



OUTCOMES-BASED EDUCATION (OBE) COURSE SYLLABUS

Chem 122 - Organic Chemistry 2nd Semester, A.Y. 2022-2023

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 Goal of the College of Arts and Sciences
 - a. To produce quality manpower and graduates in liberal arts and behavioral sciences, chemistry, biology, mathematics, physics, and statistics to serve the development needs of the region;
 - b. To uplift the economic well-being of the region through relevant R and D and extension programs; and
 - c. Enhance the regional development of the Visayas for global competitiveness.
5. Quality Objectives of the Department of Pure and Applied Chemistry.
 - a. Produce highly qualified and skilled Chemists and Chemical Technicians for the university and academia;
 - b. Generate relevant knowledge and technologies through basic and applied multi- and interdisciplinary researches; and
 - c. Achieve strong linkages and cooperation with domestic and international institutions and agencies involved in the pursuit of sustainable development.

II. PROGRAM INFORMATION

| | |
|------------------------|---------------------------------------|
| 1. Name of the Program | Bachelor of Science in Marine Biology |
| 2. CHED CMO Reference | CMO no. 46 s 2017 |
| 3. BOR Approval | BOR Resolution No. 62 s 2018 |

4. Program Educational Objectives and Relationship to Institution Mission

| Program Educational Objectives | Mission* | | |
|--|----------|---|---|
| | a | b | c |
| 1. Develop graduates with a clear recognition and understanding of the dynamics of marine life and its ecosystem. | ✓ | ✓ | ✓ |
| 2. Conduct actual field or hands-on experience. | ✓ | ✓ | ✓ |
| 3. Provide foundations for future careers in marine biology, conservation, oceanography, biomedicine, molecular biology, university teaching, fisheries etc. | ✓ | ✓ | ✓ |

*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 122 |
| 2. Course Title | Organic Chemistry |
| 3. Pre-requisite | Chem 110 Inorganic Chemistry |
| 4. Co-requisite | Chem 122.2 Organic Chemistry (Laboratory) |
| 5. Credit | 3 units |
| 6. Semester Offered | 2 nd semester |
| 7. Number of hours | 3 hrs/week |
| 8. Course Description | The course involves a study of the principles and theories important to the practice of analytical chemistry. It involves a discussion of the techniques, methods and instrumentation involved in determining the amount of constituents in samples. Particular attention is given to stoichiometric problems. |

| 9. Program Outcomes (POs) in relation to the Program Educational Objectives (POEs) | | | | |
|--|---|--------------------------------|---|---|
| Program Outcomes (POs) | | Program Educational Objectives | | |
| | | 1 | 2 | 3 |
| a | Apply scientific knowledge in general problem solving | √ | √ | √ |
| b | Have skills that can contribute to the management of tropical marine resources | √ | √ | √ |
| c | Pursue further careers in related field (e.g., research, teaching, resource management, etc.) | √ | √ | √ |
| d | Have knowledge to promote sustainable utilization of marine resources | √ | √ | √ |

| 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 |
| CO1. Apply the concepts of organic structural theory to explain and predict the physical properties and chemical reactivity of organic molecules ranging from simple organic compounds to macromolecules and biomolecules. | I | | E | |
| CO2. State the unique properties of carbon and the diversity in the structures of organic compounds based on functional groups. | I | | E | |
| CO3. Illustrate the different types of organic reactions and reaction mechanism. | I | | E | |
| CO4. Give the IUPAC name, draw molecular structures, and the reactions of organic compounds. | I | | E | |
| CO5. Apply their knowledge of organic chemistry to the other aspects of their overall education | D | D | 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 | <ul style="list-style-type: none">• OBE Course Syllabus• VSU Vision Mission, and Quality Policy Statement• Class Policies• Requirements | <p>At the end of this meeting, the student must be able to:</p> <p>State the basic information regarding the course.</p> | <p><i>Face to Face Classes and assisted by Printed Learning Guides.</i></p> <p>Class orientation</p> | <p>Note-taking</p> <p>Participation in class discussion</p> <p>Class interaction</p> | Oral recitation |

