PANGASINAN STATE UNIVERSITY
Urdaneta City Campus

BACHELOR OF SCIENCE INFORMATION TECHNOLOGY

COURSE SYLLABUS

1ST Semester, A.Y. 2025-2026

COURSE INFORMATION	
COURSE CODE	IM 102
COURSE TITLE	Information Management 2 (Advance Database Management System)
COURSE TYPE	☐ Lecture ☐ Laboratory ☐ Lecture & Laboratory
COURSE CREDIT	2/1
CLASS HOURS	90 hours
COURSE PREREQUISITE/ CO-REQUISITE	CC 105 - Fundamentals of Database
COURSE SCHEDULE	3A_DA M 1-3:00PM (AB1-207)/F 2-5:00PM (AB1-202); 3B_DA Th 10-1:00PM (AB1-207)/M 11-1:00PM (AB1-202)
UNIVERSITY VISION, MISSION, QUALITY POLICY, INSTITUTIONAL OUTCOMES AND PROGRAM OUTCOMES	
UNIVERSITY VISION	To become a leading industry-driven State University in the ASEAN region by 2030
UNIVERSITY MISSION	The Pangasinan State University, shall provide a human-centric, resilient , and sustainable academic environment to produce dynamic, responsive, and future-ready individuals capable of meeting the requirements of the local and global communities and industries.
EOMS POLICY	The Pangasinan State University shall be recognized as an ASEAN premier state university that provides quality education and satisfactory service delivery through instruction, research, extension and production. We commit our expertise and resources to produce professionals who meet the expectations of the industry and other interested parties in the national and international community. We shall continuously improve our operations in response to changing environment and in support of the institution's strategic direction.
INSTITUTIONAL OUTCOMES	The Pangasinan State University Institutional Learning Outcomes (PSU ILO) are the qualities that PSUnians must possess. These outcomes are anchored on the following core values: **A**ccountability and Transparency, **C**redibility and Integrity, **C**ompetence and Commitment to Achieve, **E**xcellence in Service Delivery, **S**ocial and Environmental Responsiveness, and **S**pirituality – (ACCESS). Anchored on these core values, the PSU graduates are able to: 1. Demonstrate through institutional mechanisms, systems, policies, and processes which are reflective of transparency, equity, participatory decision making, and accountability; 2. Engage in relevant, comprehensive and sustainable development initiatives through multiple perspectives in decisions and actions

	that build personal and professional credibility and integrity. 3. Set challenging goals and tasks with determination and sense of urgency which provide continuous improvement and producing quality outputs leading to inclusive growth; 4. Exhibit life-long learning and global competency proficiency in communication skills, inter/interpersonal skills, entrepreneurial skills, innovative mindset, research and production initiatives and capability in meeting the industry requirements of local, ASEAN and international human capital market through relevant and comprehensive programs; 5. Display, socially and environmentally responsive organizational culture, which ensures higher productivity among the university constituents and elevate the welfare of the multi-sectoral communities and; 6. Practice spiritual values and morally upright behavior which promote and inspire greater harmony to project a credible public image.

GRADUATE ATTRIBUTES	PROGRAM OUTCOMES	PERFORMANCE INDICATORS
1. People's Champion	IT 1. Apply knowledge of computing, science, and mathematics appropriate to the discipline;	1. Identify or determine the techniques, tools, methodologies to be used given a particular scenario that involves computing, science, and mathematics 2. Compare different tools, techniques, methodologies as to their pros and cons that will help in decision making
	IT 2. Understand best practices and standards and their applications	1. Identify the characteristics that conform to standards and their best practices. 2. Compare and contrast tools and methodologies in terms of best practices, standard and their application
2. Continuous Innovative Learner	IT3. Analyze complex problems, and identify and define the computing requirements appropriate to its solution	1. Analyze complex problems 2. Identify and define the complexity requirements appropriate to its solution.
	IT4. Identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based Systems	1. Analyze the user's needs and take them into account in the selection, creation, evaluation and administration of computer-based systems. 2. Identify the user's requirements and take them into account in the selection, creation, evaluation and administration of computer-based systems.
	IT 5. Design, implement, and evaluate computer-based systems, processes, components, or programs to meet desired needs and requirements under various constraints	1. Translate specification into a design 2. Design software to meet desired needs under various constraint 3. Design a database to meet desired needs for storing data under various constraints 4. Design networks to meet desired needs for sharing information under various constraints 5. Design a hardware infrastructure to meet desired processing needs under various constraints

