DE LA SALLE UNIVERSITY
**College of Science**

Department of Biology

**ECOLLAP** – General and Applied Ecology Lecture

*Prerequisite : BOTAFUN, LBYBION, ZOOLFUN, LBYBIO8 Prerequisite to :*

**Instructor** : Dr. Wilfredo Licuanan **Contact details** : wilfredo.licuanan@dlsu.edu.ph

**Consultation Hours** : 9-11, 1-3 TH **Class Schedule & Room** : 7:30-9 WF, L330

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| **Course Description** |

This is an introductory course on basic ecological principles and their applications to the understanding and solution of key environmental problems and issues including environmental pollution and degradation, global climate change, human population growth and world food supply, the biodiversity crisis, pests, and introduction of exotic species. Emphasis is given on current issues and concerns, especially in the Philippine context.

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| **Learning Outcomes** |

On completion of this course, the student is expected to present the following learning outcomes in line with the Expected Lasallian Graduate Attributes (ELGA)

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| **ELGA** | **Learning Outcome** |
| Critical and Creative ThinkerEffective CommunicatorLifelong LearnerService-Driven Citizen | On completion of the course (and its companion laboratory course LBYBIOH), the student is expected to be able to articulate the general concepts and principles in ecology and integrate these to current environment issues and practice so that students increase their awareness in his role in nature and to realize that with the special power to alter the biosphere comes the recognition of accountability to himself, society, and nature. |

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| **Final Course Output** |

As evidence of attaining the above learning outcomes, the student is required to submit the following during the indicated dates of the term.

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| **Learning Outcome** | **Required Output** | **Due Date** |
| Groups of students are asked to pretend to be leaders of a hypothetical civil society group or student professional organization and are required to submit a project proposal to a hypothetical foreign embassy. The proposal, which should follow the guidelines of the Direct Aid Program of the Australian Embassy Manila, should apply the concepts learned in the course and is supposed to describe projects that “directly contribute to the welfare and income generating capacity of the poor and disadvantaged groups in Philippine society” and “enhance the long-term productivity and sustainability of the physical environment”. The target community for this proposal is visited by the class during a field trip during which the students are encouraged to interact with community members and their leaders. | 1) Field trip to the target beneficiary community (in conjunction with  LBYBIOH) | 4th week of classes |
| 2) Proposal concept and list of proposed group members (maximum of three members) | 9th week of classes |
| 3) Final proposal | 12th week of classes |

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| **Rubric for assessment** |

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| **CRITERIA****(Equal weights)** | **Experts!** **(3.5-4.0)** | **Team Players (2.5-3.4)** | **Laid Back** **(1.5-2.4)** | **Spacemen (1.0-1.4)** |
| Ability of the proposed project to contribute to the welfare and income generating capacity of disadvantaged groups (women, indigenous people, farmers, fishers, urban and rural poor) in Philippine society | Clear benefits to four or more sectors are presented and explained | Clear benefits to three sectors are presented and explained | Clear benefits to two sectors are presented and explained  | Clear benefits to one sector are presented and explained |
| Ability of the proposed project to enhance the long term productivity and sustainability of the physical environment such as marine (coral, mangrove, seagrass, rocky intertidal) habitats, terrestrial (primary forest, secondary forest, grassland) habitats, freshwater (lakes, rivers, estuaries) habitats, agricultural and urban environments, special habitats such as caves, hot springs. | Conservation and sustainable use of more than 3/4th of the applicable habitats are presented and explained | Conservation and sustainable use of more than half to 3/4ths of the applicable habitats are presented and explained | Conservation and sustainable use of one fourth to half of the applicable habitats are presented and explained | Conservation and sustainable use of less than 1/4th of the applicable habitats are presented and explained |
| Provisions to tap local sources of funding support and build synergies with existing local initiative and programs are presented | Four or more examples for actual relevant initiatives or program are presented and explained | Three examples for actual relevant initiatives or program are presented and explained | Two examples for actual relevant initiatives or program are presented and explained | One example for actual relevant initiatives or program are presented and explained |
| Counterpart support in terms of labor, administrative support, material support, existing assets, cash is presented and described in detail in the proposal | Viable, reasonable counterpart funding worth more than 75% of grant amount requested is described | Viable, reasonable counterpart funding worth more than 50% to 75% of grant amount requested is described | Viable, reasonable counterpart funding worth more than 25% to 50% of grant amount requested is described | Viable, reasonable counterpart funding worth less than 25% of grant amount requested is described |
| Sound environmental practices are described in detail and integrated (not just incorporated) into the proposed project | Four or more examples for actual, validated, best practices of sustainable use of resources are in the proposal | three examples of actual, validated, best practices of sustainable use of resources are in the proposal | two examples of actual, validated, best practices of sustainable use of resources are in the proposal | one example of actual, validated, best practices of sustainable use of resources are in the proposal |
| Women’s participation is an essential part of the proposal | Four or more examples of unique, well-defined, high value or high impact roles for women are presented | Three examples of unique, well-defined, high value or high impact roles for women are presented | Two examples of unique, well-defined, high value or high impact roles for women are presented | One example of unique, well-defined, high value or high impact roles for women is presented |
| The major elements of the proposal are provided in detail: a) project description, b) project implementation plan (PIP), c) Implementation arrangements, d) benefits and justification, e) potential risks and how these risks are to be managed | One or none of the major elements are missing or inadequately described | Two of the major elements are missing or inadequately described | Three of the major elements are missing or inadequately described | Four or more of the major elements are missing or inadequately described |