| | | | | | | |
|---|--|--|--|--|--|---------------|
| | | Learning Guide/Instructional Workbook | Recognize the VSU VMGO, Quality Policy Statement, | Q & A for clarification, setting of expectations, and getting-to-know-each other | Sharing of ideas | |
| | | Grading System and Activities | Discuss the course policies | | Familiarization of the virtual classroom | |
| | | Submission of Requirements | Identify the class requirements | Feedbacks | Downloadin g of resource materials | |
| | | Values Integration: open-mindedness, responsibility, and readiness for learning | Communicate his/her internet connection capabilities. | VSUEE/VC: Familiarization of the virtual classroom | | |
| CO1: Apply the concepts of organic structural theory to explain and predict the physical properties and chemical reactivity of organic molecules ranging from simple organic compounds to macromolecules and biomolecules. CO2: State the unique properties of carbon and the diversity in the structures of organic compounds based on functional groups. | | | | | | |
| | | Module 1: Introduction to Organic Chemistry | <ul style="list-style-type: none"> • Differentiate organic and inorganic compounds • State the unique properties and allotropes of carbon • Identify the type of chemical bonds | <i>Face to face:</i> Meetings #2 to #5 | Class interaction | |
| | | Lesson 1.1: Inorganic and Organic Compounds | <ul style="list-style-type: none"> • Draw the molecular structures (Lewis, skeletal, condensed) of simple organic molecules • Calculate the formal charge • Draw the isometric and resonance structures of simple organic molecules | Lecture with discussion through powerpoint presentation | Note-taking | Quiz # 1 to 4 |
| | | Lesson 1.2: Allotropic forms and unique properties of carbon | | Educational video presentation | Sharing of ideas | |
| | | Lesson 1.3: Electronic Structure and Bonding | | Facilitate group activities | Peer discussion | |
| | | Lesson 1.4: Classification of Organic Compounds | | Give assignments/p roblem sets/worksheet s | Group activity | |
| | | | | | Seatwork and/or board work exercises | |
| | | | | | Feedbacks | |
| | | | | | VSUEE/VC: Downloadin g resource materials | |

| | | | | | | | |
|---|--|--|---|--|---|---|--|
| | | | | <ul style="list-style-type: none"> Differentiate valence bond model from molecular orbital model Discuss the hybridization, geometry, bond strength, bond energy and bond length of single, double triple bonded carbon in simple organic molecules Identify the functional groups in an organic compound Classify organic compounds according to their functional groups. | | <p>Answer learning tasks/quizzes/pretest/posttest</p> <p>Learning Guide: Independent study</p> | |
| CO3: Illustrate the different types of organic reactions and reaction mechanism. | | | | | | | |
| 3-5 | <p>Module 2: Introduction to Reaction Mechanism</p> <p>Lesson 2.1: What kind of organic reactions occur?</p> <p>Lesson 2.2: How do organic reactions occur?</p> | <ul style="list-style-type: none"> Identify the type of organic reactions Write the starting organic material, organic product and/or necessary reagents for chemical reactions that are characteristic of the different functional classes of organic compounds Write the overall reaction and reaction mechanism Use curved arrows to show the movement of electrons in bond breaking and bond forming processes | <p>Face to face: Meetings #6 to #7</p> <p>Lecture with discussion through powerpoint presentation</p> <p>Educational video presentation Facilitate group activities</p> <p>Give assignments/problem sets/worksheets</p> | <p>Class interaction</p> <p>Note-taking</p> <p>Sharing of ideas</p> <p>Peer discussion</p> <p>Group activity</p> <p>Seatwork and/or board work exercises</p> <p>Feedbacks</p> <p>VSUEE/VC:</p> <p>Downloading resource materials</p> | <p>Quiz # 5 to 7</p> <p>Long Exam #1 Face-to face and/or through VSU E-Learning Portal)</p> | <p>Answer learning tasks/quizzes</p> | |

