



## OUTCOMES-BASED EDUCATION (OBE) COURSE SYLLABUS

Course No. **Envi 118n**  
Course Title **Environmental Monitoring**

### I. UNIVERSITY INFORMATION

#### 1. Vision of the University

A globally competitive university for science, technology, and environmental conservation

#### 2. Mission of the University

Development of a highly competitive human resource, cutting-edge scientific knowledge and innovative technologies for sustainable communities and environment.

#### 3. VSU Quality Policy Statement

The Visayas State University (VSU), a globally competitive university of science and technology and environmental conservation, is created by law to develop highly competitive human resource, cutting-edge scientific knowledge and innovative technologies for sustainable communities and environment.

Towards this end, we, at the Visayas State University, commit to:

- Produce highly competent, quality and world-class manpower in science and technology, especially for agriculture, environmental management and industry who are proficient in communication skills, critical thinking and analytical abilities;
- Generate and disseminate relevant knowledge and technologies that lead to improved productivity, profitability and sustainability in agriculture, environment and industry; and
- Satisfy the needs and applicable requirements of the industry, the community and government sectors who are in need of quality graduates and technology ready for commercialization through the establishment, operation, maintenance and continual improvement of a Quality Management System (QMS) which is aligned with the requirements of ISO 9001:2015.

It shall be the policy of the university that the quality policies and procedures are communicated to and understood by all faculty, staff, students and other stakeholders and that the system be continually improved for its relevance and effectiveness.

  
**EDGARDO E. TULIN**  
President  
v0 07-16-2019

#### 4. Quality Goals of the College of Forestry and Environmental Science

- a. To promote relevance and responsive education in forestry, tropical ecology, environmental management and related fields;
- b. To generate appropriate knowledge and technologies for sustainable forest and environmental management and conservation through relevant research undertakings;
- c. To sustain partnerships with local communities, government and non-government organizations, private groups and funding agencies in the management and conservation of the Visayan forest and the environment; and,
- d. To establish functional awareness and public advocacy on the important socio-economic and ecological problems and issues affecting forest and the environment.

#### 5. Quality Objectives of the Institute of Tropical Ecology and Environmental Management

The overall objectives of the Institute of Tropical Ecology and Environmental Management (ITEEM) is to contribute to local, national and global efforts to conserve, protect, rehabilitate and manage tropical aquatic and terrestrial ecosystems. Specifically, it aims:

- a. To strive for excellence in tropical ecology and education with focus on ecosystems and natural resource protection, rehabilitation and management;
- b. To promote environmentally-sound technologies and strategies for the protection and conservation of the environment and ensure their effective delivery and implementation; and,
- c. To establish lasting linkages and cooperation with local, national and international institution as well as private and non-governmental agencies involve in research and extension gear towards conservation, protection, management and utilization of biological and environmental resources.

## II. PROGRAM INFORMATION

1. Name of the Program	Bachelor of Science in Environmental Science
2. CHED CMO Reference	CMO 35 Series 2005
3. BOR Approval	BOR Resolution No. 85, Series 2018

#### 4. Program Educational Objectives and Relationship to Institution Mission

Program Educational Objectives	Mission*		
	a	b	c
1. Expose students in an integrated way to environmental processes and phenomena, as well as environmental issues, from the perspective of the natural sciences.	✓	✓	✓
2. Train students to recognize and understand the natural environment, how humans affect the environment, and how the environment impacts on society.	✓	✓	✓

*\*a - development of a highly competitive human resource, b - cutting-edge scientific knowledge, c - innovative technologies for sustainable communities and environment*

### III. COURSE INFORMATION

<b>1. Course Code</b>	ENVI 118n
<b>2. Course Title</b>	Environmental Monitoring
<b>3. Pre-requisite</b>	Envi 113 (Agroecology) Envi 115n (Aquatic Resource Management) Envi 119n (Land Use Policy and Planning)
<b>4. Co-requisite</b>	None
<b>5. Credit</b>	5 units
<b>6. Semester Offered</b>	2 <sup>nd</sup> Semester
<b>7. Number of hours</b>	9 hours a week (3 hrs. lecture and 6 hrs. laboratory)
<b>8. Course Description</b>	Sampling methods & techniques for evaluation of ambient air, air emissions, soils/sediments/land surfaces, ambient water and wastewaters. The course will cover environmental science and related approaches for recognizing, evaluating contaminants, including data interpretation for regulatory compliance. The course will emphasize environmental design, strategies, methods & techniques, instrument selection, and quality control, including documentation, and sample management.

