**IS 351 - Data Warehouse and Mining**

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| Resource Person: | **Abdul Ghafar** |
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| Contact Hours: | Monday 10:00 AM - 12:00 PM |
| Office Address: | 3N 01 – Room # 7 |
| Programme: | BBA |
| Section: |  |
| Semester: | Fall 2022 |
| Course Pre-requisites: | NA |
| Credit Hours: | 3  |
| Course Type: | BBA |
| Venue/Day/Time: |  |
| Course URL (if any): |  |

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| **Course Description:** |
| Data Warehouse and Mining provides an insight to provide and analyze information from a number of sources including inside as well as outside of the organization. The course introduces students to the terms and architecture of data warehousing, dimensional modeling, data sources, Extract-Transform-Load (ETL) processes and subsystems, and schemas. Moreover Online Analytical Processing (OLAP) and Online Transactional Processing (OLTP) will also be discussed.  |

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| **Course Teaching Methodology:** |
| * Interactive lectures with hands on practical class activities.

 * Data Mining concepts implementation with real-time project
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BBA Mission

‘Our mission is to transform students into visionary leaders, managers, and entrepreneurs who are sensitive to corporate social responsibility, business ethics, and global sustainability challenges.’

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| **Programme Educational Objectives (POs):** |
| PO1: | To develop effective Teamwork and Leadership Skills |
| PO2: | To inculcate Critical Thinking and effective Decision-Making skills |
| PO3: | To develop Effective Communication Skills |
| PO4: | To polish Core Business Knowledge and Competence |
| PO5: | To expose and inculcate Ethical Behavior and Social Responsibility |
| PO6: | To provide real-life work experiences. |
| PO7: | To provide global perspectives. |

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| **Programme Learning Outcomes (PLOs):****After completing this degree programme, students shall be able to:** | **Mapping the PLOs with POs** |
| PLO1 | Work effectively in teams and understand group processes, leadership, conflict, power and culture in organization. | PO1, PO5, PO6 |
| PLO2 | Use analytical and reflective thinking techniques. | PO2, PO4, PO6 |
| PLO3 | Apply appropriate quantitative and qualitative techniques in solving business problems. | PO2, PO3, PO4, PO5, PO6 |
| PLO4 | Draft effective business documents and prepare and deliver effective oral business presentations using the variety of appropriate technologies. | PO1, PO3, PO6 |
| PLO5 | Demonstrate competency in the underlying concepts, theory and tools taught in the core undergraduate curriculum. | PO4, PO5, PO6, PO7 |
| PLO6 | Identify and analyze ethical conflicts and social responsibility issues involving different stakeholders. | PO5, PO6 |
| PLO7 | Understand the dynamics of industry and understand business as an integrated system and apply strategic planning tools. | PO2, PO3, PO6 |
| PLO8 | Identify and analyze relevant global factors that influence decision making in an international business setting. | PO6, PO7 |

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| **Course Learning Outcomes (CLOs):****After completing this course, students shall be able to:** |
| CLO1 | Introduction to the concepts and techniques of data warehousing. |
| CLO2 | Learn to implement data warehouse by implement various architectures. |
| CLO3 | Understanding the concepts dimensional data and implementing OLAP and OLTP. |
| CLO4 | Understanding data mining and implement it to identify hidden patterns in data. |
| CLO5 | Learn tools to implement data mining concepts to develop a decision model. |

