Republic of the Philippines

**SOUTHERN LEYTE STATE UNIVERSITY – TOMAS OPPUS**

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**COURSE SYLLABUS**

**IT 301 – ADVANCED DATABASE SYSTEM**

**1st Semester, AY 2021-2022**

**National Goal** : The attainment of globally competitive Filipinos through quality and excellent education, relevant and responsive to changing environment, accessible and equitable to deserving students, and efficient and effective in optimizing returns and benefits.

**Vision :** A high quality corporate University of Science, Technology and Innovation.

**Mission :** SLSU will develop science, technology and innovative leaders and professionals, produce high impact technologies from research and innovations, contribute to sustainable development through responsive community engagement programs; and generate revenues to be self-sufficient and financially-viable.

**University Goals:** Goal 1: Upgrade the quality of instruction with emphasis on Science, Technology and Innovations.

Goal 2: Provide responsive and proactive student programs and quality services for optimum student welfare and development.

Goal 3: Intensify human capability development for research and innovation.

Goal 4: Imbibe research attitude in the university.

Goal 5: Develop and sustain a culture of research and innovation.

Goal 6: Implement responsive extension programs/projects/activities for sustainable development

Goal 7: Generate sustainable revenue streams to implement SLSU development plans and programs.

Goal 8: Enhanced the transparency, Efficiency and effectiveness of the Management System.

**Quality Policy :** We, at Southern Leyte State University, commit enthusiastically to satisfy our stakeholders' needs and expectations by adhering to good governance, relevance, and innovations of our instruction, research and development, extension and other support services and to continually improve the effectiveness of our Quality Management System in compliance to ethical standards and applicable statutory, regulatory, industry and stakeholders' requirements.

The management commits to establish, maintain and monitor our quality management system and ensure that adequate resources are available.

**Core Values :** Service Excellence

Leadership Competence

Stewardship and Accountability

Unity in Diversity

**Goal of the Information Technology Program:** To produce globally competent, innovative, and socially and ethically responsible computing professionals engaged in life-long learning endeavors, and are capable of contributing to the country’s national developmentgoals.

**Program Objectives of the Information Technology Program:**

PO1: Provide students with technical and managerial skills in the field of Information Technology

PO2: Train students to be well-versed on application development, installation, operation, maintenance and administration;

PO3: Expose student’s in advance information technology in diverse learning environments

PO4: Develop student’s skills in areas of research, development and extension

PO5: Imbibe in the student’s moral, ethical and social values needed in the field of information technology

**Program Outcomes**

The graduates have the ability to:

1. ***Common to all programs in all types of schools***
2. Articulate and discuss the latest developments in the specific field of practice.
3. Effectively communicate orally and in writing using both English and Filipino
4. Work effectively and independently in multi-disciplinary and multi-cultural teams.
5. Act in recognition of professional, social, and ethical responsibility.
6. Preserve and promote *“Filipino historical and cultural heritage”.*
7. ***Common to the discipline***
   1. Analyze complex problems, and identify and define the computing requirements needed to design an appropriate solution
   2. Apply computing and other knowledge domains to address real-world problems.
   3. Design and develop computing solutions using a system-level perspective.
   4. Utilize modern computing tools.
8. ***Specific to Bachelor of Science in Information Technology***
   1. Apply knowledge of computing, science, and mathematics appropriate to the discipline.
   2. Understand best practices and standards and their applications.
   3. Analyze complex problems, and identify and define the computing requirements appropriate to its solution.
   4. Identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer based systems.
   5. Design, implement and evaluate computer-based systems, processes, components, or programs to meet desired needs and requirements under various constraints.
   6. Integrate IT-based solutions into the user environment effectively.
   7. Apply knowledge through the use of current techniques, skills, tools and practices necessary for the IT profession.
   8. Function effectively as a member or leader of a development team recognizing the different roles within a team to accomplish a common goal.
   9. Assist in the creation of an effective IT project plan.
   10. Communicate effectively with the computing community and with society at large about complex computing activities through logical writing, presentations and clear instructions
   11. Analyze the local and global impact of computing information technology on individuals, organizations, and society.
   12. Understand professional, ethical, legal, security, and social issues and responsibilities in the utilization of information technology.
   13. Recognize the need for and engage in planning self-learning and improving performance as a foundation for continuing professional development.
9. ***Common to a Graduate of a University***
10. Graduates of universities participate in the generation of new knowledge or in research and development projects.
11. ***Information Technology Graduate Attributes***

