

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER: BSC 1421

COURSE TITLE: Introduction to Biotechnology

PREREQUISITE(S): High School Biology

COREQUISITE(S): None

CREDIT HOURS: 1

CONTACT HOURS/WEEK: 1

CONTACT HOUR BREAKDOWN:

Lecture/Discussion: 1

Laboratory:

Other:

FACULTY WORKLOAD POINTS: 1

STANDARDIZED CLASS SIZE
ALLOCATION: 30

COURSE DESCRIPTION:

This course provides an introduction to the foundations of biotechnology, including current DNA & RNA technologies as well as its historical background, the cell, and genetic disorders. Scientific method, lab safety, and an emphasis for current applications in medicine, agriculture, forensics, and the environment are also covered.

SUGGESTED TEXT(S): DNA Technology, the Awesome Skill, 2nd edition, Alcamo, I. Edward, ISBN 0-12-048920-1

IMPLEMENTATION DATE: Fall Term, 2003 (20041)

REVIEW OR MODIFICATION DATE: Fall Term, 2006 (20071)

| COURSE TOPICS | <u>CONTACT HOURS PER TOPIC</u> |
|---|------------------------------------|
| I. Introduction to Biotechnology | 1 |
| II. Scientific Method/Lab Safety | 1 |
| III. Historical Background | 1 |
| IV. Cell Review | 1 |
| V. DNA/RNA | 2 |
| VI. Mutations & Human Genetic Disorders | 2 |
| VII. Medical Applications | 1 |
| VIII. Aquaculture | 1 |
| IX. Agriculture | 1 |
| X. Environmental/Bioremediation | 1 |
| XI. Forensics | 1 |
| XII. Bioethics-Licensing & Patents | 1 |
| XIII. Presentations | 1 |
| TOTAL | 15 |

PROGRAM TITLE: Biotechnology Laboratory Technology

COURSE TITLE: Introduction to Biotechnology

CIP NUMBER: 1626.061600

LIST PERFORMANCE STANDARD ADDRESSED:

NUMBER(S): TITLES(S):

- 1.1.1 Ability to interact with vendors, colleagues, scientists.
- 1.1.3 Coordinate tasks with coworkers.
- 1.1.4 Make oral and written presentations.
- 1.2.1 Comprehend and use technical vocabulary.
- 1.3.1 Take notes on procedures.
- 1.3.3 Employ scientific writing techniques.
- 1.4.1 Perform computerized research and web searches.
- 1.4.2 Read technical literature.
- 1.4.3 Identify basic reference sources in biotechnology.
- 1.5.1 Perform basic applications in work processing, spreadsheets, databases, presentations, and project management.
- 1.5.2 Navigate the Internet.



NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

| | |
|---|---------------------------------|
| <i>Section 1</i> COURSE PREFIX AND NUMBER: BSC 1421 | SEMESTER CREDIT HOURS: 1 |
| COURSE TITLE: Introduction to Biotechnology | |

Section 2
 TYPE OF COURSE: (Click on the box to check all that apply)

| | | |
|---|---|--|
| <input type="checkbox"/> AA Elective | <input checked="" type="checkbox"/> AS Required Professional Course | <input type="checkbox"/> College Prep |
| <input type="checkbox"/> AS Professional Elective | <input type="checkbox"/> AAS Required Professional Course | <input type="checkbox"/> Technical Certificate |
| <input type="checkbox"/> Other _____ | | |
| <input type="checkbox"/> General Education: (For General Education courses, you must also complete Section 3 and Section 7) | | |

Section 3 (If applicable)
 INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

| | | |
|--|---|--------------------------------------|
| <input type="checkbox"/> Communication | <input type="checkbox"/> Social & Behavioral Sciences | <input type="checkbox"/> Mathematics |
| <input checked="" type="checkbox"/> Natural Sciences | <input type="checkbox"/> Humanities | |

Section 4
 INTELLECTUAL COMPETENCIES:

| | | | | |
|---|---|--|---|--|
| <input checked="" type="checkbox"/> Reading | <input checked="" type="checkbox"/> Speaking | <input checked="" type="checkbox"/> Critical Analysis | <input checked="" type="checkbox"/> Quantitative Skills | <input checked="" type="checkbox"/> Scientific Method of Inquiry |
| <input checked="" type="checkbox"/> Writing | <input checked="" type="checkbox"/> Listening | <input checked="" type="checkbox"/> Information Literacy | <input checked="" type="checkbox"/> Ethical Judgment | <input checked="" type="checkbox"/> Working Collaboratively |

| | LEARNING OUTCOMES | METHOD OF ASSESSMENT |
|---|---|--|
| • | Understand fundamental knowledge of cell and molecular biology and the applications of biotechnology to various career fields. | Written tests, reports and/or use of equipment to demonstrate student competency in field. |
| • | Demonstrate knowledge of scientific method. | Formulate problem, make observations, derive and test hypothesis and make conclusions. |
| • | Communicate scientific ideas through oral or written assignments. | Students use analytical reasoning skills to solve problems on written tests and/or laboratory work. |
| • | Interpret scientific models such as formulas, graphs, tables and schematics, draw inferences from them and recognize their limitations. | Written reports of lab experiments and/or written tests demonstrate student competency in the application of scientific knowledge. |
| • | Demonstrate problem solving methods in situations that are encountered outside of the classroom. | Students use demonstrations, group discussions, written tests, laboratory reports, research projects and/or field experiences to illustrate competence in recognizing and evaluating various scientific processes. |
| • | Demonstrate proper laboratory technique including safety in the use and care of laboratory equipment and materials. | Results from laboratory work and experiments demonstrate student awareness of science and society. |

Section 6
 Name of Person Completing This Form: Kevin Pegg Date: 7/20/05

SECTION 7 MUST BE COMPLETED FOR ALL GENERAL EDUCATION COURSES.

| <i>Section 7</i> | <i>Primary</i> | <i>Secondary</i> | <i>N/A</i> | | <i>Primary</i> | <i>Secondary</i> | <i>N/A</i> |
|--|-------------------------------------|-------------------------------------|-------------------------------------|---|-------------------------------------|-------------------------------------|--------------------------|
| KNOWLEDGE | | | | VALUE | | | |
| A. Global and Historical Knowledge & Understanding | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Intellectual honesty | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Comprehends a general knowledge of the nature, origins and contributions of major civilizations | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Curiosity and openness to new ideas | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Comprehends the workings and interrelations of personal, business and government economies | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Recognition of one's own creative potential | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Comprehends political, social and economic systems and their effects upon society | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Acceptance of and respect for differences among people and cultures | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| B. Cultural and Aesthetic Knowledge and Understanding | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | |
| • Comprehends the contributions of the arts and humanities to the human experience on a personal, national or global level | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Civic Engagement | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| • Comprehends the historical development of the arts and sciences | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Lifelong Learning | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Comprehends religious and cultural systems and their effects upon society | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | |
| C. Human Awareness and Understanding | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | |
| • Comprehends the dynamics of human behavior and the process of increasing self-awareness, growth and development | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | |
| • Comprehends the stages of human development and the dynamics of human relationships in diverse cultures | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | |
| • Comprehends the factors that promote physical, mental and social well-being | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| D. Mathematics, Science and Technology | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| • Comprehends the basic concepts and investigative processes of the natural sciences | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| • Comprehends the breadth, significance and development of the mathematical sciences | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| • Comprehends the ways science and technology have shaped and continue to reshape human cultures and the environment | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | |