
  Determining solution dilutions, using solution stoichiometry to find volumes and amounts
  Predicting whether a compound is soluble
  Writing chemical equations for precipitation reactions
  Writing complete ionic and net ionic equations
  Writing chemical equations for acid-base reactions
  Calculations involving acid-base titrations
  Writing chemical equations for gas evolution reactions
  Identifying redox reactions, oxidizing agents, reducing agents, and assigning oxidation states
  Writing chemical equations for redox reactions

- Chapter 5
Converting between pressure units
Applying Boyle’s law, Charles’s law, and Avogadro’s law
Applying the ideal gas law
Relating density of a gas to its molar mass
Calculating the molar mass of a gas
Calculating total pressure, partial pressures, and mole fractions for a mixture of gases
Using gas-phase reaction stoichiometry as a conversion factor
Calculating the root mean square velocity of a gas
Calculating the effusion rate or ratio of effusion rates of two gases

• Chapter 6
Calculating internal energy from heat and work
Finding heat from temperature changes
Determining quantities in thermal energy transfer
Finding work from volume changes
Determining quantities in bomb calorimetry
Predicting endothermic and exothermic processes
Determining heat from $\Delta H$ and stoichiometry
Finding $\Delta H_{\text{rxn}}$ using calorimetry
Applying Hess’ law
Finding $\Delta H_{\text{rxn}}^\circ$ using standard enthalpies of formation
<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture topic</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>W 9/25</td>
<td>Introduction to Chem 1101</td>
<td></td>
</tr>
<tr>
<td>F 9/27</td>
<td>Physical and chemical changes/properties, energy</td>
<td>1.1 – 1.5</td>
</tr>
<tr>
<td>M 9/30</td>
<td>Units and measurements; <strong>Intro to Mastering Chemistry due</strong></td>
<td>1.6 – 1.8</td>
</tr>
<tr>
<td>W 10/2</td>
<td>Atoms</td>
<td>2.2 – 2.4</td>
</tr>
<tr>
<td>F 10/4</td>
<td>Atomic structure; <strong>Chapter 1 homework due</strong></td>
<td>2.5 – 2.6</td>
</tr>
<tr>
<td>M 10/7</td>
<td>Periodic table, atomic and molar mass</td>
<td>2.7 – 2.9</td>
</tr>
<tr>
<td>W 10/9</td>
<td>Chemical bonds, chemical formulas</td>
<td>3.2 – 3.4</td>
</tr>
<tr>
<td>F 10/11</td>
<td>Nomenclature; <strong>Chapter 2 homework due</strong></td>
<td>3.5 – 3.7</td>
</tr>
<tr>
<td>M 10/14</td>
<td>Formula mass, the mole, chemical composition</td>
<td>3.8 – 3.9</td>
</tr>
<tr>
<td>W 10/16</td>
<td>Determination of chemical formulas, chemical equations</td>
<td>3.10 – 3.11</td>
</tr>
<tr>
<td>F 10/18</td>
<td>Stoichiometry; <strong>Chapter 3 homework due</strong></td>
<td>4.2</td>
</tr>
<tr>
<td>M 10/21</td>
<td>Limiting reactant, theoretical and percent yield</td>
<td>4.3</td>
</tr>
<tr>
<td>W 10/23</td>
<td>Exam review</td>
<td></td>
</tr>
<tr>
<td>F 10/25</td>
<td><strong>Midterm 1 (Chapters 1 – 3)</strong></td>
<td></td>
</tr>
<tr>
<td>M 10/28</td>
<td>Solutions and solubility</td>
<td>4.4 – 4.5</td>
</tr>
<tr>
<td>W 10/30</td>
<td>Precipitation reactions</td>
<td>4.6</td>
</tr>
<tr>
<td>F 11/1</td>
<td>Ionic and net ionic equations</td>
<td>4.7</td>
</tr>
<tr>
<td>M 11/4</td>
<td>Acid-base and gas evolution reactions</td>
<td>4.8</td>
</tr>
<tr>
<td>W 11/6</td>
<td>Oxidation-reduction reactions</td>
<td>4.9</td>
</tr>
<tr>
<td>F 11/8</td>
<td>Gases, gas laws; <strong>Chapter 4 homework due</strong></td>
<td>5.2 – 5.3</td>
</tr>
<tr>
<td>M 11/11</td>
<td><strong>Veterans Day – NO CLASS</strong></td>
<td></td>
</tr>
<tr>
<td>W 11/13</td>
<td>Exam review</td>
<td></td>
</tr>
<tr>
<td>F 11/15</td>
<td><strong>Midterm 2 (Chapter 4)</strong></td>
<td></td>
</tr>
<tr>
<td>M 11/18</td>
<td>Ideal gas law</td>
<td>5.4 – 5.5</td>
</tr>
<tr>
<td>W 11/20</td>
<td>Partial pressures, gas-phase reactions</td>
<td>5.6 – 5.7</td>
</tr>
<tr>
<td>F 11/22</td>
<td>Kinetic theory of gases</td>
<td>5.8 – 5.9</td>
</tr>
<tr>
<td>M 11/25</td>
<td>Energy, first law of thermodynamics; <strong>Chapter 5 homework due</strong></td>
<td>6.2 – 6.3</td>
</tr>
<tr>
<td>W 11/27</td>
<td>Heat and work, calorimetry</td>
<td>6.4 – 6.5</td>
</tr>
<tr>
<td>F 11/29</td>
<td><strong>Thanksgiving – NO CLASS</strong></td>
<td></td>
</tr>
<tr>
<td>M 12/2</td>
<td>Enthalpy</td>
<td>6.6 – 6.7</td>
</tr>
<tr>
<td>W 12/4</td>
<td>Standard heats of formation</td>
<td>6.8 – 6.9</td>
</tr>
<tr>
<td>F 12/6</td>
<td>Final exam review; <strong>Chapter 6 homework due</strong></td>
<td></td>
</tr>
<tr>
<td>M 12/9</td>
<td><strong>Final exam (8:00 am – 9:50 am)</strong></td>
<td></td>
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</table>
### Lab Schedule (Mon/Wed Sections)