Problem Analyst

Solution Designer

Collaborative Worker

Socially Professional and responsible

1. **COURSE DETAILS**

| Course Name | IT 301 – Advanced Database System |
| --- | --- |
| Course Description | This course studies the process of integrating different systems and software applications by examining current and emerging trends, strategies, and techniques for developing systems integration solutions effectively. Students will gain experience in creating strategic business solutions using middleware to integrate the functionality of an organization’s existing applications, commercial packaged applications, and new code. |
| Number of Units | 2 |
| Prerequisite | IT 207 |

1. **COURSE OUTCOME AND ITS RELATIONSHIP TO PROGRAM OUTCOMES**

| **COURSE OUTCOMES** | **PROGRAM OUTCOMES** | | | | | | | | | | | | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| After completing this course, the students should be able to: | **Common in All Types of Schools** | | | | | **Common to the Discipline** | | | | **Specific to Bachelor of Science in Information Technology** | | | | | | | | | | | | | **Common to a Graduate of a University** |
| **Knowledge (Think)** | A | B | C | D | E | A | B | C | D | A | B | C | D | E | F | G | H | I | J | K | L | M | A |
| 1. Analyse the appropriateness of a decision to in-source or out-source IT services in a given situation. |  |  |  |  |  |  |  |  |  | I | I | I | I | I | P | D | I | I | I | I | I | I | I |
| **Values (Feel)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1. Value and apply the security and confidentiality of certain data and information. |  |  |  |  |  |  |  |  |  | I | I | I | I | I | P | D | I | I | D | I | I | D | I |
| **Skills (Do)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1. Create a testing environment and design a stress test using appropriate tools and techniques that impact system performance. |  |  |  |  |  |  |  |  |  | P | P | D | D | D | P | D | P | P | P | P | D | D | P |
| 1. Implement an enterprise integration middleware platform. |  |  |  |  |  |  |  |  |  | P | P | D | D | D | P | D | P | P | P | P | D | D | P |

