VISAYAS STATE UNIVERSITY

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OUTCOMES-BASED EDUCATION (OBE) COURSE SYLLABUS

CSci 150
Fundamentals of Database Systems

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 Engineering and Technology
    a. Produce globally competent engineering graduates by providing students with excellent instruction through updated curriculum; functional and state-of-the art facilities; and qualified, well-trained, and dedicated faculty and staff;
    b. Generate new and advance knowledge and technology in engineering and allied sciences through the conduct of relevant research that can contribute towards sustainable development, climate change mitigation, food security, and advance knowledge in engineering sciences; and
    c. Engage in relevant need-based community/stakeholder-projects that can make the Philippines and even the world a better place to live in.
5. Quality Objectives of the Department of Computer Science and Technology
    a. Graduates of the program are IT professionals and researchers, and proficient in designing and developing computing solutions.
    b. Excellent and relevant education in computer science and technology;
    c. Generate appropriate knowledge in Information and Communications Technology relevant to agricultural production, processing, utilization, technology generation and dissemination;
    d. Sustainable linkages and cooperation with public and private institutions in instruction, research and developments and extension.
    e. Dynamic linkages with other agencies and institutions for the promotion of instruction, research, extension programs in computer science and allied fields.
    f. Sustained linkages among the various units within the university to support developmental programs.

II. PROGRAM INFORMATION

1. Name of the Program	Bachelor of Science in Computer Science
2. CHED CMO Reference	CMO No. 25, series of 2015
3. BOR Approval	BOR Res. No. 76, series of 2018

1. Program Educational Objectives and Relationship to Institution Mission

Program Educational Objectives	Mission		
	a	b	c
1. Understand principles of computing fundamentals, computing specialization, mathematics, science, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements.	✔	✔	
2. Identify, analyze, formulate, research literature, and solve simple computing problems and requirements reaching feasible conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.	✔	✔	
3. Apply mathematical foundations, algorithmic principles and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.	✔	✔	
4. Understand information security issues in relation to the design, development and use of information systems.	✔	✔	
5. Design and evaluate solutions for complex computing problems; and systems, components, or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations.	✔	✔	✔
6. Create, select, adapt and apply appropriate techniques, resources and modern computing tools to simple computing activities, with an	✔	✔	

understanding of the limitations to accomplish a common goal.			
7. Function effectively as an individual and as a member of diverse teams and in multidisciplinary settings.	✔		
8. Communicate effectively with the computing community and with society at large about simple computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions	✔	✔	
9. Recognize the legal, social, ethical and professional issues involved in the utilization of computer technology	✔		
10. Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional.	✔	✔	✔

**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	CSci 150
2. Course Title	Fundamentals of Database Systems
3. Prerequisite	CSci 14, CSci 102
4. Co-requisite	None
5. Credit	3 units
6. Semester Offered	1st Semester
7. Number of hours	2 hours lecture and 3 hours laboratory per week
8. Course Description	Developing and managing efficient and effective database applications requires understanding the fundamentals of database management systems, techniques for the design of databases, and principles of database administration; emphasizing on database concepts, developments, and the use and management.

9. Program Outcomes (POs) **in relation to the Program Educational Objectives** (PEOs)

	Program Outcomes (POs)	**Program Educational Objectives**									
		1	2	3	4	5	6	7	8	9	10
a	Articulate and discuss the latest developments in the practice of Computer Science (PQF Level 6 descriptor)	✔		✔	✔	✔	✔	✔	✔	✔	✔
b	Effectively communicate orally and in writing								✔		
c	Work effectively and independently in multidisciplinary and multicultural teams (PQF Level 6 descriptor)							✔			
d	Act in recognition of professional, social, and ethical responsibility									✔	
e	Preserve and promote “Filipino historical and cultural heritage” (based on RA 7722)									✔	
f	Analyze complex problems, and identify and define the computing requirements needed to design an appropriate solution	✔	✔	✔							
g	Apply computing and other knowledge domains to address real-world problems		✔		✔	✔					
h	Design and develop computing solutions using a system-level perspective					✔					
i	Utilize modern computing tools						✔				

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	f	g	h	i
CO1: Describe data and database concepts.	I								
CO2: Design database models through analysis of business rules.	I		I	I		E	E	E	E
CO3: Use relational languages in retrieving data in databases.	I			I		E	E	E	E
CO4: Apply SQL in automating business processes.	I	I	I	E		D	D	D	D
CO5: Normalization of databases in DBMS.	I	I	I	D		D	D	D	D

