

# CHEM3068: GENERAL ECOLOGY

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## Effective Term

Semester A 2025/26

## 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.

**Learning and Teaching Activities (LTAs)**

LTAs	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 ("- for nil entry)	Allow Use of GenAI?
1	Short quizzes	1	16	They are closed books quizzes.	No
2	Group activities / presentations	2	16	-	Yes
3	Tutorial exercises, take-home assignments or presentations	3, 4	8	-	Yes

**Continuous Assessment (%)**

40

**Examination (%)**

60

**Examination Duration (Hours)**

3

**Minimum Continuous Assessment Passing Requirement (%)**

40

**Minimum Examination Passing Requirement (%)**

40

**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-)**

An excellent understanding of the principles of various topics of ecology and is fully capable of interpreting and analyzing experimental data.

**Good (B+, B, B-)**

Able to describe and explain the principles of various topics of ecology and is capable of interpreting and analyzing experimental data.

**Fair (C+, C, C-)**

Able to describe and explain some of the principles of various topics of ecology and is partially capable of interpreting and analyzing experimental data.

**Marginal (D)**

Barely able to describe and explain some of the principles of various topics of ecology and is marginally capable of interpreting and analyzing experimental data.

**Failure (F)**

Poor understanding of the principles of various topics of ecology and is unable to interpret and analyze experimental data.

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**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-)**

Able to deliver fluent, well organized and well prepared presentations to demonstrate an excellent understanding of the principles and practice of the selected topics of ecology. Able to develop well-designed experimental protocols with scientific rigour to solve ecological problems.

**Good (B+, B, B-)**

Able to deliver fluent presentations, with evidence of proper preparation, to describe and explain the principles of the selected topics of ecology. Able to develop well-designed experimental protocols to solve ecological problems.

**Fair (C+, C, C-)**

Able to deliver presentations, with evidence of proper preparation, to describe and explain some key principles of the selected topics of ecology. Able to develop well-designed experimental protocols to solve ecological problems with limited faults or loopholes.

**Marginal (D)**

Able to deliver comprehensible presentations to briefly describe isolated principles of the selected topics of ecology. Barely able to develop experimental protocols to solve ecological problems.

**Failure (F)**

Fail to present relevant principles of any topics of ecology in a coherent and comprehensible manner. Unable to develop experimental protocols to solve ecological problems.

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**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-)**

An excellent understanding of the principles of various topics of ecology and is fully capable of interpreting and analyzing experimental data. Highly competent in applying knowledge to solve real-life problems.

**Good (B+, B, B-)**

Able to describe and explain the principles of various topics of ecology and is capable of interpreting and analyzing experimental data. Competent in applying knowledge to solve real-life problems.

**Fair (C+, C, C-)**

Able to describe and explain some of the principles of various topics of ecology and is partially capable of interpreting and analyzing experimental data. Able to apply knowledge to solve a limited number of real-life problems.

**Marginal (D)**

Barely able to describe and explain some of the principles of various topics of ecology and is marginally capable of interpreting and analyzing experimental data. Some struggle to apply knowledge to solve a limited number of real-life problems.

**Failure (F)**

Poor understanding of the principles of various topics of ecology and is unable to interpret and analyze experimental data. Incapable of applying knowledge to solve real-life problems.

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**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-)**

An excellent understanding of the principles of various topics of ecology and is fully capable of interpreting and analyzing experimental data.

**Good (B+, B, B-)**

Able to describe and explain the principles of various topics of ecology and is capable of interpreting and analyzing experimental data.

**Fair (C+, C, C-)**

Able to describe and explain some of the principles of various topics of ecology and is partially capable of interpreting and analyzing experimental data.

**Marginal (D)**

Barely able to describe and explain some of the principles of various topics of ecology and is marginally capable of interpreting and analyzing experimental data.

**Failure (F)**

Poor understanding of the principles of various topics of ecology and unable to interpret and analyze experimental data.

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## 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.