| | | | | | |
|---|---|---|--|---|---|
| | | Learning Guide: Independent study | | | |
| <p>CO4: Give the IUPAC name, draw molecular structures, and the reactions of organic compounds.</p> <p>CO5: Apply their knowledge of organic chemistry to the other aspects of their overall education.</p> | | | | | |
| | <p>Module 3. Hydrocarbons: Alkanes, Alkenes, and Alkynes</p> <p>Lesson 3.1: Alkanes</p> <p>Lesson 3.2: Alkenes</p> <p>Lesson 3.3: Alkynes</p> | <ul style="list-style-type: none"> Evaluate the relationship between organic chemistry with various fields of biology and related sciences Give the IUPAC names, draw the molecular structures and the reactions of the alkanes & cycloalkanes, alkenes, alkynes & related cyclic compounds | <p>Face to face: Meetings #8 to #10</p> <p>Lecture with discussion through powerpoint presentation</p> <p>Educational video presentation</p> <p>Facilitate group activities</p> <p>Give assignments/problem sets/worksheet s</p> | <p>Class interaction</p> <p>Note-taking</p> <p>Sharing of ideas</p> <p>Peer discussion</p> <p>Group activity</p> <p>Seatwork and/or board work exercises</p> <p>Feedbacks</p> <p>VSUEE/VC:</p> <p>Downloading resource materials</p> <p>Answer learning tasks/quizzes/pretest/posttest</p> <p>Learning Guide: Independent study</p> | <p>Quiz #8 to 10</p> <p>Long Exam #2 Face-to face and/or through VSU E-Learning Portal)</p> |
| 6-7 | | | | | |
| 8 | MIDTERM EXAMINATION | | | | |
| 9-10 | <p>Module 4. Aromatic Hydrocarbons and Compounds</p> | <ul style="list-style-type: none"> Recognize the concept of | <p>Face to face: Meetings #11 to #12</p> | <p>Class interaction</p> <p>Note-taking</p> | <p>Quiz #11 to 14</p> |

| | | | | | |
|-------|---|---|--|---|--|
| | <p>Lesson 4.1: Aromaticity of Benzene Ring</p> <p>Lesson 4.2: Heterocycles and the Stability of the Benzene Ring</p> | <p>aromaticity in the case of benzenes</p> <ul style="list-style-type: none"> • Give the IUPAC names, draw the molecular structures and the reactions of the aromatic hydrocarbons and compounds • Describe the concept of aromaticity, heterocycles and polycyclic aromatic hydrocarbons | <p>Lecture with discussion through powerpoint presentation</p> <p>Educational video presentation Facilitate group activities</p> <p>Give assignments/problem sets/worksheet s</p> | <p>Sharing of ideas</p> <p>Peer discussion</p> <p>Group activity</p> <p>Seatwork and/or board work exercises</p> <p>Feedbacks</p> | |
| | | | | <p>VSUEE/VC:</p> <p>Downloadin g resource materials</p> <p>Answer learning tasks/quizzes/pretest/posttest</p> <p>Learning Guide: Independent study</p> | |
| 11-12 | <p>Module 5. Alkyl Halides, Alcohols and Phenols and Derivatives</p> <p>Lesson 5.1: Alkyl Halides (Halogen-containing compounds)</p> <p>Lesson 5.2: Alcohols and Phenols (Hydroxyl-containing compounds)</p> <p>Lesson 5.3: Ethers, Thiols and Epoxides</p> | <ul style="list-style-type: none"> • Give the IUPAC names, draw the molecular structures and the reactions of the alkyl halides, alcohols and phenols, ethers, epoxides and thiols • Summarize the unique properties of these organic compounds | <p>Face to face: Meetings #13 to #15</p> <p>Lecture with discussion through powerpoint presentation</p> <p>Educational video presentation Facilitate group activities</p> <p>Give assignments/problem sets/worksheet s</p> | <p>Class interaction</p> <p>Note-taking</p> <p>Sharing of ideas</p> <p>Peer discussion</p> <p>Group activity</p> <p>Seatwork and/or board work exercises</p> <p>Feedbacks</p> | <p>Quiz #15 to 20</p> <p>Long Exam #3 Face-to face and/or through VSU E-Learning Portal)</p> |