		6. Implement a network to meet desired needs for sharing information under various constraint 7. Implement database to meet desired needs for storing data under various constraint 8. Implement a software to meet desired needs for task under various constraints 9. Evaluate software on its functionality and level of satisfying user requirements for task under various constraint 10. Evaluate an existing network for its level of satisfying user requirements for under various constraint
	IT 6. Integrate IT-based solutions into the user environment effectively	1. Implement a network to meet desired needs for sharing information under various constraint 2. Implement database to meet desired needs for storing data under various constraint 3. Implement a software to meet desired needs for task under various constraints 4. Evaluate software on its functionality and level of satisfying user requirements for task under various constraint 5. Evaluate an existing network for its level of satisfying user requirements for under various constraint
	IT 7. Apply knowledge through the use of current techniques, skills, tools and practices necessary for the IT profession	1. Evaluate techniques, methodologies, standards/frameworks and tools for its appropriateness to the IT Infrastructure to be designed and managed considering its advantages and limitations. 2. Select, use and adapt appropriate techniques, methodologies, standards/frameworks and tools the IT Infrastructure to be designed and managed. 3. Create new IT Infrastructure as necessary to improve the efficiency and effectiveness of performing tasks and achieve goals
4. Community Developer	IT8. Function effectively as a member or leader of a development team recognizing the different roles within a team to accomplish a common goal	Team member: 1. Independently source necessary knowledge, assistance, skills and resources to complete tasks. 2. Performs tasks effectively to accomplish a common goal Leader of a team: 3. Set proper goals and timeline of activities to complete team objectives 4. Allocate task according to team member capabilities 5. Monitor task completion and performance of team member

		6. Provide expertise, assistance and support to team members to achieve of team goals 7. Resolve and reduce conflicts within the team
	IT 9. Assist in the creation of an effective IT project plan	1. Perform task in the creation of an effective IT project plan Create an effective IT project plan
	IT 10. Communicate effectively with the computing community and with society at large about complex computing activities through logical writing, presentations, and clear instructions	1. Interview clients to gather background information, situation, existing concerns and issues necessary to frame and achieve common understanding of problems to be addressed by computing solutions 2. Write effective reports and documentations about the results of performing specific computing and professional tasks 3. Write documentations (including design documentations) completely and comprehensively, with appropriate tone, correct grammar and construction, adapting to documentation standards, to communicate ideas, choices, assumptions, and consequences of decisions 4. Develop effective presentation material that will enhance understanding of ideas being communicated 5. Deliver presentations effectively and efficiently to various audience (computing community, society at large, and users) using English and Filipino as needed, with appropriate tone, correct grammar and construction 6. Choose appropriate language suitable to the audience and respectful to the audience background and culture 7. Provide clear instructions to team members
	IT11. Analyze the local and global impact of computing and information technology on individuals, organizations, and society	1. Analyze the local impact of computing and information technology on individuals, organizations, and society 2. Analyze the global impact of computing and information technology on individuals, organizations, and society 3. Make design and implementation decision considering the impact of IT on individuals, organizations, and society 4. Provide /conceptualize solutions to domain where IT is needed Evaluate the impact of this solutions to individuals, organizations, and society

	IT12. Understand professional, ethical, legal, security and social issues and responsibilities in the utilization of information technology	1. Make decisions considering professional, ethical, legal, security and social issues and responsibilities in the utilization of information technology 2. Assess professional, ethical, legal, security and social issues and responsibilities in the utilization of information technology
	IT13. Recognize the need for and engage in planning self-learning and improving performance as a foundation for continuing professional development	1. Reflect on own abilities and skills to determine necessary development needs to reach level of expectations and aspirations as a computing professional 2. Prepare a personal development plan for continuing professional development 3. Engage independently in developmental activities (like participating in professional organizations, attendance to seminars and training) as a result of recognizing the need to further and continuously develop one's competencies as a computing professional 4. Evaluate achievements and deficiencies against own's personal development plan

COURSE DESCRIPTION

This course aims to equip you with the essential skills needed to build dynamic web applications using Python and Flask, while effectively managing data with MySQL. You will learn how to create robust back-end systems, connect to databases, and implement CRUD (Create, Read, Update, Delete) and transaction operations.