<table>
<thead>
<tr>
<th>Date</th>
<th>Lab experiment</th>
</tr>
</thead>
<tbody>
<tr>
<td>W 9/25</td>
<td>Check-in, lab safety</td>
</tr>
<tr>
<td>M 9/30</td>
<td>1 – Densities of liquids and solids</td>
</tr>
<tr>
<td>W 10/2</td>
<td>3 – Fractional crystallization</td>
</tr>
<tr>
<td>M 10/7</td>
<td><strong>Quiz 1</strong> (Chapter 1)</td>
</tr>
<tr>
<td>W 10/9</td>
<td>3 – Fractional crystallization (continued)</td>
</tr>
<tr>
<td>M 10/14</td>
<td><strong>Quiz 2</strong> (Chapter 2)</td>
</tr>
<tr>
<td>W 10/16</td>
<td>4 – Determination of a chemical formula</td>
</tr>
<tr>
<td>M 10/21</td>
<td><strong>Quiz 3</strong> (Chapter 3)</td>
</tr>
<tr>
<td>W 10/23</td>
<td>5 – Identification of a compound by mass relationships</td>
</tr>
<tr>
<td>M 10/28</td>
<td>6 – Properties of hydrates</td>
</tr>
<tr>
<td>W 10/30</td>
<td>7 – Analysis of an unknown chloride (handout)</td>
</tr>
<tr>
<td>M 11/4</td>
<td>18 – Some nonmetals and their compounds</td>
</tr>
<tr>
<td>W 11/6</td>
<td>12 – Alkaline earth metals and halogens (handout/no ASA)</td>
</tr>
<tr>
<td>M 11/11</td>
<td><strong>Veterans Day – NO CLASS</strong></td>
</tr>
<tr>
<td>W 11/13</td>
<td><strong>Quiz 4</strong> (Chapter 4)</td>
</tr>
<tr>
<td>M 11/18</td>
<td>30 – Determination of iron by reaction with permanganate*</td>
</tr>
<tr>
<td>W 11/20</td>
<td>24a – Standardization of a basic solution (handout)</td>
</tr>
<tr>
<td>M 11/25</td>
<td>35 – Spot tests for some common anions</td>
</tr>
<tr>
<td>W 11/27</td>
<td><strong>Quiz 5</strong> (Chapter 5)</td>
</tr>
<tr>
<td>M 12/2</td>
<td>14 – Heat effects and calorimetry</td>
</tr>
<tr>
<td>W 12/4</td>
<td><strong>Quiz 6</strong> (Chapter 6), check-out</td>
</tr>
</tbody>
</table>

