OUTCOMES-BASED SYLLABUS BIO167: Introduction to Environmental Impact Assessment

Course Code: **BIO167**	Course Title: **Introduction to Environmental Impact Assessment**	
Credit Units: 4 units	Lecture Units: 2 units	Laboratory Units: 2 units
Pre-requisites: BIO160, BIO180		
Course Description: **This course provides an overview on the perspectives of the natural and social sciences in assessing and managing environmental impacts. It provides an introduction to the framework and methodology for environmental impact assessment.**		
Instructional Materials and References: • Theory and concepts based on the following references… 1. Asian Development Bank. 1997. Environmental Impact Assessment for developing countries in Asia Volumes 1 and 2. ADB, Manila, Philippines. EMB-DENR. 2. Barbour MG, Burk H., Pitts WD. 1980. Terrestrial plant ecology. Banjamin Cummings Menlo Park California 3. Beanlands, G. 1983. An ecological framework for environmental impact assessment in Canada. Dalhousie University: Halifax, Nova Scotia, 132 pp. 4. Begon M. 1971. Investigating animal abundance: Capture-recapture for biologists. Edward Arnold. London. 5. Begon M, Mortimer M, Thompson DJ. 1996. Population ecology: A unified study of animals and plants. 3nd ed. Blackwell Scie Ltd. Oxford 6. Berryman A. 1981. Population systems: An Introduction. Plenum Press. New York. 7. Blower JG, Cook LM, Bishop JA. 1981. Estimating the size of an animal populations. George Allen and Unwin Ltd. London. 8. Brainbridge R, Evans G, Rackam O. 1966. Light as an ecological factor. Blackwell Scient. Oxford. 9. Brewer R. 1979. Principles of ecology. Saunders Publ. Philadelphia. 10. Canter, L. 1985. Environmental impact of water resources projects. Lewis, Norman, Oklahoma, USA, 351 pp. 11. Case T. 2000. An illustrated guide to theoretical ecology..Oxford Univ Press. 12. Chapman JL, Reiss MJ. 1999. Ecology: Principles and applications. 2nd ed. Cambridge Univ. Press. Cambridge. 13. Colinvaux P. 1966. Ecology. John Wiley & Sons, Inc. NY 14. Daubanmire RF. 1974. Plants and environment: A textbook of plant autecology. 3rd ed. Wiley, New York. 15. DENR EIA Procedural Manual DAO 96-37. 16. Dixon, J., Carpenter, R., Fallon, L., Sherman, P., Manopimoke, S. 1986. Economic analysis of environmental impact of development projects. Environment and Policy Institute, Hawaii, USA, 100pp. 17. Kormondy E. 1965. Readings in ecology. Prentice Hall, Inc. New York. 18. Krebs CJ. 2002. Ecology: the experimental analysis of distribution and abundance. 5th ed. Banjamin Cummings. 19. Molles MC. 2005. Ecology: Concepts and applications. 3rd ed. NcGrawHill Co. New York.		

20. Odum EP. 1971. Fundamentals of ecology. 3rd ed. Saunders Publ. Philadelphia.
21. Odum E. Barrett G. 2004. Fundamentals of ecology. Brookes Cole.
22. Pianka ER. 1984. Evolutionary ecology. Harper Collins Coll Publ., New York.
23. Pimm SL, Lawton JH. 1980. Are foodwebs divided into compartments? *J Anim Ecol* 49: 879-898.
24. Post DM. 2002. The long and short of food-chain length. *Trends Ecol Evol.* 17: 269-277.
25. Ricklefs R. 1993. The economy of nature. 3rd ed. W.H. Freeman. New York.
26. Smith RL. Smith T. 2001. Ecology and field biology. 6th ed. Benjamin Cummings. New York.
27. Smith RL. Smith T. 2003. Elements of ecology. 5th ed. Benjamin Cummings. New York.
28. Stiling P. 2002. Ecology: Theories and applications. 4th ed. Prentice Hall Inc. New Jersey.
29. Whittaker RH. 1975. Communities and ecosystems. 2nd ed. McMillian Press. New York.

Instrument and Equipment:
Laptop and LCD projector
Glassware, Reagents, pH meter, TDS meter, DO meter, Spectrophotometer, Oven, Transect, Quadrat, Collecting materials, Computer, Other equipment for specified laboratory use.

B.S. Biology Program Objectives:

1. To develop substantial understanding of life and living processes
2. To demonstrate proficiency in oral and written communication skills
3. To engage in cutting-edge research with minimal supervision
4. To formulate methods and strategies to address health and environmental problems through a systems approach
5. To demonstrate competencies in areas of ecology, genetics, molecular biology, physiology, and developmental biology
6. To demonstrate social and professional responsibility and ethical behavior in multi-cultural settings and scenarios

Mapping of BIO Course Outcomes vis-à-vis Program Outcomes:

BIO Course Outcomes After completing Environmental Impact Assessment, the student shall be able to…	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
1. Relate the various ecological concepts and	D	D	D	P	D	D

principles at the level of individual, population, community and ecosystems						
2. Assess environmental impacts at the level of individual, population, community and ecosystems	D	D	P	D	D	D
3. Identify methodologies used in environmental impact assessment	D	D	P	D	D	D
4. Prepare an environmental impact assessment study on a selected development sector	D	D	P	D	D	D
5. Demonstrate ethical behavior in the study of environmental and health problems	D	D	P	D	D	D

