

CHEM3068: GENERAL ECOLOGY

Effective Term

Semester A 2022/23

Part I Course Overview

Course Title

General Ecology

Subject Code

CHEM - Chemistry

Course Number

3068

Academic Unit

Chemistry (CHEM)

College/School

College of Science (SI)

Course Duration

One Semester

Credit Units

4

Level

B1, B2, B3, B4 - Bachelor's Degree

Medium of Instruction

English

Medium of Assessment

English

Prerequisites

Nil

Precursors

CHEM2067/BCH2067 Diversity of Life and Evolution

Equivalent Courses

BCH3068 General Ecology

Exclusive Courses

Nil

Part II Course Details

Abstract

In this course, students will:

- explore basic principles in ecology of individuals, interactions between different species as well as factors responsible for the regulation of population size and the structure and functioning of biological communities and ecosystems;
- identify and discuss the complexity of ecological systems and examine the interrelationship between organisms and the environment;
- analyze ecological data sets and draw valid conclusions from them.

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Describe the ecology of individuals and populations, and the structure and functioning of biological communities and ecosystems.	30	x		
2	Discuss the principles and major factors involved in population growth, community interactions and ecosystem processes.	40	x	x	
3	Analyze ecological data sets provided and draw valid conclusions from them as well as develop skills in most effectively presenting the findings.	10		x	x
4	Design a laboratory protocol to study the ecology of selected individuals and populations, and/or the structure and functioning of biological communities and ecosystems.	20		x	x

A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Teaching and Learning Activities (TLAs)

TLAs	Brief Description	CILO No.	Hours/week (if applicable)
Lectures, tutorials, quizzes and take-home assignments	Students will learn to identify and describe the ecological characteristics of individuals and populations, and the structure and functioning of biological communities and ecosystems through lectures, tutorials, quizzes and take-home assignments.	1	

2	Lectures and small group discussion activities	Students will work in small groups to identify and discuss various types of interactions among species and within communities, factors regulating population size, and biological/geochemical processes within ecosystems through lectures and small group discussion activities or take-home assignments.	2	
3	Small group activities	Students will work in small groups on data sets provided and carry out numerical analysis of the data sets, interpret the findings and draw conclusions from them.	3, 4	

Assessment Tasks / Activities (ATs)

ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)	
1	Short quizzes	1	16	
2	Group activities / presentations	2	16	
3	Tutorial exercises, take-home assignments or presentations	3, 4	8	

Continuous Assessment (%)

40

Examination (%)

60

Examination Duration (Hours)

3

Additional Information for ATs

Starting from Semester A, 2015-16, students must satisfy the following minimum passing requirement for courses offered by CHEM:

“A minimum of 40% in both coursework and examination components.”

Assessment Rubrics (AR)**Assessment Task**

Short quizzes

Criterion

understanding of the topic and reading materials; correctness of interpretation and analysis of experimental data

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Assessment Task

Group activities / presentations

Criterion

Understanding of the topic and material; completeness of the presentation; logic of the presentation structure; clarity of talk; appropriate use of photos and figures in the illustration of concepts; ability to discuss the presented topic

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Assessment Task

Tutorial exercises, and take-home assignments

Criterion

Correctness of interpretation and analysis of experimental data; understanding of the topic and reading materials; application of knowledge in solving real life problems

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Assessment Task

Examination

Criterion

Completeness and correctness of calculations/answers; correctness of interpretation and analysis of experimental data; application of knowledge in solving real life problems; logic of argumentation and intelligent use of course content/ original thinking

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Part III Other Information

Keyword Syllabus

- What is ecology?
- Principles and concepts on organismal ecology
- Ecology of sex and group living
- Population biology
- Intra- and inter-specific competition
- Trophic structure and relationships
- Community ecology
- Ecosystem types
- Ecosystem function and dynamics
- Biogeochemical cycles

Reading List

Compulsory Readings

Title	
1	Nil

Additional Readings

Title	
1	Thomas M. Smith and Robert Leo Smith (2014) Elements of Ecology. 9th edition. Benjamin Cummings.
2	Charles J. Krebs (2016) Ecology: The Experimental Analysis of Distribution and Abundance. 6th edition. Pearson.
3	Manuel C. Molles Jr. (2016) Ecology: Concepts and Applications. 7th edition. McGrawHill.
4	Peter Stiling (2015) Ecology: Global Insight and Investigations. 2nd edition. McGraw-Hill.