9. Program Outcomes (POs) in relation to the Program Educational Objectives (POEs)			
Program Outcomes (POs)		Program Educational Objectives	
		1	2
a	Must have adequate technical writing and oral communication abilities.	✓	✓
b	Equipped with sufficient knowledge on the scientific theories and techniques needed to monitor and understand the environmental quality.	✓	✓
c	Able to integrate and apply the various disciplines towards the understanding of environmental problems.	✓	✓
d	Knowledgeable regarding relevant local, regional and global environmental issues.	✓	✓
e	Able to employ a rational structured approach to solving environmental problems.	✓	✓

10. Course Outcomes (COs) and Relationship to Program Outcomes (POs)					
After completing this course, the student must be able to perform the following COs:	Program Outcomes Code				
	a	b	c	d	e
CO 1: Understand the basic skills and knowledge in environmental monitoring	I	I	I	I	I
CO 2: Understand the rationale, principles, strategies, design, methods & techniques, monitoring-sampling instrument & paraphernalia selection, and quality control, including documentation	I	E	E	D	D
CO 3: Understand the results of environmental monitoring or investigations of contaminants-pollutants in assessing the effects and impacts on different environmental media (air, land and water) through regulatory compliance	D	D	D	D	D

Legend: I – Introductory, E – Enabling, D – Demonstrative

Each letter indicates the expected level of competency that each CO should provide for each PO.

11. Course Content and Plan					
Week	Topics	Learning Outcomes	Teaching and Learning Activities		Assessment Tasks
			Teaching Activities	Learning Activities	
Class Orientation					
1	<b>Introductory</b> <ul style="list-style-type: none"><li>• Introduction of the college (CFES), and institute (ITEEM)</li><li>• Introduction of Instructor(s)</li><li>• Cascade the VSU VMGO, and quality policy statement</li><li>• Introduction of students</li></ul> <b>OBE course syllabus</b> <ul style="list-style-type: none"><li>• Overview of the course content</li><li>• Class policies</li><li>• Course requirements, activities, and submission of outputs</li><li>• Grading system</li></ul> Learning guide: <b>ONLINE</b> (Moodle-VSUEE)	<ul style="list-style-type: none"><li>• Familiarize the college &amp; institute goals and objectives.</li><li>• Recognize and acquaint instructors and students.</li><li>• Articulate and comprehend the VSU VMGO and the quality policy statement.</li><li>• Understand the contents of the OBE course syllabus.</li></ul>	<b>Face-to-Face Meeting # 1-2</b> <ul style="list-style-type: none"><li>• Lecture using PPT presentation</li><li>• Getting-to-know each other and setting of expectations</li><li>• Q &amp; A for clarification</li><li>• Communicate through email, SMS, or messenger all students who missed the class orientation</li></ul>	<b>Face-to-Face Mode:</b> <ul style="list-style-type: none"><li>• Acquaint students with the VMGO, quality policy statement, and introductory about CFES and ITEEM</li><li>• Class interaction and sharing of ideas</li><li>• Familiarization of the <b>Moodle-VSUEE</b></li></ul>	<b>Quiz #1:</b> VMGO and policy quality statement comprehension (it will be incorporated either in quizzes or long exam)  Due Date: Week 1
CO1: Understand the basic skills and knowledge in environmental monitoring					
2-3	<b>Module No. 1</b> Introduction and definitions	<ul style="list-style-type: none"><li>• Understand and familiarize the terms commonly used in environmental monitoring</li></ul>	<b>Face-to-Face Meeting # 3-6</b> <ul style="list-style-type: none"><li>• Lecture using PPT presentation</li></ul> <b>ONLINE Mode:</b> <ul style="list-style-type: none"><li>• Communicate through email, SMS, or messenger the students who missed the activity(s) of the week</li></ul>	<b>Face-to-Face Mode:</b> <ul style="list-style-type: none"><li>• Class interaction</li><li>• Sharing of Ideas</li></ul> <b>ONLINE Mode:</b> VSUEE/VC: Note-taking  Downloading resource materials	<b>Quiz #2:</b> Module #1  Due Date: Week 2  <b>Lab. Exercise # 1:</b> Introduction and familiarization of instruments commonly used in Environmental Monitoring  Due Date: Week 3
4-5	<b>Module No. 2</b> Concepts and principles	<ul style="list-style-type: none"><li>• Comprehend and describe the basic concepts and principles in environmental monitoring</li></ul>	<b>Face-to-Face Meeting # 7-10</b> <ul style="list-style-type: none"><li>• Lecture using PPT presentation</li></ul> <b>ONLINE Mode:</b> <ul style="list-style-type: none"><li>• Communicate through email,</li></ul>	<b>Face-to-Face Mode:</b> <ul style="list-style-type: none"><li>• Class interaction</li><li>• Sharing of Ideas</li><li>• Feedback</li></ul> <b>ONLINE Mode:</b> VSUEE/VC:	<b>Quiz #3:</b> Module #2  Due Date: Week 4  <b>Lab. Exercise # 2:</b> Environmental Contaminants