* Answer to ASA Q1: \( 8 \text{ H}^+(aq) + \text{MnO}_4^- (aq) + 5 \text{ Fe}^{2+}(aq) \rightarrow \text{Mn}^{2+}(aq) + 5 \text{ Fe}^{3+}(aq) + 4 \text{ H}_2\text{O}(l) \)
<table>
<thead>
<tr>
<th>Date</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Th 9/26</td>
<td>Check-in, lab safety</td>
</tr>
<tr>
<td>T 10/1</td>
<td>1 – Densities of liquids and solids</td>
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<td>Th 10/3</td>
<td>3 – Fractional crystallization</td>
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<tr>
<td>T 10/8</td>
<td>Quiz 1 (Chapter 1)</td>
</tr>
<tr>
<td>Th 10/10</td>
<td>3 – Fractional crystallization (continued)</td>
</tr>
<tr>
<td>T 10/15</td>
<td>Quiz 2 (Chapter 2)</td>
</tr>
<tr>
<td>Th 10/17</td>
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<td>T 11/26</td>
<td>Quiz 5 (Chapter 5)</td>
</tr>
<tr>
<td>Th 11/28</td>
<td>Thanksgiving – NO CLASS</td>
</tr>
<tr>
<td>T 12/3</td>
<td>14 – Heat effects and calorimetry</td>
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<td>Quiz 6 (Chapter 6), check-out</td>
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</tbody>
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Engineering 1011
Engineering: An Introduction

Professor David Bowen
(510) 885-4483
david.bowen@csueastbay.edu

Office: Rm 227 Valley Business & Technology Center
Office Hours: Mon 10:am-12:00noon, 2-2:30pm;
Wed 11:30-12:00noon

Text
Engineering Design: A Project-Based Introduction, 3rd Edition

Grading
Labs/activities 20%
Project/Presentation 20%
Midterm 25%
Final 35%

Course Description:
Introduction to the engineering profession and creative engineering problem-solving through hands-on design projects, presentations, and activities. An introduction to various engineering disciplines. Issues such as sustainability, optimal use of resources, design for manufacturability, design for reuse and logistics are considered.
<table>
<thead>
<tr>
<th>WEEK</th>
<th>DATE</th>
<th>DAY</th>
<th>TOPIC/ACTIVITY/LAB</th>
<th>ACTIVITY/LAB</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6-Jan</td>
<td>M</td>
<td>Intro</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>8</td>
<td>W</td>
<td>Measure Challenge</td>
<td>Measure</td>
</tr>
<tr>
<td>2</td>
<td>13</td>
<td>M</td>
<td>Design General (Lecture)</td>
<td>Written Design Plans</td>
</tr>
<tr>
<td>2</td>
<td>15</td>
<td>W</td>
<td>Design -Simple Machines?</td>
<td>NONE</td>
</tr>
<tr>
<td>3</td>
<td>20</td>
<td>M</td>
<td>MLK Jr - HOLIDAY</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>22</td>
<td>W</td>
<td>Design (Competition)</td>
<td>Competition</td>
</tr>
<tr>
<td>4</td>
<td>27</td>
<td>M</td>
<td>Design 2</td>
<td>Lecture</td>
</tr>
<tr>
<td>4</td>
<td>29</td>
<td>W</td>
<td>Excel (Introduction)</td>
<td>Intro**</td>
</tr>
<tr>
<td>5</td>
<td>3-Feb</td>
<td>M</td>
<td>Sustainability (Footprint)</td>
<td>Footprint</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>W</td>
<td>Sustainable (Re)Design</td>
<td>Redesign</td>
</tr>
<tr>
<td>6</td>
<td>10</td>
<td>M</td>
<td>Function-Means Applications</td>
<td>In Class Applications</td>
</tr>
<tr>
<td>6</td>
<td>12</td>
<td>W</td>
<td>Midterm</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>17</td>
<td>M</td>
<td>Excel (College Rankings)</td>
<td>College Rankings**</td>
</tr>
<tr>
<td>7</td>
<td>19</td>
<td>W</td>
<td>Electronics/Logic</td>
<td>Virtual Logic Circuits</td>
</tr>
<tr>
<td>8</td>
<td>24</td>
<td>M</td>
<td>Guest Lecturer?</td>
<td>NONE</td>
</tr>
<tr>
<td>8</td>
<td>26</td>
<td>W</td>
<td>Bridge Modeling Force</td>
<td>Bridge Force Software**</td>
</tr>
<tr>
<td>Software</td>
<td></td>
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</tr>
<tr>
<td>9</td>
<td>3-Mar</td>
<td>M</td>
<td>Access Database Creation</td>
<td>Database Creation**</td>
</tr>
<tr>
<td>9</td>
<td>5</td>
<td>W</td>
<td>Engineering Ethics</td>
<td>Case Study</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>M</td>
<td>Demonstration</td>
<td>Presentations</td>
</tr>
<tr>
<td>10</td>
<td>12</td>
<td>W</td>
<td>Demonstration</td>
<td>Presentations</td>
</tr>
</tbody>
</table>
Relation to Program Objectives
Our program objectives include producing graduates who have enthusiasm and aptitude to continuously pursue learning, and have the ability to communicate and work well as individuals or on teams. This course advances realization of these objectives by requiring students to seek and utilize learning resources outside the class via assigned homework, laboratories and a project, and by requiring students to work in teams on laboratories and in-class activities. Communication skills are further promoted through oral presentation of the term project and laboratory write-ups.