1. **LECTURE LEARNING PLAN**

| **Graduate Attributes and CDIO Skill sets** | **Intended Learning Outcomes** | **Topics** | **Allotted time in Hours** | **Teaching & Learning Strategies** | **Assessment Tasks** | **Instructional Materials** |
| --- | --- | --- | --- | --- | --- | --- |
| Problem Analyst  Solution Designer  Collaborative Worker  Socially Professional and responsible | Explained and interpreted the national and regional goal, University vision and mission, Campus objectives, program objectives, and relate the overall course outline, grading system and requirements. | **Orientation**   1. National Goal 2. SLSU Vision, Mission, Goals, Objectives and Quality Policy 3. College Goals and Program Objectives 4. Program Outcomes 5. Course Outcomes 6. Course Outline 7. Course Grading System 8. Course Requirements 9. Gender Awareness and Development (GAD) 10. Student/s with Special Needs 11. Academic Integrity 12. Disaster and Risk Preparedness | 1 | ***Lecture***  (Discuss course outline through video session using google meet app)  ***Expressive Activities & Team-Based Learning***  (A group of three will read the course outline and develop 5 questions about what are their expectations about the course. Group member will alternately asking to each other questions and send it through FB Messenger) | Instructor will develop what consider being the top 5 most important questions about course outline and sending it through group chat in FB Messenger. | Course Syllabus  (IT 302)  Student Handbook  Google Meet App  Facebook Messenger |
| Problem Analyst  Solution Designer  Collaborative Worker  Socially Professional and responsible | **CO1, CO2**  **ILO1**  write complex queries, including full outer joins, self-joins, subqueries, and set theoretic queries.  **ILO3**  apply the principles of query optimization to a database schema.  (Please check the ILO numbering) | **Unit 1: SQL DML Commands**   * Select * Join (inner, outer, left, right) * Group by * Order by * Clauses * Subqueries | 7.5 | Live lecture online  Assign readings (text/pdf)  Multimedia content in LMS  Database Systems Construction  DML Commands/Queries Executions and Output  Reading the module | ***Formative Assessment***  (Modified Alternative Response Test on the Different Principles and Concepts of Data Manipulation Language with correct parameters, procedures and triggers Assessment) | Module  Google Meet  LMS  Facebook Messenger |
| Problem Analyst  Solution Designer  Collaborative Worker  Socially Professional and responsible | **CO2**  **ILO4**  explain the various types of locking mechanisms utilized within database management systems.  **ILO5**  explain the different types of database failures as well as the methods used to recover from these failures.  **CO1**  **ILO2**  write stored procedures and triggers. | **Unit 2: Stored Procedures and Triggers**   * Parameters of Query * Procedures * Triggers * Code blocks | 7.5 | Live lecture online  Assign readings (text/pdf)  Multimedia content in LMS  Reading the module | ***Scoring*** ***Criteria on the Completeness*** (Accuracy, response, and Application of the Different Commands and Queries) | Module  Google Meet  LMS  Facebook Messenger |
|  |  | **Midterm Examination** | **2** |  |  |  |
| Problem Analyst  Solution Designer  Collaborative Worker  Socially Professional and responsible | **CO1**  **ILO3**  apply the principles of query optimization to a database schema.  (Please check the ILO numbering)  **CO2**  **ILO4**  explain the various types of locking mechanisms utilized within database management systems. | **Unit 3: Query Optimization**   * Indexes * Characteristics * Potential Fields * Foreign and Primary key * relationship | 5 | Live lecture online  Assign readings (text/pdf)  Multimedia content in LMS  Conceptualized appropriate  relationship for multiple tables in a database/databases | Rubrics on the Accuracy, Relevance and Appropriateness of the Foreign and Primary fields and its relationship to the structures of multiple tables in different database platforms. | Module  Google Meet  LMS  Facebook Messenger |
| Problem Analyst  Solution Designer  Collaborative Worker  Socially Professional and responsible | **CO1**  **ILO3**  apply the principles of query optimization to a database schema.  **CO2**  **ILO4**  explain the various types of locking mechanisms utilized within database management systems.  (Please check the ILO numbering)  **C03**  **ILO6**  design queries against a distributed database management system. | **Unit 4: Concurency and Recovery**   * Multi-process and simultaneously execution * Inter-locking * Versioning * Restoration and recovery | 5 | Live lecture online  Assign readings (text/pdf)  Multimedia content in LMS  Implement Security, Data Recovery, and Inter-locking of multiple tables in a database  Reading the module | Rubrics on the Accuracy, Security, and Efficacy of the Data on the Implemented Database Systems. | Module  Google Meet  LMS  Facebook Messenger |
| Problem Analyst  Solution Designer  Collaborative Worker  Socially Professional and responsible | **CO3**  **ILO7**  perform queries against database designed with object-relational extensions.  **ILO8**  develop and query XML files.  **ILO3**  apply the principles of query optimization to a database schema.  (Please check the ILO numbering) | **Unit 5: Database System** **Architectures**   * Centralize database * Distributed database * Remote Server * Accessing * Related Issues | 6 | Live lecture online  Assign readings (text/pdf)  Multimedia content in LMS  Development of Database Systems with complete features and Data Security, Integrity and Efficiency  Reading the module | Scoring Criteria for Front end and back end access through remote platform efficiency | Module  Google Meet  LMS  Facebook Messenger |
|  |  | **Final Examination** | **2** |  |  |  |

**D. REFERENCES**

**Books**

1. Database Systems: The Complete Book, by Hector Garcia-Molina, Jeffrey D. Ullman, and Jennifer Widom. Prentice Hall.

2. Munindar P. Singh and Michael N. Huhns, CSC691D: Transparencies for Advanced Database Management (Cooperative Information Systems). Course Packet.

3. Omran Bukhres and Ahmed K. Elmagarmid (eds.), Object-Oriented Multidatabase Systems: A Solution for Advanced Applications, Prentice Hall International. ISBN: 0-13-103813-2.