Week	Topics	Learning Outcomes	Teaching and Learning Activities		Assessment Tasks
			Teaching Activities	Learning Activities	
			SMS, or messenger the students who missed the activity(s) of the week	Note-taking  Downloading resource materials	and Pollutants  Due Date: Week 5
6			<b>Face-to-face Mode:</b> Long exam will be announced during <b>Week 5</b> class  <b>ONLINE Mode:</b> Posting of long exam in the Moodle-VSUEE	<b>Face-to-face Mode:</b> Students should take the exam during the scheduled time	<b>First Long Examination</b> on Module Nos. 1 and 2  Due Date: Week 6
<b>CO2: Understand the rationale, principles, strategies, design, methods &amp; techniques, monitoring-sampling instrument &amp; paraphernalia selection, and quality control, including documentation.</b>					
7-8	<b>Module No. 3</b> Contaminants/ Pollutants  • Parameters, description, significance, measurements  • Sampling, measurements  • Analysis	• Characterize and classify parameters, description, significance and measurements  • Explain the methods of sampling and measurement of contaminants and pollutants  • Perform analysis in the methods of contaminants and pollutants assessment and evaluation	<b>Face-to-Face Meeting # 11-14</b>  • Lecture using PPT presentation  <b>ONLINE Mode:</b> • Communicate through email, SMS, or messenger the students who missed the activity(s) of the week	<b>Face-to-Face Mode:</b> Class interaction Sharing of Ideas Feedback  <b>ONLINE Mode:</b> VSUEE/VC: Note-taking  Downloading resource materials	<b>Quiz #4:</b> Module #3  Due Date: Week 4  <b>Lab. Exercise # 3:</b> Monitoring Strategies and techniques for water quality  Due Date: Week 5
9			<b>Face-to-face Mode:</b> Midterm exam will be announced during <b>Week 7</b> class  <b>ONLINE Mode:</b> Posting of long exam in the Moodle-VSUEE	<b>Face-to-face Mode:</b> Students should take the exam during the scheduled time	<b>Midterm Examination</b> on Module No. 4  Due Date: Week 6

Week	Topics	Learning Outcomes	Teaching and Learning Activities		Assessment Tasks
			Teaching Activities	Learning Activities	
CO3: Understand the results of environmental monitoring or investigations of contaminants-pollutants in assessing the effects and impacts on different environmental media (air, land and water) through regulatory compliance.					
10-11	<b>Module No. 4</b> Monitoring strategies & techniques <ul style="list-style-type: none"><li>Air</li><li>Water</li><li>Substrates/soil/sediment</li><li>Ecological/ habitats</li></ul>	Comprehend and apply the methods in monitoring air, water, soil substrates, and natural habitats	<b>Face-to-Face Meeting # 15-18</b> <ul style="list-style-type: none"><li>Lecture using PPT presentation</li></ul> <b>ONLINE Mode:</b> <ul style="list-style-type: none"><li>Communicate through email, SMS, or messenger the students who missed the activity(s) of the week</li></ul>	<b>Face-to-Face Mode:</b> Class interaction Sharing of Ideas Feedback  <b>ONLINE Mode:</b> VSUEE/VC: Note-taking  Downloading resource materials	<b>Quiz #5:</b> Module #4  Due Date: Week 10  <b>Lab. Exercise # 4:</b> Monitoring Strategies and techniques for ecological habitats  Due Date: Week 8
12			<b>Face-to-face Mode:</b> Long exam will be announced during <b>Week 5</b> class  <b>ONLINE Mode:</b> Posting of long exam in the Moodle-VSUEE	<b>Face-to-face Mode:</b> Students should take the exam during the scheduled time	<b>Second Long Examination</b> on Module No. 4  Due Date: Week 12
13-14	<b>Module No. 5</b> Assessment & Environmental quality criteria & standard	Comprehend the environmental quality criteria and standard	<b>Face-to-Face Meeting # 19-22</b> <ul style="list-style-type: none"><li>Lecture using PPT presentation</li></ul> <b>ONLINE Mode:</b> <ul style="list-style-type: none"><li>Communicate through email, SMS, or messenger the students who missed the activity(s) of the week</li></ul>	<b>Face-to-Face Mode:</b> Class interaction Sharing of Ideas Feedback  <b>ONLINE Mode:</b> VSUEE/VC: Note-taking  Downloading resource materials	<b>Quiz #6:</b> Module #5  Due Date: Week 10  <b>Lab. Exercise # 5:</b> Assessment and Environmental Quality Criteria and Standard  Due Date: Week 8
15-17	<b>Module No. 6</b> Synthesis	Synthesize	<b>Face-to-Face Meeting # 23-28</b> <ul style="list-style-type: none"><li>Lecture using PPT presentation</li></ul> <b>ONLINE Mode:</b> <ul style="list-style-type: none"><li>Posting the schedule of the oral presentation</li></ul>	<b>Face-to-Face Mode:</b> Group/Individual presentations will done face-to-face  <b>ONLINE Mode:</b> Students should send the PPT presentation	Oral report and presentation: for <b>Lab. Exercise # 5</b>  Due Date: Week 16-17