COURSE OUTCOMES

SDCOURSE OUTCOMES (C0) At the end of the course, the student should be able to:		ILO	PO	SDG
CO1	Exhibit a solid grasp of database management concepts, including data modeling, normalization, relational database principles.	ILO1	IT1 - E IT2 - E IT3 - E	SDG 9 - Industry, Innovation and Infrastructure
CO2	Understand the basics of Python programming and write console-based programs.	ILO1 , ILO3	IT1 - I IT2 - I IT3 - E IT7 - E	SDG 9 - Industry, Innovation and Infrastructure

CO3	Develop web-based applications using Flask Python framework	ILO1 , ILO3	IT1 - I IT2 - E IT3 - E IT7 - E	SDG 9 - Industry, Innovation and Infrastructure
CO4	Develop Flask applications that seamlessly interact with databases, including establishing connections, executing SQL queries, and managing database transactions.	ILO1 , ILO3	IT2 - E IT3 - E IT7 - E	SDG 9 - Industry, Innovation and Infrastructure
CO5	Implement error handling and exception management strategies to ensure robustness and stability within Python applications	ILO1 , ILO3	IT2 - D IT3 - D IT7 - D IT10 -D	SDG 9 - Industry, Innovation and Infrastructure

COURSE LEARNING PLAN

Course Outcome/s	Learning Outcomes	Topics	Hours	Learning Activities	Learning Materials and Platform	Assessment
			Lec and Lab			
	1. Discuss the VMGO of the University. 2. Discuss course requirements and the grading system.	CLASS ORIENTATION ▪ PSU Vision Mission and Core Values ▪ BSBIO Program and Course Outcome ▪ Classroom Policies ▪ Grading System ▪ Course Requirements	1/0	• Discussion • Recitation of the PSU Vision, Mission, ILOs, POs and COs	• PSU Student Handbook	

CO1	**LECTURE (LO)** a. Explain what data management systems are; b. Describe the components of Data Model **LABORATORY(LO)** a. Construct an entity relationship diagram; and b.Perform database normalization; C. Write SQL queries	**Chapter 1: Review on Database Management Systems (DBMS)** A. Database Systems B. Entity Relationship Diagram C. Database Normalization D. SQL	2/3	**LECTURE** ● Discussion **LABORATORY** Construct an ERD and perform normalization. Write SQL queries	**LECTURE** Powerpoint Slides **LABORATORY**	**LECTURE** Quiz **LABORATORY** ***Summative*** ● Laboratory Exercises
CO2	**LECTURE (LO)** a. Explain an overview of Python language; b. Discuss the tools for Python development; c. Discuss Phyton syntax,variables, data types, operators and basic input/output; d. Discuss conditional statements and looping statements e. DiscussPython object collections. **LABORATORY (LO)** A. Write Python programs using the console.	**Chapter 2: Introduction to Python Programming** ● Overview of Python ● Setting up development environment ● Python Syntax ● Variables, data types, and basic input/output ● Operators ● Conditional statements and looping ● Lists ● Tuples ● Sets ● Dictionaries ● Arrays	4/6	**LECTURE** ● Discussion **LABORATORY** Create simple Python programs that perform basic input/output operations, arithmetic operations, conditional and looping statements and objects	**LECTURE** Powerpoint Slides **LABORATORY** VS Code	**LECTURE** Quiz **LABORATORY** ***Summative*** ● Laboratory Exercises

