



## OUTCOMES-BASED EDUCATION (OBE) COURSE SYLLABUS

### CHEM211 – Chemistry in the Living System (Lecture)

#### 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.

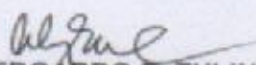
##### 3. VSU Quality Policy Statement

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 Office of the Graduate School

Produce high quality manpower in science and technology, especially for agriculture and its allied fields, environmental management and industry through graduate education to serve the development needs of the region.

#### 5. Quality Objectives of the Office of the Graduate School

- To offer graduate courses to teachers, researchers, extension workers, administrators, and other professionals;
- To train and guide graduate students in conducting productive and independent research studies relevant to agriculture and its allied fields, environmental management, and industry;
- To design and implement innovative strategies for the enhancement of managerial and leadership skills of professional and development workers; and,
- To strengthen personal discipline and moral character of graduate students to better serve their clientele.

## II. PROGRAM INFORMATION

1. Name of the Program	Master in Education (Chemistry)
2. CHED CMO Reference	CMO No. 75 Series of 2017
3. BOR Approval	BOR Res. No. 68, s. 2018

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

Program Educational Objectives	Mission*		
	a	b	c
1. Develop among prospective teachers' strong commitment for teaching and a real concern for the welfare and development of the learners.	√	√	√
2. Produce graduates equipped with professional, pedagogical and critical thinking skills.	√	√	√
3. Provide students the opportunity to formulate and conduct research on relevant areas and undertake community outreach projects.	√	√	√

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

## III. COURSE INFORMATION

1. Course Code	CHEM 211
2. Course Title	Chemistry in the Living System
3. Pre-requisite	Consent of the Professor
4. Co-requisite	None
5. Credit	3.0 units
6. Semester Offered	First Semester
7. Number of hours	3 hrs / week
8. Course Description	This course will be devoted to the advanced study of the biomolecules and life process. Topics also include molecular components of cells, protein dynamics, metabolism and its regulation, information transfer and recent advances of the chemistry in the living systems.



9. Program Outcomes (POs) in relation to the Program Educational Objectives (POEs)				
Program Outcomes (POs)		Program Educational Objectives		
		1	2	3
a	Higher levels of comprehension (textual, visual, etc.)	/	/	/
b	Proficient and effective communication (writing, speaking, and use of new technologies)	/	/	/
c	Appreciation of human condition	/	/	/
d	Capacity to personally interpret the human experience	/	/	/
e	Problem-solving (including real-world 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
CO1: Recognize, write formulas, and describe the chemical structures that make up the components of living matter: water, carbohydrates, proteins, lipids, and nucleic acids.	I	E	D	E	D
CO2: Describe the interactions of these components that give rise to the organized supramolecular structures, cells, and multicellular organisms.	E	E	D	E	E
CO3: Explain how enzymes work and regulate chemical reactions	E	E	E	E	E
CO4: Explain how living organisms extract energy from the surroundings to perpetuate life and how chemical reactions are regulated inside living cells.	D	E	E	E	E
CO5. Describe how organisms store and transmit genetic information to grow and to reproduce accurately.	E	E	E	D	E
CO6. Present awareness of major issues at the forefront of chemistry in the living system	E	D	E	E	E

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	OBE Course Syllabus (including VSU Vision Mission, and Quality Policy Statement)  Class Policies	Explain their role in the attainment of VSU's VMGO	Face to Face/Online Mode: Meeting/ Viewing of recorded presentation	Face to Face/Online Mode: Role play through a video	Oral recitation



Requirements					
Grading System and Activities					
Learning Guide / Instructional Workbook / Laboratory Manual					
Submission of requirements					
Values Integration: _____					
			: Q & A for clarification, setting of expectations, and getting-to-know-each other  Class interaction  Sharing of Ideas  Feedbacks  <b>VSUEE/VC*:</b> Familiarization of the virtual classroom		

**CO1.** Recognize, write formulas, and describe the chemical structures that make up the components of living matter: water, carbohydrates, proteins, lipids, and nucleic acids.

**CO2.** Describe the interactions of these components that give rise to the organized supramolecular structures, cells, and multicellular organisms.