| | | | | | |
|-------|---|---|---|--|---|
| 15-16 | Module 7: Introduction to Biochemistry | <ul style="list-style-type: none"> • Relate organic compounds to biomolecules • Briefly discuss the structure and properties of carbohydrates, lipids, amino acids, proteins and nucleic acids. | <i>Face to face: Meetings #19 to #20</i> | Class interaction | Quiz #25 to 30 Long Exam #4 Face-to face and/or through VSU E-Learning Portal) |
| | Lesson 7.1: Carbohydrates | | Lecture with discussion through powerpoint presentation | Note-taking | |
| | Lesson 7.2: Lipids | | Educational video presentation | Sharing of ideas | |
| | Lesson 7.3: Amino Acids & Proteins | | Facilitate group activities | Peer discussion | |
| | Lesson 7.4: Nucleic Acids | | Give assignments/problem sets/worksheet | Group activity | |
| | | | | Seatwork and/or board work exercises | |
| | | | | Feedbacks | |
| | | | | VSUEE/VC: | |
| | | | | Downloading resource materials | |
| | | | | Answer learning tasks/quizzes/pretest/posttest | |
| | | | | Learning Guide: | |
| | | | | Independent study | |

17

FINAL EXAMINATION

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

12. Life-long Learning Opportunities

The students will be able to identify the different kinds of organic compounds and their classification into distinct families based on the type of their functional groups. With their knowledge on the correct naming and proper structure as well as the distinct properties of these organic molecules, they can visualize the varied and wide applications of these organic compounds may it be in biosynthesis or bioprocesses, in industrial applications, or in primary scientific fields. The student will be able to build the interconnectivity and the relationship within each of the different organic families and correlate them to different uses of these organic molecules, may it be in the academic field or everyday living.

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

| | |
|---------------------------------------|-----|
| General Education Courses: | 0% |
| Basic Education (Foundation): | 20% |
| Professional Education/Major Courses: | 80% |

14. References and Other Learning Resources**A. Textbook(s)/ E-Books**

Bettelheim F. A. Brown W. H. Campbell M. K. Farrell S. O. Torres O. J. & Madsen S. (2020). *Introduction to general organic and biochemistry* (Twelfth). Cengage.

Brown W. H. Iverson B. L. Anslyn E. V. Foote C. S. & Iverson S. (2014). *Student study guide and solutions manual: organic chemistry* (Seventh). Cengage Learning.

Campbell M. K. Farrell S. O. & McDougal O. M. (2018). *Biochemistry* (9th ed.). Cengage Learning.

Garrett R. H. & Grisham C. M. (2017). *Biochemistry* (Sixth). Cengage Learning.

Klein D. R. (2020). *Organic chemistry as a second language: first semester topics* (5e [Fifth edition]). John Wiley & Sons.

McMurry J. (2016). *Organic chemistry* (Ninth). Cengage Learning.

Murray R. K. (2012). *Harper's illustrated biochemistry* (29th ed.). McGraw-Hill Medical.

Solomons T. W. G. Fryhle C. B. Snyder S. A. Johnson R. G. & Antilla J. (2014). *Study guide and solutions manual to accompany organic chemistry eleventh edition*. Wiley.

Stoker H. S. (2013). *General organic and biological chemistry* (6th ed.). Brooks/Cole Cengage Learning.

Voet D. Voet J. G. & Pratt C. W. (2016). *Fundamentals of biochemistry: life at the molecular level* (Fifth). John Wiley & Sons.

B. Other Learning Resources

Journals

Videos

Websites

Webinars

Open Educational Resources

15. Course Assessment and Evaluation

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

50% Midterm Points + 50% Final term Points = (Overall Total Points) 100%

| Item No. | Assessment Tasks | Percentage Contribution (1) | No. of Times in the Semester (2) | Individual Task % Contribution (1/2) |
|----------|-------------------|--------------------------------|---|---|
| 1 | Quizzes | 20 | 30 | 0.67% |
| 3 | Term Exams (TE) | 40 | 2 | 20% |
| 4 | Long Exams (LE) | 30 | 4 | 7.5% |
| 5 | Class Report (CR) | 10 | 1 | 10% |
| | | 100% | | |
| COs | Assessment Tasks | Weight in Percent | Minimum Average for Satisfactory Rating | Target and Standards |