11. Course Content and Plan

Week	Topics	Learning Outcomes	Teaching and Learning Activities		Assessment Tasks
			Teaching Activities	**Learning Activities**	
1	**Faculty On-boarding**				
2	**Class Orientation** 1. OBE Syllabus 2. Requirements 3. Assessment System and Activities 4. Class Policies 5. Safety Guidelines and Emergency Response during fire and earthquake		• Setting of expectations • Agreements • Learning mode • Mode of communication • Familiarization of VSUEE/VC*		
CO1: Describe data and database concepts.					
3-4	**Module 1:** Database Concepts Lesson 1.1. Introduction to Database Systems	LO 1.1.1 Identify and explain the concepts about data and databases. LO 1.1.2 Identify and explain the users, characteristics, and applications of databases.	• Interactive discussion on concepts related to data and databases • Give problem sets and other assessments • Manage individual and group learning tasks	• Reading of e-learning materials • Classroom interaction • Note-taking	Learning Task Quiz
CO2. Design database models through analysis of business rules.					

5-6	**Module 2:** Database Models Lesson 2.1. Data Models Lesson 2.2. Hierarchical and Relational Databases Lesson 2.3. Entity-Relationship Diagrams (ERD)	LO 2.1.1 Identify and explain the concepts about data models. LO 2.1.2 Identify and apply the rules in translating business rules and concepts into database models. LO 2.2.1 Identify and explain the concepts about hierarchical and relational databases. LO 2.2.2 Identify and explain the rules of data integrity. LO 2.3.2 Apply and demonstrate the concepts about entity-relationship model and Unified Modeling Language.	● Interactive discussion on concepts related to database models ● Give problem sets and other assessments ● Manage individual and group learning tasks	● Reading of e-learning materials ● Classroom interaction ● Note-taking ● Hands-on assessments on data modeling	Learning Tasks Quiz Laboratory Exercise
CO3: Use relational languages in retrieving data in databases.					
7-8	**Module 3:** Structured Query Language Lesson 3.1. Relational Languages Lesson 3.2. Introduction to SQL Lesson 3.3. Basic Data Retrieval Lesson 3.4. Table	LO 3.1.1 Identify and explain the concepts and operations on Relational Algebra and Calculus. LO 3.2.1 Identify and explain the concepts about Structured Query Language. LO 3.3.1 Apply and demonstrate basic data retrieval and summarization. LO 3.4.1 Apply and demonstrate	● Interactive discussion on concepts related to Standard Query Language ● Give problem sets and other assessments ● Manage individual and group learning tasks	● Reading of e-learning materials ● Classroom interaction ● Note-taking ● Hands-on assessment on basic data retrieval from databases	Learning Tasks Quiz Laboratory Exercise

	Manipulation	table manipulation.			
9	**MIDTERM EXAM**				
CO4: Apply SQL in automating business processes.					
10-13	**Module 4:** SQL Commands Lesson 4.1. SQL Join Clauses Lesson 4.2. SQL Views Lesson 4.3. SQL Authorization Lesson 4.3. SQL Subqueries	LO 4.1.1 Apply and demonstrate INNER and OUTER JOIN on database tables. LO 4.2.1 Apply and demonstrate the programmatic management of database views. LO 4.3.1 Apply and demonstrate the programmatic granting and revoking of privileges. LO 4.4.1 Apply and demonstrate the use of sub-queries.	● Interactive discussion on concepts related to SQL commands ● Give problem sets and other assessments ● Manage individual and group learning tasks	● Reading of e-learning materials ● Classroom interaction ● Note-taking ● Hands-on assessments on database queries	Learning Task Quiz Laboratory Exercise
CO5: Normalization of databases in DBMS.					
14-17	**MODULE 5:** Database Management Systems (DBMS) Lesson 5.1. Database Normalization Lesson 5.2. Database Management Systems	LO 5.1.1 Identify and explain the concepts about database normalization. LO 5.1.2 Apply and demonstrate database normalization. LO 5.2.1 Identify and describe the top DBMS used in the industry.	● Interactive discussion on concepts related to database normalization ● Interactive discussion on the top DBMS used in the industry ● Give problem sets and other assessments ● Manage individual and group learning tasks	● Reading of e-learning materials ● Classroom interaction ● Note-taking ● Hands-on assessments on database normalization	Learning Tasks Quiz Laboratory Exercise
18	**FINAL EXAM**				
** VSUEE/VC – VSU E-Learning Environment/ Virtual Classroom*					
12. Life-long Learning Opportunities					

- The students will gain an introductory experience in designing and management of databases relevant to the practices in the industry.
- The students will develop soft skills including, but not limited to, communication and empathy that enables optimal balance of the ethical principles and relevant business requirements in their future endeavors.
- The students will acquire additional and in-demand knowledge and skills that will help them become competitive and relevant in the advancing job market or in their pursuit of more advanced studies.