CO2, CO5	**LECTURE (LO)** a.Explain how to create and call functions; b. Distinguish parameters and arguments; c. Discuss how to create user defined function that doesn't and return values; d. Discuss some built in string functions e. Discuss error handling techniques **LABORATORY (LO)** a.Implement functions/methods, handle exceptions in Python programs.	**Chapter 3: Functions and Exception Handling** ● Defining and Calling a function ● Parameter and Argument ● Creating user defined functions ● Built-in Functions ● Exception handling basics	4/6	**LECTURE** ● Discussion ● Hands-Demo **LABORATORY** Write user-defined functions and handle exceptions in Python	**LECTURE** Powerpoint Slides **LABORATORY** VS Code	**LECTURE** Quiz **LABORATORY** ***Summative*** ● Laboratory Exercises
CO3, CO5	**LECTURE (LO)** a. Explain the flask framework and basic structure of flask; b.Discuss basics of routes, templates, flask form and alerts. **LABORATORY (LO)** a. Build basic web apps using Flask	**Chapter 4: Flask Basics** ● Flask Basics ● Basic Structure of a Flask application ● Basic Routes ● Flask Dynamic Routing ● Template Basics ● Template Control Flow ● Template Forms ● Flask Form Basics ● Form Fields ● Flash Alerts	4/6	**LECTURE** ● Discussion ● Hands-Demo **LABORATORY** Write a simple web app with Flask framework.	**LECTURE** Powerpoint Slides **LABORATORY** VS Code	**LECTURE** Quiz **LABORATORY** ***Summative*** ● Laboratory Exercises
MIDTERM EXAMINATION 3 hours (lecture and laboratory)						

CO4, CO5	**LECTURE (LO)** a. Explain the Flask database extensions b. Discuss how to connect to MySQL database Performing CRUD operation **LABORATORY (LO)** a. Create database driven applications using CRUD operation.	• **SQL Database with Flask** • Using Flask DBASE Extensions • Connecting to a MySQL database • Performing CRUD operations	9/9	**LECTURE** • Discussion • Hands-Demo **LABORATORY** Create CRUD operation using Flask and MySQL	**LECTURE** Powerpoint Slides **LABORATORY** VS Code MySQL XAMPP	**LECTURE** Quiz **LABORATORY** ***Summative*** • Laboratory Exercises

CO5	**LECTURE (LO)** a. Discuss how to perform SQL joins using transaction operations with Flask and MySQL b. Discuss deploying flask web applications with dbase integration **LABORATORY (LO)** a. Design and develop web application with CRUD and transaction operations.	**Advanced Database Management with Flask and MySQL** ● Perform transaction operations with Flask and MySQL ● Deploying Flask web applications with DBASE integration ● Final project: Develop a web application with Flask and MySQL with CRUD and transaction operations	9/9	**LECTURE** ● Discussion ● Hands-Demo **LABORATORY** Design and develop web application with CRUD and transaction operations.	**LECTURE** Powerpoint Slides **LABORATORY** VS Code MySQL XAMPP	**LECTURE** Quiz **LABORATORY** ***Summative*** ● Laboratory Exercises ● End Term Requirement
FINAL EXAMINATION 3 hours (lecture and laboratory)						

Total no. of Hours: 90

COURSE REFERENCES AND SUPPLEMENTAL READINGS

A. Books and E-books

1. Pomperada, Jake R and Rollyn M. Moises (2019). Fundamaentls of Python.
Published by Mindshapers Co. Inc., Manila
ISBN 978-621-406-231-7
2. Dawson, Michael (2010). Python Programming for Absolute Beginner. Published by Cengage Pub., Australia
ISBN 978-1-4354-5500-9

B. Journals and Magazine

1.

B. Electronic Sources

https://flask.palletsprojects.com/en/stable/tutorial/

https://www.w3schools.com/python/

https://www.tutorialspoint.com/flask/index.htm

COURSE REQUIREMENTS

1. Major Examinations - These include the Middle Term and Final Term examinations. Test questions are problem-solving and maybe modified true or false, multiple choices, or fill-in-the-blank.
2. Quizzes/Laboratory Quiz- A test administered every after the end of a chapter or as the need arises to assess the level of knowledge of the students through written set-up.
3. Laboratory Exercise/Lab Activity - A hands-on, practical activity conducted in computer laboratory designed to reinforce theoretical knowledge and develop skills in

data warehousing.
4. Homework – Most of these are reading assignments which are assessments for home-based learning. These help in developing understanding of the skills and process as well as the concepts in Data Warehousing. Homeworks are assigned for harmonious and productive discussions and participation.
5. Classroom Attendance - Class attendance is compulsory for discussion, participation, and examinations.

