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| **Course Code** | CSU3301 | | | | | |
| **Level** | 3 | | | | | |
| **Course Title** | Database Design and Implementation | | | | | |
| **Credit value** | 3 | | | | | |
| **Core/Optional** | Core | | | | | |
| **Prerequisites** | CSU3200((EL/CR) | | | | | |
| **Hourly breakdown** | **Theory** | | **Practical**  **hours** | **Independent Learning** | **Assessments** | **Total hrs.** |
| 25 Sessions X 2 = **50 hrs.** | 5 DS x  3 hrs. = **15**  **hrs.** | 1 Lab x 3 hrs. =  **03 hrs.** | * Sessions (25 x 3)   = 75 hrs.   * Online = 3.5 hrs. * Lab (03 x 0.5) = 1.5   hrs.  Total = **80 hrs.** | * Continuous Assessments (CA) : **01 hr.** * Practical assessments (PA) : **01 hr.** | **150 hrs.** |
| **Course Aim/s.** | To identify how store and transform data into information to support making decision using Normalization, ER diagram and Structured Query Language (SQL). | | | | | |
| **PLOs addressed by course** | **PLO1: Knowledge:** Explain the fundamental, principles and broader knowledge pertaining to the chosen science disciplines offered for the degree.  **PLO2: Practical Knowledge and Application**. Demonstrate the competency to use the knowledge and practical skills appropriately.  **PLO4: Individual Work, Team Work and Leadership**: Demonstrate the competency in working independently and in groups in addressing issues in multi-disciplinary environments and completing the tasks on time through collaborative learning while exhibiting leadership.  **PLO5: Creativity and Problem Solving:** Identify and analyze problems using quantitative and/or qualitative approaches using scientific methodology to provide valid conclusions.  **PLO9: Lifelong Learning**: Develop the capacity to foresee new trends and their impacts and continuously update knowledge and develop skills willingly to meet those future challenges. | | | | | |
| **Course Learning Outcomes (CLO)** | At the completion of course, student will be able to:  CLO1: Explain what a Database and a File system is, characteristics and Limitations of them, and the applicability of database towards the limitations of the file system (PLO1 & 9).  CLO2: Explain the Database System, its functions and major parts (PLO1 & 9).  CLO3: Explore different kinds of Database Models, their pros and cons, and key concepts of each Database Model (PLO1 & 9).  CLO4: Comprehend what the ER Model, ER diagram, and key concepts of ER Model and how to develop an ER diagram to a given scenario (PLO1, 4, 5, & 9).  CLO5: Explore the relationship between ER diagram & relational schema (Database Structure) and how to convert an ER diagram to a Relational Schema (PLO1,4, 5 & 9).  CLO6: Comprehend the need of Normalization in Database Management System (PLO1 & 9).  CLO7: Explore what are SQL and its key concepts (PLO1, 2& 5).  CLO8: Identify the querying data from the database, building database structure & manipulating data within the database (PLO1, 2& 5). | | | | | |
| **Content**  **(Main topics, sub topics)** | Introduction to Databases, History of Databases, Introduction to Database Management Systems, Types of Databases, Hierarchical and Network Data Models, Relational, Entity Relationship and Object Oriented Data Models, Evolution of Data Models, Entity Relationship (E-R) Model, Logical Structure and Keys in Relational Models, Relational Algebra, Relational Database Model, Developing E-R Diagrams, Database Tables and Normalization, Introduction to SQL, Introduction to Database Query, Categorize Data Using Operators , Summarizing Data Results From a Query, Sorting and Grouping Data, Restructuring the Appearance of Data, Understanding Dates and Times, Joining Tables in Queries, Using Sub-Queries to Define Unknown Data, Combining Multiple Queries into One, Stored Procedures and Functions. | | | | | |
| **Teaching Learning methods (TL)** | Self-learning/independent learning of self - study (IL)   * Learning the course contents in course materials in print and web-based materials (SS) * Learning through practical exercises & group work projects (PR) & (GP) * Additional reading materials/ recommended reading (RE)   Contact sessions   * Day schools (discussion sessions) (Non-compulsory) * Laboratory practical exercises (PR) (Non-compulsory) | | | | | |

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| **Assessment strategy** | Overall Continuous Assessment Mark (OCAM): 40% | Final Assessment: 60 % |
| Details: Continuous Assessment (CA) : **01 hr**.  Practical Assessment (PA) : **01 hr**.    OCAM computation:  OCAM= 60% of best CA/PA + 40% of other CA/PA | Final Evaluation  Theory: **02 hrs**. |
| **Recommended**  **Readings:** | 1. Hoffer, Jeffrey A; Prescott, Mary B; Topi, Heikki. (2010) .[*Modern database management*](http://search.lib.ou.ac.lk/cgi-bin/koha/opac-detail.pl?biblionumber=74219&query_desc=su%2Cwrdl%3A%20database) (9th Ed) 2. Howe, D.R. (1989).*Data analysis for database design*. 3. Kroenke, David M. (2002).[*Database processing: fundamentals, design & implementation*](http://search.lib.ou.ac.lk/cgi-bin/koha/opac-detail.pl?biblionumber=111858&query_desc=su%2Cwrdl%3A%20database) (8th Ed) 4. Ramakrishnan, Raghu; Gehrke, Johannes. (2000). [*Database management systems*](http://search.lib.ou.ac.lk/cgi-bin/koha/opac-detail.pl?biblionumber=22543&query_desc=su%2Cwrdl%3A%20database) (2nd Ed) | |