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| **Additional Requirements** |
| * Take and pass all written assessments. No special/make-up quizzes and exams will be allowed.
* ACTIVELY participate in class discussions (recitation).
* Not to incur more than 2.5 weeks of absences. No special/alternative/make-up classroom-based activities will be provided.
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| **Grading System** |
| Long Exams: (25%,25%,20%-lowest class average) 70%Project proposal: 5%Comprehensive Final Exam: 25%**TOTAL: 100%****Passing Grade: 60%** | **Scale:**92-100% 4.086-91% 3.580-85% 3.075-79% 2.570-74% 2.065-69% 1.560-64% 1.0<60% 0.0 |

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| **Learning Plan** |

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| **Learning outcome** | **Topics in lecture****(note there will be will be slight shifts and overlaps)** | **Meeting #** | **Textbook Chapter #** | **Textbook pages #** | **Related learning activities in LBYBIOH** |
| On completion of the course, the student is expected to be able to articulate the general concepts and principles in ecology and integrate these to current environment issues and practice so that students increase their awareness in his role in nature and to realize that with the special power to alter the biosphere comes the recognition of accountability to himself, society and nature. | Introduction: Requirements and Grading | 01 (9/12) |  |  |  |
| Introduction: Scientific method | 02 (9/14)  | C1 | 17-31 | Accuracy and precision |
| Sampling: Replicates and subsamples; Data analysis | 03 (9/19) | Sci. paper |  | Transect Quadrat |
| Climate | 04 (9/21) | C2 | 32-50 | Weather parameters |
| Aquatic and Terrestrial ecosystems | 05 (9/26) | C3 and C4 | 68-84 |  |
| Evolution and adaptation | 06 (9/28) | C5 (C6, C7) | 85-108 (109-166) |  |
| Species interactions and natural selection | 07 (10/3) | C12, C13 | 259-300 | Predator Prey |
| Community structure and the niche | 08 (10/5) | C17 | 376-387 |  |
| Long Exam 1 (~147 pages of the text plus scientific paper) | 09 (10/10) |  |  |  |
| Properties of populations: Density, distribution | 10 (10/12) | C8 | 167-178 |  |
| Properties of populations: Age, stage or size structure; sex ratios | 11 (10/17) | C8 | 178-187 |  |
| Population growth: Life tables | 12 (10/19) | C9 | 188-194 | Life tables |
| Population growth: Mortality and survivorship curves; Extinction | 13 (10/24) | C9 | 194-207 |  |
| Life history: Reproduction and mating, strategies | 14 (10/26) | C10 | 208-234 |  |
| Community structure: Diversity, trophic structure, zonation | 15 (11/2) | C16 | 352-375 |  |
| Community structure and the niche (review) plus the role of food webs and resource availability | 16 (11/7) | C17 | 376-400 |  |
| Community dynamics  | 17 (11/9) | C18 | 401-425 |  |
| Landscape dynamics | 18 (11/14) | C19 | 426-454 |  |
| Long Exam 2 (covers ~122 pages of the text) | 19 (11/16) |  |  |  |
| Systems thinking; Ecosystem energetics | 20 (11/21) | C20 | 455-479 |  |
| Biogeochemical cycles | 21 (11/23) | C22 | 509-525 |  |
| Biogeochemical cycles (continued) | 22 (11/28) |  |  |  |
| Large-scale patterns of biological diversity | 23 (11/5) | C26 | 591-607 |  |
| Long Exam 3 | 24 (11/7) |  |  |  |
| Comprehensive final exams |  |  |  |  |

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| **References** |

Main text: Smith, Thomas M and Robert Leo Smith (2002) Elements of Ecology. 9th (Global) ed. Singapore: Pearson.

Borcard D, F Gillet, P Legendre (2011). Numerical Ecology with R [electronic resource] Springer.

Miller GT, SE Spoolman (2010) *Introduction to Environmental Science (2nd ed.)* Cengage Learning Asia Pte Ltd.

Richter M, U Weiland (eds.) (2012). Applied urban ecology : a global framework. Wiley-Blackwell.

Townsend CR (2008) Ecological applications : Toward a sustainable world. Blackwell Pub.

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| **Online Resources** |
| Genographic Project: <https://genographic.nationalgeographic.com>isee systems - STELLA Modeling & Simulation Software: [www.iseesystems.com/softwares/Education/StellaSoftware.aspx](http://www.iseesystems.com/softwares/Education/StellaSoftware.aspx)CoenoMAP is a web-accessible, map-oriented database on the distribution of corals in the Philippines.  <http://coenomap.philreefs.org> |

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| **Class Policies** |

* Come to class fully equipped for class discussions.
* Make use of the available Wi-Fi for easy access to the Internet for immediate reference during discussions.
* Honesty and integrity are integral components of the academic process.
* Proper decorum is to be observed among peers in all activities.
* Absence and tardiness are strongly discouraged.
* Attentiveness and active participation are critical to successful learning.
* The use of mobile phones and other electronic devices is not allowed during class hours, unless necessary AND upon the teacher's approval.
* The policies on academic dishonesty, attendance, and behavior stipulated in your Student Handbook are honored in this course.

Approved by:

**DR. MARY JANE C. FLORES**

Chair, Biology Department