GRADING & ASSESSMENT

TERM	REQUIREMENT	PERCENTAGE
MIDDLE	**LECTURE**	**40%**
	• *Middle Term Examination*	*40%*
	• *Quiz/Lab Quiz*	*20%*
	• *Homework*	*5%*
	• *Attendance*	*5%*
	• *Lab Activity*	*30%*
	LABORATORY	**60%**
FINAL	**LECTURE**	**40%**
	• *Final Exam*	*40%*
	• *Quiz/Lab Quiz*	*20%*
	• *Homework*	*5%*
	• *Attendance*	*5%*
	• *Lab Activity*	*30%*
	LABORATORY	**60%**
SEMESTRAL GRADE	$\frac{Middle\ Term\ Grade + Final\ Term\ Grade}{2}$	

COURSE POLICIES AND EXPECTATIONS

Class Attendance (Article 2, Section 14 of PSU Student Handbook)

1. If you have a record of ten (10) unapproved absences from the class, and/or have been absent for more than 20 percent of the required number of hours without any valid reason, you will be automatically dropped from the subject.
2. Approved absences are limited only to illness as certified by a physician, death of a family member, official and authorized representation of Campus/University in official function/ activities and other reasons as may be deemed justified by your instructor.

3. For excused absences, it is your responsibility to seek out missed assignments. You should check the official PSU LMS, official class FB page/group messenger and your classmates for notes, handouts, etc.

Classroom Expectations

1. Be Prepared

- Your grade is your sole responsibility. Earn the good grade you deserve by coming to class prepared. Complete reading assignments and other homework before class so that you can understand the lecture and participate in discussion. Have your homework ready to submit and always bring your book, notebook, paper and writing materials. You are not allowed to borrow anything from your classmates to ensure avoidance of virus transmission. This is for your health's safety. Also, each of you is assigned to be the prayer leader for the day. If you are assigned to lead, please be ready with your prayer. (Accountability, Credibility and Integrity, Spirituality)

2. Be Participative

- Be ready and willing to participate in classroom discussions. Contribute proactively to class discussions. Do not hesitate to ask questions during class discussions. Remember, you came to school to learn. (Competence and Commitment to Achieve Excellence)

3. Be Punctual

- Seat plan will be used for the checking of attendance. If you are not on your designated area once the class has started, you will be considered late/absent. Submit your homework/problem sets/ class activities on time too. (Accountability, Competence and Commitment to Achieve Excellence)

4. Be Respectful.

- Any action that bothers another student or the teacher, or any disruptive behavior in class, is considered disrespectful. Demonstrate proper respect for teachers, your classmates, other university personnel and all university property. Listen to others and evaluate ideas on their own merit. (Social Responsiveness)

5. Be Tidy.

- Cleanliness is next to Godliness. Wear your complete proper uniform. Likewise, your activities must be clean and properly stapled. Loose leaves are prone to be misplaced. Your clean work reflects that homework/problem sets are well-prepared. Before leaving the classroom, please make sure that your place is clean. Pick up litters and throw them on the designated trash bins. (Accountability, Credibility and Integrity, Competence and Commitment to Achieve Excellence, Social and Environmental Responsiveness)

Technology Agreement

1. The use of electronic devices such as laptops, tablets and cell phones inside the classroom is ONLY ALLOWED WITH MY PERMISSION. Charging of your electronic devices is prohibited inside the class. Please make sure they are fully charged before bringing them to class. Please bring your **OWN EXTENSION WIRE.**

2. Cell phones and other devices need to be set in silent mode. For emergency purposes, please request to take the call/answer the text message outside the classroom.

