SOUTHEAST COMMUNITY COLLEGE
DIVISION OF ARTS AND SCIENCES
Sciences
Revision Date: 07-01-22

I. CATALOG DESCRIPTION

Course Number:	BIOT1400
Course Title	Introduction to Biotechnology I
Prerequisite(s):	Completion of MATH1000 with a C or higher or MATH1103 with a B or higher or appropriate placement score.
Corequisites (s):	BIOT1400L
Catalog Description:	This course introduces students to the fundamental scientific principles of biotechnology, bioethics, the variety of careers in biosciences, as well as the commercial and regulatory characteristics of the biosciences. This course emphasizes how key concepts from biology and chemistry apply to modern applications within the biological sciences. The knowledge and skills gained in this course provide students with a broad understanding of biotechnology and the impact it makes on society. The laboratory section deals with practices, equipment and techniques encountered in a general lab setting. Includes general lab practices, knowledge and practice in handling hazardous materials, data analysis.
Credit Hours:	4.0
Class Hours:	45
Lab Hours:	30
Total Contact Hours:	75

II. COURSE OBJECTIVES: *Course will*:

A. Provide practical explorations into fields of biotechnology.
B. Challenge students to apply critical thinking skills to their readings, class activities, laboratory exercises, and classroom discussions about current topics in biotechnology.
C. Improve the student's ability to understand and use biotechnology methods and databases.
D. Increase the problem-solving skills of students, especially in those areas related to biotechnology.
E. Prepare the student for more advanced Biotechnology courses.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES

A. Student Learning Outcomes: *Student will be able to*:
- **1.** Understand and use terminology of the field
- **2.** Operate equipment
- **3.** Perform assays and experiments
- **4.** Troubleshoot experiments and equipment
- **5.** Perform data analysis
- **6.** Communicate results
- **7.** Participate in safety training
- **8.** Coordinate with a team
- **9.** Maintain lab notebook
- **10.** Produce documentation

B. General Education Learning Outcomes
- **1.** GELO #3: Critical Thinking & Problem Solving
  Outcome: Collect, identify, interpret and analyze data.
  Outcome: Synthesize information to arrive at reasoned solutions to problems.
  Outcome: Evaluate ideas presented in writing, media, speech, or artistic presentations.

Outcome: Acquire and integrate knowledge and construct relationships across disciplines.

2. GELO #5: Analytical, Quantitative, and Scientific Reasoning

Outcome: Apply mathematical and scientific methods to solve problems from an array of contexts and everyday situations.

Outcome: Understand and create logical arguments supported by quantitative and scientific evidence and communicate those arguments in a variety of formats.

Outcome: Effectively develop strategies, algorithms, or experiments (or performing experiments) to better describe the systems or to solve the problems.

Outcome: Manipulate formulas, data sets, graphs, tables, etc. in a way to produce a meaningful outcome.

IV. CONTENT/TOPICAL OUTLINE (*course outline may provide more detailed information*)

A. An Introduction to Scientific Thinking
B. Chemistry and Biology
C. An introduction to genes and genomes
D. Recombinant DNA technology
E. Making Proteins
F. Microbiology and biotechnology
G. Plants in biotechnology
H. Animal in biotechnology
I. DNA fingerprinting
J. Bioremediation

V. INTRUCTIONAL MATERIALS

A. Required Text(s):

1. Daugherty, Ellen. *Biotechnology: Science for the New Millennium*, 2nd ed. ISBN: 978-0-7386-806-2.

2. Lab Manual**:** Daugherty, Ellen. *Biotechnology: Laboratory Manual*, 2nd ed. ISBN: 978-0-76387-299-1.

VI. METHODS OF PRESENTATION/INSTRUCTION

A. Methods of presentation typically include a combination of the following:

1. Lecture = Powerpoint lectures plus occasional short videos.
2. Lab = hands-on experiments and activities plus occasional short videos and demonstrations.
3. Demonstration.
4. Computer based data analysis.

VII. METHODS OF EVALUATION

A. Methods of evaluation typically include a combination of the following:

1. Exams
2. Quizzes
3. Homework from lecture and lab
4. In-class assignments
5. Oral presentation

B. SCC GRADING SCALE

A+	95-100	C+	75-79	F	59 or less
A	90-94	C	70-74		
B+	85-89	D+	65-69		
B	80-84	D	60-64		

VIII. SPECIFIC COURSE REQUIRMENTS

A. None.