1-4	<b>Module 1. Molecular Components of the Cell</b>  <b>Lesson 1.1 Chemistry: the Logic of Biological Phenomenon</b>  <b>Lesson 1.2 Water: The Medium of Life</b>  <b>Lesson 1.3 Thermodynamics of Biological Systems</b>  <b>Lesson 1.4 Amino Acids</b>  <b>Lesson 1.5 Proteins: Structure and Biological Functions</b>	<ul style="list-style-type: none"> <li>explain the chemistry logic of biological phenomenon</li> <li>discuss the properties of water as a medium of life</li> <li>describe the thermodynamics of biological systems</li> <li>write the formula of the different classes of amino acids</li> <li>illustrate the structures of proteins and state their</li> </ul>	<b>Face to Face/Online Mode: Meetings 1-4</b>  <b>Viewing of recorded presentation:</b>  Computer-assisted powerpoint presentations	<b>Face to Face/Online Mode: VSUEE/VC: Note-taking</b>  Downloading resource materials	Module 1 Pretest  Learning Activity 1.1-1.5  Assessments 1.1-1.5  Due Date:
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		biological function			
<b>FIRST LONG EXAMINATION</b>					
5-6	<b>Lesson 1.6 Carbohydrates and Glycoconjugates of Cell Surfaces</b>  <b>Lesson 1.7 Lipids: Membranes and Membrane Transport</b>	<ul style="list-style-type: none"> <li>• classify carbohydrates as monosaccharides, disaccharides and polysaccharides</li> <li>• identify the glycoconjugates of cell surfaces</li> <li>• discuss the role lipids in membrane and membrane transport</li> </ul>	<b>Face to Face/Online Mode: Meetings 5-6</b>  <b>Viewing of recorded presentation:</b>  Computer-assisted powerpoint presentations	<b>Face to Face/ Online Mode: VSUEE/ VC:</b> Note-taking  Downloading resource materials	Module 1 Pretest  Learning Activity 1.6-1.7  Assessments 1.6-1.7  Due Date:
<b>SECOND LONG EXAMINATION</b>					
6-7	<b>Lesson 1.8 Nucleotides and Nucleic Acids</b>  <b>Lesson 1.9 Recombinant DNA: Cloning and Creation of Chimeric Genes</b>	<ul style="list-style-type: none"> <li>• write the structures of the nucleotides and nucleic acids</li> <li>• discuss cloning and creation of chimeric genes as recombinant DNA technique</li> </ul>	<b>Face to Face/Online Mode: Meetings 6-7</b>  <b>Viewing of recorded presentation:</b>  Computer-assisted powerpoint presentations	<b>Face to Face/ Online Mode: VSUEE/ VC:</b> Note-taking  Downloading resource materials	Learning Activity 1.8-1.9  Assessments 1.1-1.9  Due Date:
<b>CO3: Explain how enzymes work and regulate chemical reactions</b>					
7-8	<b>Module 2. Protein Dynamics</b>  Lesson 2.1 Enzymes: Kinetics and Specificity  Lesson 2.2 Mechanism of Enzyme Action	<ul style="list-style-type: none"> <li>• discuss the kinetics and specificity of enzymes</li> <li>• describe the mechanism of enzyme action</li> </ul>	<b>Face to Face /Online Mode: Meeting #: 7-8</b>  Computer-assisted powerpoint presentations	<b>Face to Face/ Online Mode: VSUEE/ VC:</b> Note-taking  Downloading resource	Module Pretest  Learning Activity: 2.1-2.4  Assessment: 2.1-2.4  Due Date:





	<p><b>Lesson 3.4 Electron Transport Chain and Oxidative Phosphorylation</b></p> <p><b>Lesson 3.5 Photosynthesis</b></p>	<p>glucose and the starting material that enters the citric acid cycle</p> <ul style="list-style-type: none"> <li>• Define electron transport chain</li> <li>• State the role of electron transport chain in metabolism</li> <li>• Describe the coupling of oxidation to phosphorylation in ATP production</li> <li>• Give the number of moles of ATP formed from each mole of NAD and FAD</li> <li>• Identify the inhibitors that can block the chain</li> <li>• Rationale how the structure of chloroplast affect photosynthesis</li> <li>• Compare the structures of chlorophyll, hemoglobin and myoglobin in terms of structure</li> <li>• Relate photosynthesis with electron transport chain in terms of ATP production</li> <li>• Describe how herbicides can inhibit photosynthesis</li> </ul>			
<b>FOURTH LONG EXAMINATION</b>					
11-14	<b>Lesson 3.6 Gluconeogenesis, Glycogen Metabolism &amp; the Pentose Phosphate Pathway</b>	<ul style="list-style-type: none"> <li>• Define gluconeogenesis and describe its role in biological systems</li> <li>• Identify smaller biomolecules that can be used to synthesize glucose</li> </ul>	<p><b>Face to Face/Online Mode: Meetings #: 11-14</b></p> <p><b>Viewing of recorded presentation :</b></p>	<p><b>Face to Face/ Online Mode: VSUEE/ VC: Note-taking</b></p> <p><b>Downloading</b></p>	<p>Module Pretest</p> <p>Learning Activity 3.6-3.11</p> <p>Assessment #3.6-3.11</p>