I/K = Introduces **KNOWLEDGE** of the outcome
P/U = Strengthens **UNDERSTANDING** of the outcome
D/P = Demonstrates **PROFICIENCY** in the outcome

BIO Learning Outcomes:

Course Outcomes	Topic	Time (wks)	Intended Learning Outcomes	Teaching Strategies	Assessment Tasks	Materials and Resources
Relate the various ecological concepts and principles at the level of individual, population, community and ecosystems	• Introduction • EIA Concepts, Principles & objectives • Ecological Approach to EIA	3	• Identify the ecological concepts and principles affecting the levels of hierarchical organization • Explain the ecological approach to EIA in the levels of	• Lecture-discussion • Video presentation • Laboratory	• Quiz • Completed worksheet • Reflection paper • Exam • Report	• Projector and laptop • Speakers • Video file • Glass wares • Reagents • Equipment

			hierarchical organization			
Relate the various ecological concepts and principles at the level of individual, population, community and ecosystems **Assess the environmental impacts in the level of individual, population, community and ecosystems** **Identify methods and strategies in EIA** **Prepare EIA** **Demonstrate ethical behavior in the study of environmental**	• EIA Process • Environmental Impact Prediction & Evaluation • Baseline Data gathering through rapid rural appraisal & participatory research appraisal • Impact Identification, prediction and evaluation • Environmental Management Planning • Environmental Monitoring • Environmental Risk Assessment • Environmental Risk	16	• Identify the EIA Process • Assess environmental impacts, predict and evaluate impacts on the terrestrial and aquatic ecosystems in the levels of hierarchical organization • Identify methods and strategies in baseline data gathering for EIA • Evaluate and predict the impacts • Prepare environmental management and monitoring plans and environmental risk assessments • Prepare environmental risk communication	• Lecture-discussion • Video presentation • Laboratory • Field Work • Case Study	• Quiz • Completed worksheet • Reflection paper • Exam • Report • Review papers • Practical Exam	• Projector and laptop • Speakers • Video file • Glass ware • Reagent • Equipment

and health problems	Communication		plans			

Course Grading Rubrics:

LECTURE	
Four Lecture Examinations	70%
Assignments/Activities	10%
Modified Recitation/Quizzes	10%
Journal Report	10%
	100%
LABORATORY	
Laboratory Examinations	65%
Oral Reports	10%
Written Reports	15%
Lab Performance	10%
	100%

Course Policies:

1. Quizzes and Long Examinations
    a. Quizzes may be announced or unannounced. A make-up quiz may be given to a student (upon the discretion of the teacher) if the student presents a valid excuse document (medical certificate from UP Health Service only). Otherwise, the student receives a zero for the particular quiz.
    b. Students who miss departmental examinations will automatically take the finals at the end of the semester. The grade of the final exam will take the place of the missed exam.
    c. **Exams are scheduled at the beginning of the semester and are considered final. Exams will only be rescheduled in cases of extreme weather and holiday declarations. All exams are departmental.**
2. Final Examinations
    a. A comprehensive final examination will be given at the end of the semester and will cover lessons from both the lecture and laboratory parts. It will comprise 20% of the final grade for the course.

b. A student may be **exempted** from taking the final examination under the following conditions:
    - No missed examination
    - Pre-final grade is **2.5 (70%) or better**
    - Lecture pre-final grade is 3.00 (60%) or better
    - Laboratory pre-final grade is 3.00 (60%) or better

c. Grade computation guide for students who will take the final examination:

80% Course Pre-final Grade (60% lecture + 40% laboratory)
20% Final Examination Grade
100% Course Grade

3. Classroom Rules
    a. Mobile phones and pagers must be turned off or put into silent mode during class hours. Making calls and sending text messages are strictly prohibited. However, important calls or text messages may be sent or accepted outside the classroom.
    b. Specimens in the laboratory must be handled with utmost respect and care. Used specimens must be properly disposed.
    c. Dissection areas must be cleaned at the end of each laboratory class.
    d. Animal dissection is STRICTLY PROHIBITED OUTSIDE THE ASSIGNED BIOLOGY LAB ROOM (college gardens, stairs, sidewalks, cafeteria, tambayans, PGH, NEDA and other university locations)! Students who wish to dissect specimens outside class hours must have the permission of their laboratory teacher.
    e. Eating and drinking are not allowed during class hours.
    f. Failure to comply with any of these rules will result to a deduction on the pre-final grade.
    g. CHEATING in any form whether premeditated or non-premeditated automatically merits a grade of 5.00 for the course.

University Grading Scale:

Percentage	Grade Equivalent
93 – 100	1.00
90 – 92	1.25
87 – 89	1.50
83 – 86	1.75
80 – 83	2.00
75 – 79	2.25

70 – 74	2.50
65 – 69	2.75
60 – 64	3.00
54 – 59	4.00
< 54	5.00

Department of Biology Contact Information:
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