**Electronics References**

1. www.neurotechnology.com/index.html

2. sourceforge.net/projects/attendee-time-attendance

3. talkerscode.com/webtricks/generate-barcode-using.php

**E. GRADING SYSTEM**

Assessment Task 60%

Term Output 40%

**TOTAL**  **100%**

**F. PROVISIONS FOR FLEXIBILITY**

***Academic Integrity***

* In this course, all submitted works of the student must be original (e.g must be written or programmed by the student exclusively, unless explicitly stated otherwise) and must include acknowledgement of any collaborators or sources (other than course text books or handouts) used to produce the submission. However, students are not permitted to review assignments or solutions or course materials from similar courses offered at other institution in preparing the work.
* Students are encouraged to discuss course material with other students. Discussion of assignments is also allowed, but sharing of solutions or code is strictly forbidden.

***Final Project***

* All topics within the scope of this curse syllabus shall compose the minimum requirement for the final project. In addition, the students are also required to introduce new concepts, techniques or technology beyond the project’s minimum requirement and must be supported with complete documentation prior to final project presentation.

1. **RUBRICS**

| **Skills** | **5** | **4** | **3** | **2** | **1** |
| --- | --- | --- | --- | --- | --- |
| Database Normalize Design | Show fully understand the normalization in the database design | Shows a high  level of  understanding | Understands  the concepts  and their  applications | Demonstrates a limited understanding of the concepts | Requirements  not met |
| Data Integrity | Clearly identifies  all the important  elements of a  problem and  shows a high  level of  understanding of  the relationships  between the  concepts. | Can identify  the important  elements of a  problem and  show  understanding  of the  relationships  between the  concepts. | Identifies  important  elements of  problems. The  solution steps  are not  adequately  completed. | Cannot  identify  important  elements of  problems and  has difficulty  recognizing  the  relationship  between  concepts and  applications | Requirements  not met |
| Relationship  and Entity  Analysis | Fully understand  the entity and  relationship.. | Proficient in  using ER  diagram  modeling | Generally  understand  ER diagrams | Very limited to  conduct ER  analysis | Requirements  not met |
| SQL  Injections | Presents clear  and precise  explanations  and solutions for  SQL injection | Generally  understand  and explain  SQL  injections | Provides  inadequate  explanations  and  expressions  for SQL  injections | Ability to  express SQL  injections very  limited.  Explanations  are not clear. | Requirements  not met |

Appendix A. **Portfolio Rubrics**

| **PORTFOLIO RUBRICS** | | | | |
| --- | --- | --- | --- | --- |
| **Criteria** | **3** | **2** | **1** | **Feedback** |
| Documents load and are legible |  |  |  |  |
| Entries are well-organized comprehensive |  |  |  |  |
| Artifacts are appropriate for the chosen program |  |  |  |  |
| Rationales describe the document clearly and concisely in terms that can be understood by a general audience. |  |  |  |  |
| The reflection explains the artifacts, their salient features, and how they are relevant to the desired program |  |  |  |  |
| The reflection explains how the artifacts influenced the learning |  |  |  |  |
| The reflection considers the strengths of the artifacts, as well as aspects of learning that you would improve or modify to use in your practice |  |  |  |  |
| The reflection is anchored in theories and research from across the discipline |  |  |  |  |
| Portfolio is developed in a professional and visually appealing appearance |  |  |  |  |

**Guide:**

**3 – Exceptional:** adequately evident in the portfolio

**2 –** **Satisfactory**: with high evidence but fall short in terms of adequate relational presentation between artifacts and program objectives/outcomes

**1 –** **Acceptable**: evidences are less representative of the chosen program objective. Relational presentation is weak

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**CONFIRMATION AND ACKNOWLEDGEMENT RECEIPT**

This is to confirm that the contents of the course syllabus in **IT 301 – Advanced Database System**, First Semester of AY 2021-2022 at SLSU-Tomas Oppus, Southern Leyte, were discussed to us during the first day of class and a copy of which was provided for reproduction and individual reference and guide.

| **Names** | **Signature** | **Names** | **Signature** |
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