Academic Honesty and Class Conduct

1. Cheating in Examination and Quizzes (Article 14, Section 1-n of PSU Handbook):
   - 1st Offense : Automatic grade of 5.00 in the particular examination where cheating occurred; referral to guidance counselor.
   - 2nd offense : Automatic grade of 5.0 if done on the same subject and/or other subjects and suspension for one semester.
   - 3rd offense : Automatic grade of 5.0 in the subject/s and suspension of one semester to dismissal from the institution.

Guidelines on Late Submissions of Requirements and Late Examinations

1. The dates of the submission for all home-based requirements are indicated in the Instructional Delivery Plan. Five points will be deducted for every day of failure to submit said requirements (except for approved absences).

2. You are only allowed to take missed examinations due to approved absence. Please fill up the Request for Special Examination before taking the missed exam.

Lecture Class Policies (Face to Face)

1. Please wear your face masks at all times. Bring your own alcohol, soap, ballpen, paper and other materials. Strictly no borrowing of things.
2. Please stay home if you are unwell.
3. Attendance in the class signifies readiness to participate in class discussions and activities.
4. A student is responsible for his/her absence.
5. A student will be automatically marked DRP (Dropped) after eight (8) consecutive absences.
6. Requirements must be submitted within the designated date of submission.
7. USE OF CELLPHONES OR ELECTRONIC DEVICES IS NOT ALLOWED AT ANY TIME. All school rules will be followed as stated in the student handbook.
8. Late work: Deductions will be given; however, leniency will be observed.
9. Others (agreed upon by the class)

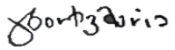
Lecture Class Policies (Online Class)

1. Wear a decent casual dress during web conference.
2. No foul words during online discussions.
3. Observe punctuality and courtesy (group of 5 individuals per batch, usually group leaders)
4. Private conversations during web conferencing are not allowed.
5. Respect shall be observed for the teacher and students
6. Cheating and plagiarism not tolerated
7. On-time submission of requirements as agreed during class orientatio

REVISION HISTORY

REVISION NUMBER	DATE OF REVISION	DATE OF IMPLEMENTATION	HIGHLIGHTS OF REVISION

2025-01	**August 7, 2025**	**August 18, 2025**	1. Outline topics to be included 2. Revised the computation of grades (based on the new BOR approved assessment) 3. Followed the new format of syllabus 4. Alignment of the COs to the ILOs and new POs 5. Addition of new resources 6. Inclusion of SDG Mapping 7. Inclusion of learning activities for learners and special needs

PREPARATION AND REVIEW	NAME	SIGNATURE	DATE SIGNED
Prepared by	**MICHAEL E. ACOSTA** **Faculty**		**August 7, 2025**
Reviewed by the Committee for BS IT Program Note: For common program (department chairs of the campuses offering the program; or at least 2 department chairpersons and one expert senior faculty member)	**DR. CHRISTINE LOURRINE S. TABLATIN** Dean, College of Computing		**August 8, 2025**
	DR. CRISTETA G. TOLENTINO Dean, College of Computing Sciences, Lingayen Campus		**August 8, 2025**
	DR. CARLO GENSTER P. CAMPOSAGRADO Dean, College of Management and Technology, Alaminos City Campus		**August 8, 2025**
	MR. JB O. DORIA Dean, College of Technology and Business, Asingan Campus		**August 8, 2025**

FACULTY CONTACT INFORMATION

NAME	Michael E. Acosta
DESIGNATION	Associate Professor IV
E-MAIL ADDRESS	michaelacosta_ph@yahoo.com
CONSULTATION SCHEDULE	Tuesday, 11-5:00 PM
OFFICE LOCATION	2nd Floor New Academic Building, COC Faculty Room

Adopted and enhanced by:	Checked by:	Recommended by:	Approved:
MICHAEL E. ACOSTA	**CAREN A. PACOL, DIT**	**CHRISTINE LOURRINE S. TABLATIN, PhD**	**ROY C. FERRER, PhD**
Faculty	Department Chairperson	College Dean	Campus Executive Director

Certified for Campus/University Utilization for A.Y.2024-2025

WEENALEI T. FAJARDO, PhD
Director for Curriculum and Instruction

WEENALEI T. FAJARDO, PhD
OIC, Office of the Vice President for Academic and Student Affairs