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

General Education: 0%
Basic ICT: 0%
Professional Computer Science*:* 100%

14. References and Other Learning Resources

A. Textbooks

1. Elmasri, R., et al. (2016). Fundamentals of Database Systems, 7th ed. Pearson Higher Education, 221 River Street, Hoboken, NJ 07030.

B. Other References

1. Aparajitha. R.S.V, & Kavitha, M.K & Monisha, T.R.P & Pavithra, T.S.B & P, Vinoth. (2010). Database Management Systems. International Journal of Computer Applications. 1. 10.5120/179-310.
2. Date, C.J. (2004), Introduction to Database Systems (8th Edition) Addison Wesley.
3. Dietrich, S. W. (2021). Understanding databases: Concepts and practice. Wiley.

15. Course Assessment and Evaluation

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

Item No,	Assessment Tasks	Percentage Contribution (1)	No. of Times in the Semester (2)	Individual Task % Contribution (1/2)
1	Learning Tasks (LT)	5	5	1
2	Quizzes (Q)	15	5	3
3	Laboratory Exercises (LE)	30	4	7.5
5	Term Exams (TE)	50	2	25
	TOTAL	**100%**		

COs	Assessment Tasks	Weight in Percent	Minimum Average for Satisfactory Rating	Target and Standards
CO 1	Module 1 Learning Task	1	60 %	At least 70% of the students have at least 60% score
CO 1	Module 1 Quiz	3		
CO 2	Module 2 Learning Task	1		
CO 2	Module 2 Quiz	3		
CO 2	Module 2 Laboratory Exercise	7.5		
CO 3	Module 3 Learning Task	1		
CO 3	Module 3 Quiz	3		
CO 3	Module 3 Laboratory Exercise	7.5		
CO 1	Midterm Exam	25		

CO 2 CO 3				
CO 4	Module 4 Learning Task	1		
CO 4	Module 4 Quiz	3		
CO 4	Module 4 Laboratory Exercise	7.5		
CO 5	Module 5 Learning Task	1		
CO 5	Module 5 Quiz	3		
CO 5	Module 5 Laboratory Exercise	7.5		
CO 4 CO 5	Final Exam	25		
TOTAL		**100%**		

Grading System (% Passing: 60%)

Range	Grade	Range	Grade
95.56-100.00	1.00	52.50-59.99	3.25
91.11-95.55	1.25	45.00-52.49	3.50
86.67-91.10	1.50	37.50-44.99	3.75
82.22-86.66	1.75	30.00-37.49	4.00
77.78-82.21	2.00	22.50-29.99	4.25
73.33-77.77	2.25	15.00-22.49	4.50
68.89-73.32	2.50	07.50-14.99	4.75
64.44-68.88	2.75	00.00-07.49	5.00
60.00-64.43	3.00		

16. Course Policies

- **VSU E-Learning Portal** (https://elearning.vsu.edu.ph/) is the official learning portal for this course.
- **Classroom Rules**
  - The students are required to have their smartphones turned off or set to silent mode during the class. Usage of smartphones is restricted to emergency situations only.
  - The students are encouraged to take down notes using pen and paper. Learning materials being presented may be photographed when necessary.
  - Engaging in work or any activities unrelated to the subject of the class is prohibited.
  - All are required to maintain the cleanliness of the classrooms at all times. The chairs, tables, and other items present in the classrooms must be returned to their proper places after every class.
  - Trash should be thrown in garbage bins.
- **Dress Code**
  - Male students are expected to maintain well-groomed, clean-cut hairstyles. While longer hair is discouraged, if a male student chooses to have longer hair, it must be kept tidy and well-maintained.
  - Female students are required to have their hair kept in clean and neat order.
  - All students adhere to appropriate attire while within the classroom, attires such as sleeveless shirts or blouses, shirts with inappropriate imagery, short shorts, miniskirts, see-through blouses, distressed pants, or any clothing that might reveal undergarments in part or whole, are not considered suitable.
  - Students are encouraged to wear long pants whenever feasible. Wearing the PE uniform is discouraged.
  - Students must wear shoes at all times, may be leather or rubber soled.
  - School Identification Cards must be worn at all times.
- Attendance and Absences
  - A student is considered present if:
    - He/she is physically present during roll call;
    - He/she is wearing proper attire; and
    - He/she is in his/her assigned seat, if applicable.