Relation to Program Outcomes
This course contributes to the following outcomes
  (e) Solve engineering problems
  (j) Know contemporary issues
The main purpose of this course is to generate enthusiasm for engineering and an appreciation for the impact of engineering solutions on contemporary issues. Students conduct a number of laboratory experiments and in-class activities related to sustainability and design exercises. The course is open to non-majors and has no prerequisites, so designs are typically generated through design-test-redesign improvement cycles rather than through application of analytical tools.

Design Experience:
Students design multiple solutions to open ended design problems throughout the course. Principles of redundancy, learnability, efficiency and memory requirements are illustrated. Integrated design projects are undertaken.

Laboratory Usage:
Laboratory activities include measurement of a building, design of an air propelled vehicle, use of computer simulation for bridge design, introduction to circuit design, Access database use, MathCAD and/or Excel software.

Computer Usage:
Course includes use of computer simulation for bridge design, and introduction to circuit design, MathCAD and/or Excel software.

Communication Building:
Oral and written communication awareness and skills are developed through the air propelled vehicle design exercise, wherein groups create a design, then build based on another group’s design. Each group receives feedback on potential improvements to their written design instructions. Extensive use of teams affords opportunities for oral communication, and groups typically provide oral or written results to the class and/or instructors.

Engineering Science: 40%
Engineering Design: 60%
Psychology 1005: Introduction to Psychology for Healthier Living
Spring, 2014; MWF, 12-1:15 pm
Instructor: Dr. C. Barkley

Office: S. Sc. 451
Office Phone: 510-885-2764
Office Hours: M/W 1:15-2:15pm
Mailbox: Psychology Dept. Office (S.Sc. 229)
E-mail: cynthia.barkley@csueastbay.edu (include Psychology 1005 in the subject line of all e-mail).

Please review the course requirements for this course as printed in your catalog.
http://www20.csueastbay.edu/ecat/undergrad-chapters/u-psyc.html#undergrad

Course Texts: Introduction to Psychology, Coon and Mitterer, 13th edition. This text may be purchased as a paper version, or electronically from the publisher’s web site. I will provide you the link to the electronic version of the text on blackboard. The e-version of the text is less expensive than the paper version new through the bookstore and includes interactive tools.

Blackboard: Syllabus, study-guides for exams, and homework assignments/quizzes for the course are available only electronically on Blackboard. We will discuss this further in class. Additionally, changes to the schedule will be posted as announcements on our class blackboard site. Be sure to check these announcements and your horizon e-mail regularly.

There will be 3 exams: 2 midterms and a final. Assignments for this course are quizzes posted on blackboard. Due dates for these assignments will be posted on blackboard.

Topics and assignments (by week):
April 2 – Introduction and Research Methods: Chp. 1 (March 31st is a holiday)
April 7 – The Nervous System and Sensation: Chps. 2 & 4
April 14 – Sensation and Perception Chp. 4
April 21 – Exam 1 and Conditioning and Learning Chapter 6 and pages 520-526.
April 28 – Conditioning and Learning continued and Memory, Chp. 6 & 7.
May 5 – States of Consciousness. Chapter 5
May 12 – Review Exam 2 and Intelligence Chapter 9
May 19 – Development: Chap. 3 (5/20 is the last day to withdraw from a course)
May 28 – Social Psychology: Chap 16 & 17 (May 26th is a holiday – no class).

