BI 031: UNDERGRADUATE RESEARCH EXPERIENCE

Originator
asawa

Justification / Rationale
Update SLOs

Effective Term
Fall 2020

Credit Status
Credit - Degree Applicable

Subject
BI - Biology

Course Number
031

Full Course Title
Undergraduate Research Experience

Short Title
RESEARCH EXPERIENCE

Discipline

Disciplines List
Biological Sciences

Modality
Face-to-Face

Catalog Description
Under the supervision of STEM faculty, students will select a project to be completed during the semester. Topics will include information retrieval, computer skills applied to laboratory research, time management and organizational skills, application of modern research methods, experimental design, data collection and analysis, presentation skills (written and oral), and applying for summer internship opportunities. This course is intended for students pursuing a STEM degree and who have completed a minimum of 35 college level units.

Schedule Description
Under the supervision of STEM faculty, students will select a research project to be completed during the semester. Prerequisite: BI-005 or BI-006 Advisory: LIS-001

Lecture Units
1
Lecture Semester Hours
18

Lab Units
1
Lab Semester Hours
54

In-class Hours
72

Out-of-class Hours
36

Total Course Units
2
Total Semester Hours
108

Prerequisite Course(s)
BI 005 or BI 006
Advisory: LIS 001

Required Text and Other Instructional Materials
Resource Type
Web/Other

Description
All Learning resource material will be provided.

Class Size Maximum
20

Course Content
The scientific method.
The research process.
Types of Library-specific databases.
Online literature searches.
Evaluation of online articles.
Proper citation of information both written and online.
Experimental design.
Preparation of written, oral, and poster presentation using appropriate software.
Time management skills and balancing coursework with research.
Summer Research Internships, what are they, where are they found, and how to apply.

Lab Content
Laboratory safety with specific reference to working in a research lab.
Introduction to Laboratory software, e.g. LabView and MatLab.
Creating a laboratory notebook.
Conduct research project.
Summary and analysis of project results.
Preparation of written, oral and poster presentations using appropriate software.

Course Objectives

	Objectives
Objective 1	Demonstrate literature searches to assess previous work by others.
Objective 2	Create proper citations for referencing the work of others.
Objective 3	Demonstrate the skills necessary to collect and analyze data, and present results.
Objective 4	Apply multiple software programs in a research environment.
Objective 5	Develop a schedule that makes it possible to complete research projects and coursework.
Objective 6	Propose a research project and present the proposal to others.
Objective 7	Evaluate proposed work by others for goals, objectives, activities and feasibility.
Objective 8	Write a paper describing research and results with proper formatting and literature citations.
Objective 9	Prepare a poster for presentation that describes a research project.

| Objective 10 | Present completed research project to a group utilizing PowerPoint or similar software. |
| Objective 11 | Locate and apply for summer research internship opportunities at national laboratories and universities. |

Student Learning Outcomes

	Upon satisfactory completion of this course, students will be able to:
Outcome 1	Communicate the background and significance, experimental design, results, and analysis of a research project.
Outcome 2	Evaluate the appropriateness of the conclusions reached based on the data presented.

Methods of Instruction

Method	Please provide a description or examples of how each instructional method will be used in this course.
Collaborative/Team	Students will work on projects in teams.
Supplemental/External Activity	Project will be submitted to student conferences for presentation.
Lecture	Short lectures will be provided as new topics are encountered.
Laboratory	Laboratory work can be within the lab environment or outdoors.
Journal	Students will keep up-to-date records in lab notebook.
Experiential	Students will complete projects.

Methods of Evaluation

Method	Please provide a description or examples of how each evaluation method will be used in this course.	Type of Assignment
Portfolios		
Organizational/timeline assessment		
Group activity participation/observation		
Presentations/student demonstration observations		
Laboratory projects		
Term or research papers		

Assignments

Other In-class Assignments
Notetaking
Participation in discussion
Presentation of project proposal
Critique proposals of other students
Conduct project
Presentation of completed project (Oral and Poster)

Other Out-of-class Assignments
Literature search
Project design
Complete project analysis and summarize results
Prepare written document

Grade Methods
Letter Grade Only

Comparable Transfer Course Information
University System
CSU
Campus
CSU San Bernardino

Course Number
Bio 396A
Course Title
Directed Study

Catalog Year
2015

University System
UC
Campus
UC Riverside

Course Number
Bio 199
Course Title
Junior/Senior Research

Catalog Year
2015

MIS Course Data

CIP Code
26.0101 - Biology/Biological Sciences, General.

TOP Code
040100 - Biology, General

SAM Code
E - Non-Occupational

Basic Skills Status
Not Basic Skills

Prior College Level
Not applicable

Cooperative Work Experience
Not a Coop Course

Course Classification Status
Credit Course

Approved Special Class
Not special class

Noncredit Category
Not Applicable, Credit Course

Funding Agency Category
Not Applicable

Program Status
Stand-alone

Transfer Status
Transferable to CSU only

Allow Audit

No

Repeatability

No

Materials Fee

No

Additional Fees?

No

Approvals

Course Control Number

CCC000569647