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		<ul style="list-style-type: none"> <li>• Differentiate glycogenesis and glycogenolysis in terms of:               <ul style="list-style-type: none"> <li>• utilization of glucose</li> <li>• its role in biological systems</li> <li>• energy involved</li> </ul> </li> <li>• Compare and contrast glycolysis, glycogenesis, glycogenolysis, and gluconeogenesis</li> <li>• Explain how glycogen metabolism is controlled, and relate it to diabetes mellitus</li> <li>• Differentiate pentose phosphate pathway from other carbohydrate metabolic pathways</li> <li>• Identify the importance of pentose phosphate pathway in biological systems</li> <li>• Trace the oxidative and non-oxidative reactions in the pentose phosphate pathways</li> <li>• Explain how the pentose phosphate pathway is controlled</li> <li>• Relate defective enzyme in the pentose phosphate pathway results to hemolytic anemia</li> <li>• Trace the</li> </ul>	Computer-assisted powerpoint presentations	resource materials	Due Date:
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	<p><b>Lesson 3.10 The Synthesis and Degradation of Nucleotides</b></p> <p><b>Lesson 3.11 Metabolic Integration and Organ Specialization</b></p>	<ul style="list-style-type: none"> <li>• Explain the role of glutamate in the biosynthesis of amino acids</li> <li>• Differentiate between glucogenic and ketogenic amino acids and give examples of each</li> <li>• Describe the urea cycle and state its importance</li> <li>• Write equation for the reaction of the urea cycle</li> <li>• Show how the urea cycle is linked to the citric acid cycle</li> <li>• Show how the purine and pyrimidine are broken down</li> <li>• Describe how the different metabolic pathways are integrated</li> <li>• Identify the specialized organs for metabolic integration</li> </ul>			
<b>FIFTH LONG EXAMINATION</b>					
CO5. Describe how organisms store and transmit genetic information to grow and to reproduce accurately.					
CO6. Present awareness of major issues at the forefront of chemistry in the living system					
15-17	<p><b>Module 4 Information Transfer</b></p> <p><b>Lesson 4.1 DNA Metabolism: Duplication, Recombination and Repair</b></p> <p><b>Lesson 4.2 Transcription and</b></p>	<ul style="list-style-type: none"> <li>• Describe the molecular basis of DNA metabolism: replication, recombination and repair</li> <li>• Explain transcription</li> </ul>	<p><b>Face to Face/ Online Mode: Meetings #: 16-17</b></p> <p><b>Viewing of recorded presentation :</b></p> <p>Computer-assisted</p>	<p><b>Face to Face/ Online Mode: VSUEE/ VC: Note-taking</b></p> <p>Downloading resource materials</p>	<p>Module Pretest</p> <p>Learning Activity 4.1-4.5</p> <p>Assessment # 4.1-4.5</p> <p>Due Date:</p>



	<b>Regulation of Gene Expression</b>  <b>Lesson 4.3 Protein Synthesis</b>  <b>Lesson 4.4 Completing the Protein Life Cycle: Folding, Processing and Degradation</b>  <b>Lesson 4.5 The Reception and Transmission of Extracellular Information</b>  <b>Lesson 4.6 Oral paper presentation</b>	<ul style="list-style-type: none"> <li>• Discuss gene regulation</li> <li>• Describe how proteins are synthesized</li> <li>• Trace the complete protein life cycle in terms of folding, processing and degradation</li> <li>• Discuss the flow of genetic information</li> <li>• Present recent advances related to chemistry in the living system</li> </ul>	powerpoint presentations		
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#### SIXTH LONG EXAMINATION

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

#### 12. Life-long Learning Opportunities

The student will visualize the different molecular components in the cells, explain mechanism of enzyme action, trace the different metabolic pathways in biological systems and explain how these pathways are regulated, identify the biomolecules involved, and associate the biochemical concepts such as information transfer learned with everyday living.