No participation is permitted during finals week.
June 11 – Final Exam Wednesday (at 12:00)

Exam Dates:
Exam 1 – Monday April 21
Exam 2 – Wednesday May 14
Final Exam – Wednesday June 11 at 12:00
Exams:
You will need a #2 pencil and a Scantron form 882-E for each exam. You will be required to bring photo id with you to exams. Make-up exams will only be granted for documented emergencies. **Please review the exam dates now, and note them. Do not continue in this class if you cannot make the scheduled exams.** Exams will cover material from assigned readings, films and lecture material.

Assignments:
You will be assigned several chapter post-tests online through the blackboard site. These chapter post-tests will be posted with their due dates at least one week before they are due. You are responsible for checking the site to insure that you do them on time.

Grading:
Each exam will be worth 100 points. The homework quizzes (4 of them) will be worth 10 points each. Total points available in the class is therefore 340. Grades will be calculated on percentages 93-100% is an A, 90-92.9% is a A-, 87-89.9% is a B+, 83-86.9% is a B, 80-82.9% is a B-, 77-79.9% is a C+, 73-76.9% is a C, 70-72.9% is a C-, 67-69.9% is a D+, 60-66.9% is a D, below 60% is an F. I do not curve grades and I do not ‘assign’ grades — you earn your grades. Note that an incomplete grade will only be considered in the event of a documented emergency, not as a way of avoiding a failing grade.

Lecture notes:
As a courtesy for you, I will have outlines of my lecture notes (excluding overheads of copyrighted material) online at the blackboard site for this class. Try and print and read these notes before class.

Films
There will be several films seen in class. These will be shown as convenient to me, and thus are (mostly) unannounced. There will be questions from these films on the exams, and we may not discuss them in class prior to the exam. These films are part of my personal library and may not be available elsewhere. Regular attendance in class is strongly advised.

In order to receive a grade in this course:
To get a fuller flavor of Psychology as an experimental science, one must have some direct contact with ongoing research. Consequently, as part of the requirements for this course you will participate as a subject in some research studies. If you do not complete the subject pool requirement you will receive an **Incomplete** in the course. If your grade at this point is a D or F, you will receive the grade rather than an Incomplete. You will be provided with a yellow “Research Participation and Reminder” sheet. Please read this yellow sheet carefully because it describes the subject pool requirement in more detail. Each time you participate, the experimenter will sign your yellow sheet and indicate the number of points you have earned. It is important that you keep your yellow sheet. In the unlikely event of an error in the subject pool records, your yellow sheet serves as proof of your research participation. Sign-up sheets for experiments are located on the bulletin board outside South Science 236. When you sign up to be in an experiment, you are making a commitment to arrive at the experiment at the stated hour and on time. **One point will be added to your point requirement each time that you miss an appointment (i.e., if the requirement for the quarter is 4 points and you miss one appointment then you would need to earn 5 points that quarter).** This means that you will need to earn an extra point later on in order to fulfill the requirement. The subject pool requirement is
administered by the Subject Pool Coordinator, not by your Psychology 1005 instructor. Please
direct questions regarding the subject pool to the Subject Pool Coordinator in the Psychology
Department office (South Science 229).

Misc: -The best predictor of final grades in my classes is attendance. Students who do not attend
my classes do not do well. You must be here if you wish to succeed. Additionally, if you do
attend but spend your time in class chatting, or texting or using an electronic device for anything
other than note taking, you are not absorbing the material from the course and may be distracting
those around. If I observe you being a distraction, I reserve the right to ask you to leave until you
can focus on the material.

Occasionally I find it necessary to send you information by e-mailing through blackboard. Be
sure you check your horizon e-mail account regularly.

Class policy on plagiarism
Duplication of any material from another written work that is not in quotations is plagiarism.
Plagiarism is cheating, and therefore, any instance will be considered grounds for an F in this
class. This includes copying anyone else’s simulations. Cheating during exams will be grounds
for an automatic F in the class. Additionally, I am required to put the following statement in my
syllabus “By enrolling in this class the student agrees to uphold the standards of academic
integrity described in the catalog at http://www.csueastbay.edu/ecat/current/i-
120grading.html#section12.”