Week	Topics	Learning Outcomes	Teaching and Learning Activities		Assessment Tasks
			Teaching Activities	Learning Activities	
				through email to the instructor and submit at the VSUEE	
18			<b>Face-to-face Mode:</b> Long exam will be announced during <b>Week 16</b> class  <b>ONLINE Mode:</b> Posting of long exam in the Moodle-VSUEE	<b>Face-to-face Mode:</b> Students should take the exam during the scheduled time	<b>Final Examination</b> on Module Nos. 5 & 6  Due Date: Week 18

\* VSUEE/VC – VSU E-Learning Environment/ Virtual Classroom

<b>12. Life-long Learning Opportunities</b>  Students will learn the importance of environmental monitoring subject. The students will understand the results of environmental investigations, especially for contaminants-pollutants in assessing the effects and impacts on different environmental media (air, land and water) through regulatory compliance.
<b>13. Contribution of Course to Meeting the Professional Component (%)</b>  General Education: 10% Basic Education ( <i>Foundation</i> ): 10% Professional Education ( <i>Major Field</i> ): 80%
<b>14. References and Other Learning Resources</b>  A. Textbook(s)/ E-Books B. Other Learning Resources <ul style="list-style-type: none"> <li>Environmental Guidelines for Selected Infrastructure Projects. (1990). Asian Development Bank, 1990</li> <li>Philippine EIS System guide: Policies and Procedure. (1994). Environmental Management Bureau, Department of Environmental and Natural Resources</li> <li>Cardenas et al. (1992). Public Participation in EIA. <i>An Environmental Monitoring Manual. Environmental Management Bureau</i></li> </ul>

\*These are some suggestions but not limited to...

15. Course Assessment and Evaluation				
<p>The performance of students will be assessed and evaluated based on the following:</p> <p>50% Midterm + 50% Final Term = 100% (Overall Final)</p>				
Item No,	Assessment Tasks	Percentage Contribution (1)	No. of Times in the Semester (2)	Individual Task % Contribution (1/2)
1	Attendance (A)	5%	14 (Lec); 12 Lab	0.19%/A
2	Quizzes (Q)	5%	4	1.25%/Q
3	Long Exam (LE)	20%	1	20.00%/LE
4	Lab. Exercise (Lex)	40%	3	13.33%/LEx
5	Midterm Exam (ME)	30%	1	30.00%/ME
<b>Total Midterm</b>		<b>100%</b>		
6	Attendance (A)	5%	14 (Lec); 14 Lab	0.18%/A
7	Quizzes (Q)	5%	2	2.50%/Q
8	Long Exam (LE)	20%	1	20.00%/LE
9	Lab. Exercise (Lex)	20%	2	10.00%/LEx
10	Oral Report (OR)	20%	1	20%/OR
11	Midterm Exam (ME)	30%	1	30.00%/FE
<b>Total Final Term</b>		<b>100%</b>		
COs	Assessment Tasks	Weight in Percent	Minimum Average for Satisfactory Rating	Target and Standards
CO 1	Attendance (18)	1.73%	60%	At least 70% of the students have at least 60% score
	Quiz nos. 1, 2 & 3	1.88%		
	Lab. exercises nos. 1 & 2	13.33%		
	1 <sup>st</sup> Long hour examination	10.00%		
CO 2	Attendance (8)	0.76%	60%	At least 70% of the students have at least 60% score
	Quiz no. 4	0.63%		
	Lab. exercise no. 3	6.67%		
	Midterm examination	15.00%		
CO 3	Attendance (28)	2.50%	60%	At least 70% of the students have at least 60% score
	Quiz nos. 5 & 6	2.50%		
	Lab. exercise nos. 4 & 5	10.00%		
	2 <sup>nd</sup> Long hour examination	10.00%		
	Oral report	10.00%		
	Midterm examination	15.00%		
<b>TOTAL</b>		<b>100.00%</b>		
Grading System (% Passing: 60% )				
Range		Grade	Range	Grade
96.00 - 100.0		1.00	64.50 - 68.99	2.75
91.50 - 95.99		1.25	60.00 - 64.49	3.00
87.00 - 91.49		1.50	59.99 - below	5.00
82.50 - 86.99		1.75		
78.00 - 82.49		2.00		
73.50 - 77.99		2.25		
69.00 - 73.49		2.50		