| | | | | |
|------------------|----------------------|-------------|-----|--|
| CO1 to CO5 | Quizzes | 20% | 60% | At least 60% of the students have at least 60% score |
| | Long Exams | 30% | | |
| | Term Exams (MT & FT) | 40% | | |
| | Class Report | 10% | | |
| | TOTAL | 100% | | |

| Grading System (Passing Rate: 60%) | | | |
|------------------------------------|-------|--------------|-------------|
| Range | Grade | Range | Grade |
| 97-100 | 1.00 | 75-79 | 2.25 |
| 93-96 | 1.25 | 70-74 | 2.50 |
| 89-92 | 1.50 | 65-69 | 2.75 |
| 85-88 | 1.75 | 60-64 | 3.00 |
| 80-84 | 2.00 | Below 60 | 5.00 |

16. Course Policies

A. Classroom Rules

a. Face-to-face (offline) Mode:

1. All students are required to always maintain the cleanliness of the classroom. Thus, all chairs, tables, and other items present in the classrooms must be returned to their proper places after every class.
2. Trashes are to be thrown in garbage bins near the classroom.
3. Students are to turn their cellular phones off or in silent mode for the class duration and are not allowed to use them except for emergency purposes.
4. Students are encouraged to take down notes using pen and paper. Upon the approval of the instructor, notes written on the board or presented may be photographed.
5. Working/reading/studying on subject matters not related to the topic of the class is not allowed.

b. Online Mode:

1. In blended learning, the official virtual classroom is VSU E-Learning Environment VSUEE) (<https://elearning.vsu.edu.ph>). Therefore, a class orientation concerning the use and navigation of the platform will be done.
2. Zoom or Google Meet will be used for web-conferencing and real-time class meetings. The username and password link will be posted in VSUEE/VC.
3. Students are to turn their cellular phones off or in silent mode for the class duration and are not allowed to use them except for emergency purposes.

B. Attendance and Absences

1. Students who commit six (6) consecutive absences without prior notice to the faculty are considered dropped.
2. Suppose a student is absent and wishes to be excused for the said absence. In that case, he/she must write an excuse letter or present a medical certificate from the university health services to the faculty. (Section 298 and 299, ViSCA Code).
3. For online classes, attending virtual meetings is highly encouraged. However, if you cannot attend due to internet connection limitations, keep-up with the lessons and do all the necessary exercises.

C. Quizzes, Problem Sets, and Examinations

1. Quizzes should be done and completed within the allotted time. These are either announced or unannounced. Meanwhile, online quizzes must be submitted and completed through the VSUEE portal within the allotted time.
2. In answering the Learning Tasks/Problem sets, he/she can do the following:
 - a. Handwritten or encoded in MS Word file format
 - b. General format:
 - i. A4 size bond paper
 - ii. 1" margin on all sides
 - iii. Arial, 12 font size, double space (for encoded outputs)

This requirement should be submitted on or before the due date. Late submission will no longer be accepted.
3. All examinations will be done on-site based on the schedule agreed upon by the class or the registrar for term examinations. Special/make-up exams will not be given without a valid excuse. A reasonable proof to justify your absence must be presented if an exam is missed without advance notice due to illness or emergency. The validity of the reason will be up to the discretion of the instructor/professor.
4. Make sure your answers are original. Once caught cheating with your classmates or retrieving answers from any solving site on the internet will be considered wrong. Consequently, a failing grade of 5.00/DR will be given. Furthermore, University rules on cheating will be strictly implemented.

D. Reference/Instructional Materials

The Learning Guide and this Chem 122 Organic Chemistry OBE-Syllabus posted in VSUEE are the official instructional materials in this subject. It will serve as your guide in blended learning for the whole semester.

E. Consultation/Clarifications

For any inquiries/clarifications, you may contact the course instructor/professor through e-mail or in person during the official class schedule: Monday to Friday from 8:00 am to 5:00 pm only.

F. Other Important Rules

1. All students must adhere to the VSU Health and Safety Protocol while attending on-site meetings.
2. All students are reminded to observe all university policies, regulations, and rules. In addition, everyone is advised to read, understand, and practice the provisions of the VSU Student Manual. Non-compliance to the said policies shall have their respective consequences set by the instructor.
3. By the end of the first half of the semester, students who have not complied with any course requirements (less than 50% compliance) and have been absent without official leave (AWOL) are considered unqualified to pass the course, hence, a final remark of dropped will be given at the end of the semester.