Children
As part of this class, we will be discussing topics that are inappropriate for children (ie gender,
reproduction, hormones, and use of postmortem brain material for study). Please do not bring
your children with you to class without consent from me. Infants also are a huge distraction for
me while I am lecturing and other students who are trying to listen. Please be courteous and do
not bring them to class.

Additional information required by Academic Senate
Accommodations for those with a documented disability are available through Accessibility
Services. Please see them as soon as possible to pick up the appropriate paperwork if you qualify
for services.
Emergency information: “Information on what to do in an emergency situation may be found at
http://www20.csueastbay.edu/af/departments/risk-management/ehs/emergency-
management/index.html. Please be familiar with these procedures. Information on this page is
updated as required. Please review the information on a regular basis.”

Student Learning Objectives:
In this cluster class, we will be emphasizing the application of psychology towards healthier
living. Towards this end, we will be emphasizing within each chapter how the understanding of
how your brain and mind works is essential for understanding how to live a healthier life,
physically and emotionally. We will also be highlighting the role of the nervous system, learning,
hormones and emotion in prevention of illness.
During the course of this term, you will come to understand the research methods involved in the study of psychology. You will learn to critically analyze research in a variety of life and social sciences. You will learn to analyze the arguments presented by the author of a study, examine the methods and their appropriateness to the argument and to determine whether the methods can support a causal inference. You will learn the difference between correlational and experimental research. You will also learn the limits of generalization to the population being studied. You will learn to interpret basic graphs of correlational and experimental designs. You will further gain insight into how research in psychology is conducted by participating in research studies being done in the psychology department.

You will also learn basic neuro-anatomy. You will learn the names and functions of the lobes of the cortex and sub-cortical structures. You will learn how neurons function and propagate neural signals. You will learn what the effects are on the nervous system of some of the common drugs of abuse. You will learn how external stimuli (light, sound, touch, smell, taste) are transformed into neural signals and processed by the nervous system to become what we experience as perception.

You will learn how learning occurs and what the underlying changes look like in the nervous system as you learn. You will learn how memory works and what things you can do to improve your processing of incoming information, retention of that information and your recovery of that information in both academic and non-academic settings.

You will learn about the stages of sleep and sleep disorders. You will learn about development: physiological development, emotional development and cognitive development. You will learn how genetics and hormones affect developmental processes.

You will learn about psychological disorders: their symptoms, treatments and what is known about their causes.

Assessment in this class of these objectives will be done by multiple-choice exams, and chapter quizzes on blackboard. The chapter quizzes are good review for the material that may be covered on the exam.
PROPOSAL FOR LOWER DIVISION GE SCIENCE REQUIREMENT
NATURAL SCIENCES (B2)

PROPOSED COURSE: PSYC 1000: (INTRODUCTION TO PSYCHOLOGY)

DEPARTMENT: PSYCHOLOGY

DATE: 2-24-05

Proposal Requirements:

1. Course Syllabus (please see enclosed copy)

2. Narrative Description:

Students should be able to demonstrate broad science content knowledge in the life sciences and be able to describe fundamental concepts in the life sciences that distinguish them from the physical sciences.

Psychology 1000 is a survey course of the entire field of psychology that includes broad content from both the social sciences and the life sciences. Much emphasis is placed on the physiological basis of behavior, and the evolution of physiological structure and behavior throughout the animal kingdom (note the “songs of canaries” topic mentioned in the syllabus!) Evolutionary Psychology is dealt with in the section on Heredity and Kinship and Development. The structure of the brain and nervous system is dealt with in regard to Sensation and Perception, Conditioning and Learning, Memory, and Abnormal Psychology. Assessment of knowledge of these topics will be done by class exams.

Students should be able to demonstrate the application of quantitative skills (such as statistics, mathematics, the interpretation of graphical data, etc.) to life sciences problems.

The course begins with a section on Research methods, including statistical analysis. Data are consistently presented in graphical form and students are expected to interpret these graphs. Student’s ability to understand statistical concepts and interpret graphs will be tested in class exams.

Students should be able to demonstrate a general understanding of the nature of science, the methods involved in scientific investigations, and the value of those methods in developing a rigorous understanding of (living systems?) Students should be able to identify the difference between science and other fields of knowledge. Students should be able to distinguish science from pseudoscience.