#### 13. Contribution of Course to Meeting the Professional Component (%)

General Education: 10%

Basic Education (Foundation): 20%

Professional Education (Major Field): 70%

#### 14. References and Other Learning Resources

##### A. References

Alberts B, Johnson A, Lewis J (2014) Molecular Biology of the Cell 6<sup>th</sup> ed., Garland Science (or later edition)

Karp G (2013) Cell and Molecular Biology: Concepts and Experiments 7th ed., Wiley (or later edition)

Lodish H, Berk A, Kaiser CA, Krieger M, Bretcher A, Ploegh H, Amon A, Scott MP (2012) Molecular Cell Biology, 6<sup>th</sup> ed. W.H. Freeman (or later edition).

The National Center for Biotechnology Information, National Library of Medicine, National Institutes of Health USA [www.pubmed.gov](http://www.pubmed.gov) or [www.ncbi.nlm.nih.gov](http://www.ncbi.nlm.nih.gov)

##### B. Textbooks

Berg, J.M. Tymoczko, J.L., Gatto GJ, and Stryer, L. (2015) Biochemistry, 8th ed.,



W.H. Freeman (or later edition).  
 Campbell, M.K. and Farrell, S.O. (2014) Biochemistry, 8th ed., Brooks Cole (or later edition)  
 Mathews, C.K., van Helde, K.E, Appling DR, Anthony-Cahill SJ. (2012) Biochemistry, 4th ed., Benjamin Cummings (or later edition).  
 Nelson, D.L. and Cox, M.M. (2012) Lehninger Principles of Biochemistry, 6th ed., W.H. Freeman (or later edition).  
 Pratt CW and Cornely K (2013) Essential Biochemistry, 3rd ed., Wiley (or later edition)  
 Voet, D. and Voet, J.G. (2010) Biochemistry, 4th ed., John Wiley and Sons (or later edition)

#### C. Other Learning Resources

Open Educational Resources/Websites:

: [http://serc.carleton.edu/microbelife/research\\_methods/genomics/replication.html](http://serc.carleton.edu/microbelife/research_methods/genomics/replication.html)

Videos:

[https://www.youtube.com/watch?v=rXzN89I4\\_Yk](https://www.youtube.com/watch?v=rXzN89I4_Yk)  
<https://www.youtube.com/watch?v=TNKWgcFPHqw>  
<https://www.youtube.com/watch?v=bKlpDIJdK8Q>  
<https://www.youtube.com/watch?v=sX6LncNjTFU>  
<https://www.youtube.com/watch?v=gG7uCskUOrA>  
<https://www.youtube.com/watch?v=kmrUzDYAmEI>  
<https://www.youtube.com/watch?v=MvuYATh7Y74>  
<https://www.youtube.com/watch?v=rA8MUR4pqNE>  
<https://www.youtube.com/watch?v=2JUu1WqidC4>  
<https://www.youtube.com/watch?v=ezfwqmKC9Uc>  
<https://www.youtube.com/watch?v=uM1t0mWXU30>  
<https://www.youtube.com/watch?v=CHJsaq2INjU>  
<https://www.youtube.com/watch?v=8FqITslU22s>  
<https://www.youtube.com/watch?v=ulut0oVWCEg>  
<https://www.youtube.com/watch?v=RN81h85V6D4>  
[https://www.youtube.com/watch?v=joZ1EsA5\\_NY](https://www.youtube.com/watch?v=joZ1EsA5_NY)  
<https://www.youtube.com/watch?v=KfvYQgT2M-k>  
<https://www.youtube.com/watch?v=NDIJexTT9j0>

#### 15. Course Assessment and Evaluation

The performance of students will be assessed and evaluated based on the following:

50% Midterm + 50% Final Term = 100% (Overall Final)

Item No.	Assessment Tasks	Percentage Contribution (1)	No. of Times in the Semester (2)	Individual Task % Contribution (1/2)
1	Quizzes (Q)/ Assignment/Assessment	30	29	1.03%/Q
2	Long Examination	60	6	10%
3	Project /Oral Paper (equivalent to 1 long exam)	10	1	10%
...		100%		