This class policy shall serve 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

Printed Learning Guide, Digital and Physical Reference Chemistry Books, Personal Laptop, Syllabus, Power Point Presentations, Video Lectures and Internet Resources.

18. Revision History

| Revision number | Date of Revision | Date of implementation | Highlights of Revision |
|-----------------|------------------|------------------------|--|
| 01 | 02/13/23 | February 15, 2023 | OBE-compliant CHED CMO No. 46 s 2017; ISO compliant format v.02 11-14-2022 |
| 00 | 03/10/21 | March 15, 2021 | OBE-compliant CHED CMO No. 46 s 2017; ISO compliant format |

19. Preparation

| | Name | Signature | Date Signed |
|-------------|---------------------|--|-------------------|
| Prepared by | Genesis C. Albarico |  | February 15, 2023 |

IV. INSTRUCTOR/PROFESSOR INFORMATION

| | |
|---------------------------------|--|
| 1. Name of Instructor/Professor | Genesis C. Albarico |
| 2. Office and Department | Department of Pure and Applied Chemistry |
| 3. Telephone/Mobile Numbers | (053) 565 0600 loc. 1032 |
| 4. Email Address | genesis.albarico@vsu.edu.ph |
| 5. Consultation Time | TBA |
| 1. Name of Instructor/Professor | Helen Grace F. Oracion |
| 2. Office and Department | Department of Pure and Applied Chemistry |
| 3. Telephone/Mobile Numbers | +639073118005 |
| 4. Email Address | helengrace.oracion@vsu.edu.ph |
| 5. Consultation Time | TBA |

20. Department Instructional Materials Review Committee:

| Committee | Name | Signature | Date Signed |
|--------------|------------------------|-----------|-------------|
| Member: | VIVIAN P. LINA | | |
| Member: | MARIA ROBELYN A. INSIK | | |
| Chairperson: | ELIZABETH S. QUEVEDO | | |

| | Name | Signature | Date Signed |
|---------------|------------------------------------|-----------|-------------|
| Verified by: | MA. THERESA P. LORETO Dean, CAS | | |
| Validated by: | NANCY D. ABUNDA 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.

18. Revision History

| Revision number | Date of Revision | Date of Implementation | Highlight of Revision |
|-----------------|------------------|------------------------|--|
| 01 | 02/13/23 | February 18, 2023 | OBE-compliant CHED CMO No. 48 s 2017, ISO compliant format v 02 11-14-2022 |
| 00 | 03/10/21 | March 15, 2021 | OBE-compliant CHED CMO No. 48 s 2017, ISO compliant format |

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

19. Preparation

| Prepared by | Name | Signature | Date Signed |
|-------------|--------------------|---|-------------------|
| | Genesis C. Alabaco |  | February 18, 2023 |

IV. INSTRUCTOR/PROFESSOR INFORMATION

| | |
|---------------------------------|--|
| 1. Name of Instructor/Professor | Genesis C. Alabaco |
| 2. Office and Department | Department of Pure and Applied Chemistry |
| 3. Telephone/Mobile Number | (053) 555 0800 loc. 1032 |
| 4. Email Address | genesis.alabaco@van.edu.ph |
| 5. Consultation Time | TBA |
| 1. Name of Instructor/Professor | Heleen Grace F. Oration |
| 2. Office and Department | Department of Pure and Applied Chemistry |
| 3. Telephone/Mobile Number | +63073718005 |
| 4. Email Address | heleengrace.oracion@van.edu.ph |
| 5. Consultation Time | TBA |

20. Department Instructional Materials Review Committee:

| Committee | Name | Signature | Date Signed |
|---------------|------------------------------------|-----------|-------------|
| Member: | VIVIAN P. LINA | | |
| Member: | MARIA ROBELYN A. INSIG | | |
| Chairperson: | ELIZABETH S. QUEVEDO | | |
| Verified by: | MA. THERESA P. LORETO Dean, CAS | | |
| Validated by: | NANCY D. ABUNDA Head, IMD | | |

Note:

1) The number of POs will depend on each degree program offered