CHEM 410 Introductory Biochemistry

Credit Hours: 3

Scheduled hours per week
- Lecture: 3
- Lab: N/A
- Other: N/A

Catalog Course Description: Introduction to chemistry of cellular constituents (proteins, amino acids, carbohydrates, lipids, nucleic acids, enzymes and coenzymes) and their metabolism in animals and plants. (Pre-requisite: CHEM 115, CHEM 116, CHEM 233/235 or equivalent or Consent) Offered in the Spring Semester of odd numbered years.

Pre-requisites: CHEM 115, CHEM 115L; CHEM 116, CHEM 116L; CHEM 233, CHEM 235

Co-requisites: CHEM 412

Course Learning Outcomes:
- Students will understand major biochemical pathways in living cells
- Students will learn about cellular metabolism using structure and functional group analysis
- Students will be introduced to concepts and applications of molecular biology

Topics to be studied:
- List of the topics that will be presented in the course
- Foundations of biochemistry
- Water
- Amino acids, peptides, and proteins
- Three dimensional structure of proteins
- Protein function
- Enzymes
- Carbohydrates and glycobiology
- Nucleotides and nucleic acid
- DNA based information technologies
- Lipids
- Biological membranes and transport
- Biosignaling

Relationship of Course to Program or Discipline Learning Outcomes:

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<thead>
<tr>
<th>Relationship of Course to Science Learning Outcomes:</th>
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<tbody>
<tr>
<td>Students will learn the process and reasoning behind the Scientific Method</td>
<td>X</td>
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<td>and be able to conduct experiments that meet the requirements of the model.</td>
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<td>Students exhibit the basic safety-related rules and regulations of working in the lab.</td>
<td>X</td>
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<td>Students be able to recount the basic safety tenants associated with a specific scientific discipline.</td>
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<td>Students will become proficient at Science Writing.</td>
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Students will recognize and identify the applications of their specific discipline in the ‘real world.’

Students will accurately recount important milestones in the history of scientific inquiry in their discipline.

10/30/2017

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<th>Relationship of Course to General Education Learning Outcomes:</th>
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<tr>
<td><strong>Composition and Rhetoric</strong> Students illustrate a fundamental understanding of the best practices of communicating in English and meet the writing standards of their college or program-based communication requirements.</td>
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<tr>
<td><strong>Science &amp; Technology</strong> Students successfully apply systematic methods of analysis to the natural and physical world, understand scientific knowledge as empirical, and refer to data as a basis for conclusions.</td>
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<td><strong>Mathematics &amp; Quantitative Skills</strong> Students effectively use quantitative techniques and the practical application of numerical, symbolic, or spatial concepts.</td>
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<td><strong>Society, Diversity, &amp; Connections</strong> Students demonstrate understanding of and a logical ability to successfully analyze human behavior, societal and political organization, or communication.</td>
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<td><strong>Human Inquiry &amp; the Past</strong> Students interpret historical events or philosophical perspectives by identifying patterns, applying analytical reasoning, employing methods of critical inquiry, or expanding problem-solving skills.</td>
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<td><strong>The Arts &amp; Creativity</strong> Students successfully articulate and apply methods and principles of critical and creative inquiry to the production or analysis of works of art.</td>
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**Special requirements of the course:**

**Additional information:**

**Prepared by:**

**Date:** 10/30/2017