- A student is considered late (tardiness) if he/she arrives 5 minutes after the class has started or the instructor has arrived up to 10 minutes for a 1-hour class. A student is considered absent if:
  - He/she is not physically around 10 minutes after the start of the class
  - He/she accumulates three consecutive tardiness. The absence is to be applied on the third tardiness
- A student will be dropped from the subject if he/she has accumulated 6 consecutive absences or if he/she has acquired more than 50% absences from the total number of sessions and shall be given a grade of "5.00" by the end of the semester. (Section 301, VSU Code)
- If a student accumulates three consecutive absences, a report shall be submitted by the instructor to the student affairs office, where the director will call upon the student and notify the parents or guardians immediately. (Section 300, VSU Code)
- If a student is absent and wishes to be excused for the said absence, he/she must obtain an excuse form from the college secretary, or Medical Certificate from the college health services to be presented to the teacher. (Section 298 and 299, VSU Code)

- **Course Evaluation**
  - Attendance is not graded, but will be checked before the start of the class.
  - A written quiz is done after every module, which will last for 20–30 minutes.
  - Failure of timely submissions of laboratory exercises results in a zero score.
  - All term exams will be written and must be submitted within two hours.
  - No electronics, such as smartphones, are allowed during any assessments.
  - Cheating is strictly prohibited. Students caught cheating, both the copier and the source, shall automatically get zero credit for the said quiz or exam. Grounds for cheating are as of follows, but not limited to:
    - Looking at seatmate's paper;
    - Talking or asking any question to a seatmate
    - Exchanging of papers during the exam;
    - Looking at written, printed, or digital notes or resources without the approval of the instructor; and
    - Announcing any answer to the whole class.
  - If a student missed a test or a long examination, no make-up exam shall be given except for a valid reason or prior arrangement with the instructor at least one week before the conduct of the examination. If the student is not able to inform the instructor within one week after the exam, the student shall forfeit any score for that exam.

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. Non-compliance to the said policies shall have their respective consequences set by the instructor.

17. Course Materials and Facilities Available

Faculty:	Student:
● Whiteboard, marker, and eraser ● Desktop PC and Laptop ● Projector	● VSUEE (E-learning portal) ● Electronic reading materials ● Desktop PC

18. Revision History

Revision number	Date of Revision	Date of implementation	Highlights of Revision	Revised by
00	Jul 25, 2018	Oct 5, 2018	● FM-VPI-22 OBE Based Syllabus_v2 05-25-2020 Format	Jonah Flor O. Maaghop

01	Aug 23, 2021	Aug 16, 2021	• TP-IMD-08-Outcomes-Based-Education-Course-Syllabus v3-10-02-2020 Format	Jonah Flor O. Maaghop
02	Sep 5, 2021	Sep 12, 2022	• Revised based on the new syllabus format (v1 11-19-2021)	Jona Flor O. Maaghop
03	Aug 14, 2023	Aug. 16, 2023	• Course Outcome revisions • Realignment of module lessons • Assessment tasks revisions • Course assessment and evaluation revisions • Revised to the new syllabus format (v02 11-14-2022)	Rodney M. Maniego Jr.

19. Preparation			
	Name	Signature	Date Signed
Prepared by	Rodney M. Maniego Jr.		

IV. INSTRUCTOR/PROFESSOR INFORMATION

1. Name of Instructor/Professor	Rodney M. Maniego Jr.
2. Office and Department	Department of Computer Science and Technology
3. Telephone/Mobile Numbers	+63 921 509 8929
4. Email Address	rodney.maniegojr@vsu.edu.ph
5. Consultation Time	Monday and Friday 1 – 3 PM

20. Department Instructional Materials Review Committee:

Committee	Name	Signature	Date Signed
Member:	Magdalene C. Unajan		
Member:	Maricel V. Calhoun		
Chairperson:	Jude B. Rola		

	Name	Signature	Date Signed
Verified by:	**JANNET C. BENCURE** College Dean		
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.