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COs	Assessment Tasks	Weight in Percent	Minimum Average for Satisfactory Rating	Target and Standards
CO1 CO2	Quizzes (Q)/ Assignment/Assessment (1-9) Long Examinations 1-2	9.27 20.0	60 %	At least 60% of the students have 60% score
CO3	Quizzes (Q)/ Assignment/Assessment (10-13) Long Examination 3	4.12 10.00	60 %	
CO4	Quizzes (Q)/ Assignment/Assessment (14-24) Long Examination 4-5 Oral paper	11.33 20.00	60 %	
CO5 CO6	Quizzes (Q)/ Assignment/Assessment (24-28) Long Examination 6 Oral paper	5.15 10.00 10.00		
<b>TOTAL</b>		<b>100%</b>		

#### Grading System (% Passing: 60%)

Range	Grade	Range	Grade
97-100	1.00	65-69	2.75
93-96	1.25	60-64	3.00
89-92	1.50	59 below	5.00
85-88	1.75		
80-84	2.00		
75-79	2.25		
70-74	2.50		

#### 16. Course Policies

- 1) The official virtual classroom is VSU E-Learning Environment (VSUEE) (<https://elearning.vsu.edu.ph>). A class orientation will be done in relation to the use and navigation of the platform.
- 2) ZOOM or Google Meet will be used for web-conferencing in case Face to Face real-time class meetings will not be possible. Username and password link will be posted in VSUEE/VC.
- 3) 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.



- 4) The virtual meeting is our avenue for synchronous learning. Whether it is Face to Face/Online meetings, class interaction and participation are encouraged, sharing of ideas, feedbacking of your outputs and other related concerns in the subject will be done during this time.
- 5) 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.



#### ONLINE Submission:

Scan (.pdf) / take a picture (.jpg) / MS Word file (.docx) of the Learning task/activity then send through the VSUEE/VC or email.



#### OFFLINE Submission:

Place your answers in a SEALED BROWN ENVELOPE. On the envelope, write your FULLNAME, YEAR LEVEL, COURSE, CONTACT NUMBER, EMAIL ADDRESS, COURSE NUMBER, COURSE TITLE, and DATE OF SUBMISSION, COURSE PROFESSOR.

**JUAN DELA CRUZ**  
 3<sup>rd</sup> year BSED - Math  
 0920 - 1234567  
[juandelacruz@gmail.com](mailto:juandelacruz@gmail.com)  
 Course Title: \_\_\_\_\_  
 Date submitted: \_\_\_\_\_  
 Course Professor: \_\_\_\_\_  
 Department \_\_\_\_\_, College \_\_\_\_\_

Sealed

Submitted through:  
 VSU Learning Dropbox or  
 VSU-LGU Kiosks

Submit through a courier: The office address is DEPARTMENT OF PURE AND APPLIED CHEMISTRY, COLLEGE OF ARTS AND SCIENCES, Visayas State University, Baybay City, Leyte, Philippines.

- 6) Original copies of all answers, solutions, and term reports should be kept by the student, put in a folder/envelope one after the other, and should be bound together to form a "portfolio" as part of the final requirements of the course.
- 7) In answering the Learning Task/Activities/Assessments, it can be done in any of the following:
  - a. Use the CHEM 211 Learning Guide, in answering the given activities/tasks. Additional sheet of paper may be used as necessary.
  - b. Handwritten or encoded in MS Word file format



c. General format for additional sheet either handwritten/Word file:

- i. A4 size bond paper
- ii. 1" margin all sides
- iii. Arial, 12 font size, double space (for encoded outputs)

- 8) Quizzes will be given real time. All quizzes are announced and will open every after a topic has been discussed. Learning Activities/Assessments will be set in the VSUEE-VC. You have one week to comply with the LA/Assessments and answer it anytime you think that you are ready.
- 9) Long and term examinations will be done face to face.
- 10) This CHEM 211 ISO-OBE syllabus is our official instructional material in this subject. It will serve as your guide for the whole semester. Whether you have internet connection or not, use it.
- 11) In the submission of activities, there are no deduction for late submissions but ON-TIME submission is much appreciated.
- 12) If you have any inquiries/clarifications, you may contact the course instructor/professor during official class schedule; Monday to Friday only.
- 13) 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.
- 14) 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