**16. Course Policies**

- 1) Lecture and laboratory classes will be done face-to-face. However, when the university management to conduct classes virtually, ZOOM or Google Meet will be used for web-conferencing and real-time class meetings. Username and password link will be sent in mail.
- 2) Attending the virtual meeting is highly - encouraged but not compulsory. If you cannot attend due to internet connection limitation, there is no problem. Just keep up with the lessons and do all the necessary exercises that is required of you.
- 3) The virtual meeting is our avenue for synchronous learning. Class interaction and participation is encouraged, sharing of ideas, feedbacking of your outputs and other related concerns in the subject will be done during this time.
- 4) All requirements will be submitted preferably through the VSUEE or email but if internet connection is not stable or you do not have an internet connection. You may send your activities to the office through a courier.
- 5) In the submission of activities, there are no deduction for late submissions but ON-TIME submission is much appreciated.
- 6) If you have any inquiries/clarifications, you may contact the course instructor/professor during official class schedule; Monday to Friday only.
- 7) All students are reminded to observe all policies, regulations, and rules of the university and other related laws of the land and are advised to read, understand, and practice the provisions of the VSU Student Manual.
- 8) Lastly, as we embark in this “new normal”. Let us have an open mind and heart as we adjust in this new way of delivering the teaching-learning process and still continue to aim for quality in education.

This class policy serves as our written agreement for the whole semester. If there are any changes to enhance the class learning opportunity within the semester, it will be communicated accordingly.

**17. Course Materials and Facilities Available**

- Virtual Classrooms
- Lecture presentations
- Lecture learning materials

**18. Revision History**

Revision number	Date of Revision	Date of implementation	Highlights of Revision	Revised by
1	Feb. 15, 2023	Feb. 20, 2023	Course content and plan for OBE format compliance V02 11-14-2022	Jimmy O. Pogosa

**19. Preparation**

Prepared by	Name	Signature	Date Signed
	Jimmy O. Pogosa Instructor, ITEEM		

#### IV. INSTRUCTOR/PROFESSOR INFORMATION

1. Name of Instructor/Professor	Jimmy O. Pogosa
2. Office and Department	Institute of Tropical Ecology and Environmental Management
3. Telephone/Mobile Numbers	(053) 563-7497 / 565-0600 (local 1052)
4. Email Address	<a href="mailto:jimmy.pogosa@vsu.edu.ph">jimmy.pogosa@vsu.edu.ph</a>
5. Consultation Time	Friday 1:00 AM – 5:00 PM

#### 20. Institute Instructional Materials Review Committee:

Committee	Name	Signature	Date Signed
Member:	<b>Kleer Jeann G. Longatang</b>		
Member:	<b>Marlito M. Bande</b>		
Chairperson:	<b>Eliza D. Espinosa</b>		

	Name	Signature	Date Signed
Verified by:	<b>Dennis P. Peque</b> College Dean		
Validated by:	<b>Nancy D. Abunda</b> Head, IMD		

Note:

- 1) The number of POs will depend on each degree program offered
- 2) COs and Relationship to POs
  - a. (I) - **Introductory** – an Introductory Course to an outcome
  - b. (E) - **Enabling** – an Enabling Course or a course that strengthens the outcome
  - c. (D) - **Demonstrated** – a Demonstrative Course or a course demonstrating an outcome.

REMINDER:

1. *The author should not be part of the DIMRC.*
2. *\*If the author is the Department Head, he/she will be replaced by another chairperson from among the senior faculty members.*
3. *\*\*If the author is the College Dean, the Head of Instructional Materials Development will approve.*
4. *Follow the next higher supervisor, no same person*
5. *For the component campuses, if the author is the College Dean, the Director for Academic Affairs will approve.*
6. *If the author is the Department Head and at the same time the College Dean, the Director for Academic Affairs will be the Chairperson of the DIMRC, and the Chancellor will approve it.*

(3) Distribution of copies: OHIMD, Department, Faculty