The scientific method is emphasized in Psychology 1000, and there is constant attention paid to the value of this method in contrast to the more traditional ways of thinking about human behavior and perception. Different types of research methodologies used to conduct scientific experiments are dealt with.
Belief in pseudoscience is possibly more prevalent regarding the subject matter of psychology than in any other natural science. Psychology 1000 deals with these beliefs directly; for example, the section on Sensation and Perception deals with the topic of extra-sensory perception. Students understanding of these issues will be tested in class exams.
Application for General Education Credit
for Lower Division Physical Science (Area B1)

Course Title: General Chemistry I
Course number: CHEM 1101

Courses approved for general education credit must provide students with explicit instruction in the approved student learning outcomes. Please be as specific as possible in your explanations, describing topics, readings, assignments, activities and assessments that illustrate how the course supports students' acquisition of the learning outcomes. Remember, there may be no one on the review committees who has any knowledge of your discipline. Attach the course syllabus and any assignments and/or assessments needed to support your explanations.

Please use this template to address ALL of the following learning outcomes.

Purpose of Science GE: The goal of lower division general education in the natural sciences is to gain basic knowledge and learn key principles in the life and physical sciences as essential for an informed citizenry. In addition, students should recognize the experimental and empirical methodologies characteristic of science and understand the modern methods and tools used in scientific inquiry.

1. Students will demonstrate broad science content knowledge in the physical sciences such as the nature and structure of matter, Earth's place in the Universe, or the conservation of energy and matter.

   In CHEM 1101 students gain an understanding of the nature of matter in terms of the atoms and molecules of which it is composed. They learn what situations induce changes in matter through chemical reactions and how energy is consumed or released in the process. They develop an understanding of how chemicals dissolve in water or other liquids and learn what types of chemicals make up acids and bases. Each of these concepts is addressed and reinforced through lecture explanations, demonstrations, problem solving and laboratory experimentation.

2. Students will demonstrate the application of quantitative skills (such as statistics, mathematics and the interpretation of numerical graphical data) to physical science problems.

   Chemistry requires calculations of various types, e.g. in chemical equations, solubility problems and graphical representations. The field is particularly rich in quantitative applications. Students demonstrate their acquired skills both in laboratory experiments and in several hundred problems assigned in lecture.

3. Students will demonstrate a general understanding of the nature of science, the methods applied in scientific investigations, and the value of those methods in developing a rigorous understanding of the physical world. Students should be able to identify the difference between science and other fields of knowledge. Students should be able to distinguish science from pseudoscience.

   CHEM 1101 introduces students to the scientific method. The course provides many examples of how chemical science has progressed through the process of developing hypotheses to explain chemical phenomena, then testing them rigorously before either advancing them to the level of viable theories or rejecting them as untrue. In the laboratory the students are frequently introduced to a hypothesis, given a suggested method for testing it and asked to draw their own conclusions in lab reports. They become familiar with the concept of a "controlled experiment" where all the variables are held constant except the one to be tested. The idea of rigorous and controlled testing learned in chemistry can be applied later in life when judging the likely truth of scientific claims of various types.
REQUEST TO APPLY COURSE TO G.E. OR CODE REQUIREMENTS

1. Alphabetical prefix in capital letters, number, full title, and unit value of course. ENGR, 1011, Introduction to Engineering, (3), Two hours Lecture 3 hours Lab. Course Description.

   Introduction to Engineering (3)
   This course introduces students to the engineering profession and creative engineering problem-solving through hands-on design projects, presentations, and activities. It will familiarize students with various engineering disciplines and will discuss the engineering design process. The course will analyze the effect of engineering design choices on sustainability and other environmental issues. Efficient use of resources in engineering designs, the concepts of design for manufacturability, design for reuse and logistics of recycling will be explored.

2. G.E. Requirement or section of Code Requirement to which assignment is requested.
   Apply the course to natural science G.E. area B5 requirement.

   Justification for requested G.E. or Code assignment.

   The course satisfies the requirements for area B5. An introduction to various engineering disciplines are given. Students work on introductory engineering design projects and get exposed to real world constraints and effects of design choices on cost, time, and the environment. Environmental issues resulting from engineering projects are explored. Sustainability and design for reuse will be discussed. This course is proposed as part of the Healthier Living Cluster for Engineering Students.

3. Other courses in the department meeting this G.E. or Code requirement.
   NA

4. Certification of chair of faculty review body

   Chair: ___________________________ Date: ___________________________

   Certification of school approval by the dean.

   Dean/Associate Dean: ___________________________ Date: ___________________________