1. DLP (Face-to-face)
2. Laptop
3. Internet sources
4. Whiteboard and whiteboard markers (Face-to-face)

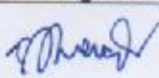
#### 18. Revision History

Revision number	Date of Revision	Date of implementation	Highlights of Revision
0		08/23/2021	OBE-compliant CHED CMO No. 75 Series of 2017 ISO compliant format
1	9/07/2022	09/12/2022	Revised the Learning Activities/Class Policies to fit the flexible/blended learning



			modality (Face to face/online learning modality)
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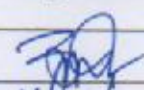
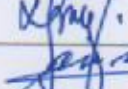
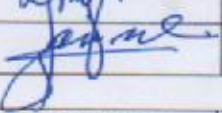
#### 19. Preparation

	Name	Signature	Date Signed
Prepared by	ELIZABETH S. QUEVEDO		September 07, 2022

#### 19. INSTRUCTOR/PROFESSOR INFORMATION

1. Name of Instructor/Professor	Elizabeth S. Quevedo
2. Office and Department	Department of Pure and Applied Chemistry
3. Telephone/Mobile Numbers	053-563-7747 (office number); 09178905658
4. Email Address	elizabeth.quevedo@vsu.edu.ph
5. Consultation Time	TBA

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

Committee	Name	Signature	Date Signed
Member:	FELIX M. SALAS		9/8/2022
Member:	ALLAN A. RAMAL		9/9/2022
Chairperson	JACOB GLENN F. JANSALIN		9/13/2022

	Name	Signature	Date Signed
Verified by:	ANABELLA B. TULIN, PhD Graduate School Dean		
Validated by:	NANCY D. ABUNDA, PhD 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.

Distribution of copies: OIMD, College, Department, Faculty and ODQA





## EVALUATION OF OUTCOMES-BASED EDUCATION (OBE) COURSE SYLLABUS

Course No. Chem 211 and Course Title Chemistry in the Living System

1<sup>st</sup> Semester and A.Y. 2022-2023

Name of faculty : ELIZABETH S. QUEVEDO  
Department/Institute : Department of Pure and Applied Chemistry  
College : College of Arts and Sciences

CRITERIA	Complied	Partially Complied	Not Complied	Remarks
<b>FORMAT</b>				
1) The OBE course syllabus follows the university-prescribed format	/			
2) The course syllabus covers the required number of weeks in one academic term	/			
3) Course policies and grading system are clearly defined	/			
4) The syllabus is designed to align with the CMO-prescribed curriculum in relation to:				
a. Program Educational Objectives to VSU Vision, Mission, and Quality Policy Statement	/			
b. Program Outcomes to Program Educational Objectives	/			
c. Course Outcomes to Program Outcomes	/			
<b>CONTENT</b>				
1) Learning outcomes are clearly articulated ( <i>Specific, Measurable, Attainable, Realistic, Time-bounded (SMART) and anchored on Bloom's Taxonomy of Objectives</i> )	/			
2) Course coverage completely follows the course description	/			
3) Topics/lessons are arranged in a logical – sequence	/			
4) Gender-sensitivity and values education are integrated in the syllabus whenever applicable	/			
5) References are relevant, varied and updated. Contains at least five book titles copyrighted within the last 5 years as prescribed by CHED	/			
<b>TEACHING-LEARNING</b>				
1) Teaching-learning activities are:				

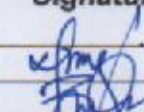
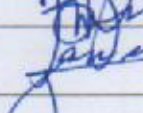
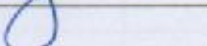


a. varied and relevant	✓			
b. outcomes-based	✓			
c. encourage active learning	✓			
d. develop the students' critical – thinking skills and reflective judgment	✓			
<b>LEARNING ASSESSMENT</b>				
1) Learning outcomes and methods of assessment are aligned	✓			
2) Assessment methods used are varied and relevant	✓			
3) Schedule and frequency of assessment, and expected outputs are clearly defined	✓			

**General Recommendation (Pls. check):**

✓	APPROVED for use
	Needs to be REVISED ( <i>please see comments</i> )

**Department Instructional Materials Review Committee:**

Committee	Name	Signature	Date Signed
Member:	ALLAN A. RAMAL		9/9/2022
Member:	FELIX M. SALAS		9/8/2022
Chairperson	JACOB GLENN F. JANSALIN		9/15/2022

	Name	Signature	Date Signed
Verified by <sup>1/</sup> :	ANABELLA B. TULIN		
Validated by <sup>2/</sup> :	NANCY D. ABUNDA Head, IMD		

<sup>1/</sup> Means of Verification: Ratings on Individual evaluation sheets of the DIMRC members

<sup>2/</sup> Means of Validation: Final action of the College Dean

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,