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| **Assessment Structure and Grading Policy\*:** |
| **Assessment Item** | **Weight (%)** | **Execution Plan** |
| Quizzes | 10 | 4 Quizzes |
| Assignments | 10 | 4 Assignments |
| Mid Term | 20 | One-time assessment |
| Class Participation | 5 |  |
| Final exam | 35 | One-time assessment |
| Project | 20 | Group Based |
| **Total**  | **100** |  |
| **Notes – Norms and Important Class Policies:*** **Class Policy**: You are required to be in class at the assigned time. If you arrive more than ten minutes late, you will be marked absent.
* **Email Policy**: You will be responsible if you miss a deadline because you did not read your email. Participants should regularly check their University email account.
* **Class Attendance Policy**: A minimum 80% attendance is required for a participant to be eligible to sit in the final examination. Reporting sick and attending family functions (such as a wedding) will be considered as absent. Participants with less than 80% attendance in a course will be given grade ‘F’ (Fail) and will not be allowed to take the final exam. An ‘F’ grade will negatively impact student’s CGPA.
* **Mobile Policy**: Switch off your mobile phones while in class.
* Withdrawal Policy: Students may withdraw from a course till the end of the 12th week of the semester. In such a case, a grade ‘W’ will be awarded. A ‘W’ grade will not impact student’s CGPA. A student withdrawing after the 12th week will be awarded ‘F’ grade, which will negatively impact CGPA.
* **Harassment Policy**: Sexual or any other form of harassment through physical, verbal or electronic (mobile, email, etc.) means is constituted as punishable offence. Such actions will not be tolerated.
* **Use of Unfair Means/Honesty Policy**: Any participant found using unfair means or assisting another participant during a class test, quiz, assignment, examination, etc. will be liable for strict disciplinary action.
* **Plagiarism Policy**: Plagiarism is defined as the practice of taking someone else's work or ideas and passing them off as one's own. The participants will submit the plagiarism report to the resource person with every assignment, report, project, thesis, etc. A participant who fails to submit the ‘Turnitin’ report will receive ‘F’ grade that will count towards CGPA. If participants attempt to cheat ‘Turnitin,’ they will receive an additional ‘F’ that will count towards their CGPA. Look up the Student Handbook for further information on rules and regulations regarding plagiarism while submitting final report and other documents.
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| **Week** | **Topics / Contents** | **Application/Objectives****CLO** |
| 1 | **Basics of Data warehouse and Mining**Introduction, general information and key terms of the subject. | CLO1 |
| 2 | **Strategic Information in Business**What is strategic information, and how it can be used to perform strategic decisions. | CLO1 |
| 3 | **Data Warehouse Implementation**Implementing data warehouse architecture to design organizational data warehouse, Problems and issues with different architectures | CLO2 |
| 4 | **Dimensional data modeling**What is dimensional data, and understanding the model to implement dimensional data | CLO2, CLO3 |
| 5 | **Dimensional data modeling Implementation**Understanding the models to implement dimensional data with star schema, degenerate dimensions, snowflaking, and surrogate keys  | CLO2, CLO3 |
| 6 | **OLAP**Implementing dimensional data with OLAP using Microsoft Excel and RapidMiner | CLO3 |
| 7 | **Case analysis with dimensional data**Implementing dimensional data with OLAP to apply on a case analysis. | CLO3 |
| 8 | **Mid Term**  |  |
| 9 | **ETL Requirements**Requirements of ETL in data warehouse, various issues with data handling, data cleaning | CLO2 |
| 10 | **ETL sub systems**Understanding different sub-systems of ETL to develop more sophisticated data warehouse systems | CLO2 |
| 11 | **Introduction to data mining**Basics of data mining, and various techniques used in data mining. | CLO4 |
| 12 | **Data Preprocessing**Various techniques used for data preprocessing such as data cleaning, normalization, outliers, etc. | CLO4 |
| 13 | **Classification and Clustering**Use of data mining algorithm to perform classification and clustering | CLO5 |
| 14 | **Text and Web Mining**How to perform text and web mining, understanding NLP and other techniques | CLO5 |
| 15 | **Final Project Presentation** |  |
| 16 | Final Term Examination |  |

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| **Primary Text Book (s):** |
| 1. Data Warehousing Fundamentals for IT professionals Second Edition By Ponniah 2017
2. Data Warehousing,Reema Thareja, 2009
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| **Reference / Supplementary Reading (s):** |
| Hands on notes.Case Studies Microsoft Excel TutorialsRapid Miner Tutorials |