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| C:\Users\TEMP.WDC.013\Downloads\VIT logo.png  **Version 0619-5** | **Consolidated Academic Administration Plan for the Course**  ***Advanced Database Management Technology (core ) & OLAP Lab***  ***Sem. V – Program INFT 2019-2020 – Odd Semester***  ***Faculty - Prof. Deepali Nayak & Prof. Arpita Raut & (ClusterMentor) Dr. Deepali Vora*** |
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**The academic resources available in VIT –**

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| **VMIS (ERP)** | **V-Refer and V-Live** | **VIT Library** | **VAC & MOOC Courses** |
| Institute & Department Vision and Mission | Former IA question papers and solutions (prepared by faculty) | Former IA question papers solutions - hardcopy | Value Added Courses (VAC) are conducted throughout the semester & in the semester break - Enrol for the VACs |
| Program Educational Objectives (PEO) | MU end semester examination question papers and solutions (prepared by faculty) | MU end semester exam question paper & solutions - by faculty, hardcopy |
| Program Specific Outcome (PSO) | Class notes and Digital Content for the subject (scanned / typed by faculty) | All text books, reference books, e -books mentioned in the syllabus & AAP | Online courses from NPTEL, Coursera etc. are pursued throughout the semester - Register for the course & get certified |
| Program Outcome (PO) | Comprehensive question bank, EQ, GQ, PPT, Class Test papers | Technical journals and magazines for reference |
| Departmental Knowledge Map | Academic Administration Plan & Beyond Syllabus Activity report | VIT library is member of IIT Bombay Library | Watch former lectures captured in LMS at VIT |

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| **1.a** | **Course Objectives (write in detail – as per NBA guidelines)** |

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| Cognitive | What do you want students to know? | Students must know the fundamentals of database management systems, transactions, concurrency, distributed databases and data warehousing. |
| Affective | What do you want students to think / care about? | Students must care about database modelling, choice of ETL tools and database security concerns. |
| Behavioural | What do you want students to be able to do? | Students must be able to design databases, distributed databases and organize large amounts of data in a data warehouse. |

**Advice to Students:**

Attend every class!!! Missing even one class can have a substantial effect on your ability to understand the course. Be prepared to think and concentrate, in the class and outside. I will try to make the class very interactive. Participate in the class discussions. Ask questions when you don’t understand something. Keep up with the class readings. Start assignments and homework early. Meet me in office hour to discuss ideas, solutions or to check if what you understand is correct. The v-Refer Link for this course <http://vidyalankarlive.com/vrefer/index.php/apps/files/?dir=/vRefer/INFT/SEM%20V/201920/ADMT&fileid=156401>

**Collaboration Policy:**

We encourage discussion between students regarding the course material. However, no discussion of any sort is allowed with anyone on the assignment and homework for the class. If you find solution to some problems in a book or on the internet, you may use their idea for the solution; provided you acknowledge the source (name and page in the book or the website, if the idea is found on the internet). Even though you are allowed to use ideas from another source, you must write the solution in your own words. If you are unsure whether or not certain kinds of collaboration is possible please ask the teacher.

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| **1.b** | **Course Outcome (CO) Statements and Module-Wise Mapping (follow NBA guideline)** |

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| CO No. | Statements | Related Module/s |
| CO1 | Students will be able to explain and understand the concept of a transaction and how ACID properties are maintained when concurrent transaction occur in a database | 2 |
| CO2 | Students will be able to measure query costs and design alternate efficient paths for query execution. | 1 |
| CO3 | Students will be able to apply sophisticated access protocols to control access to the database. | 3 |
| CO4 | Students will be able to implement alternate models like Distributed databases and Design applications using advanced models like mobile, spatial databases. | 3,4 |
| CO5 | Students will be able to organize strategic data in an enterprise and build a Data Warehouse | 5,6 |
| CO6 | Students will be able to analyse data using OLAP operations so as to take strategic decisions. | 5 |

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| **1.c** | **Mapping of COs with POs (mark S: Strong, M: Moderate, W: Weak, Dash ‘–’: not mapped)**  **(List of POs is available in V-refer)** |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO 10 | PO 11 | PO 12 |
| CO 1 | W | S |  |  |  |  |  |  |  |  |  |  |
| CO 2 |  | M |  | S |  |  |  |  |  |  |  |  |
| CO 3 |  | S |  |  |  |  |  |  |  |  |  |  |
| CO 4 |  |  |  | S |  |  |  |  |  |  |  |  |
| CO 5 |  |  |  |  | M |  | S |  |  |  |  |  |
| CO 6 |  |  |  |  | M |  | S |  |  |  |  |  |

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| **1.d** | **Mapping of COs with PSOs (mark S: Strong, M: Moderate, W: Weak, Dash ‘–’:not mapped)** |

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| --- | --- | --- | --- | --- |
|  | PSO 1 | PSO 2 | PSO 3 | PSO 4 |
| CO 1 | S |  |  |  |
| CO 2 | M |  |  |  |
| CO 3 | S |  |  |  |
| CO 4 |  | S |  |  |
| CO 5 |  | M | S |  |
| CO 6 |  |  | S |  |

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| **1.e** | **Teaching and Examination Scheme (As specified by the University) for the Course** |

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| Categories | Mathematics | Basic Science & General Engg. | Humanities & Soft Skill | Core Engg./ Technology - Design & Analysis | Multidisciplinary |
| Tick suitable category |  |  |  | ✓ |  |

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| Subject Code | Subject Name | **Teaching Scheme** | | | Credits Assigned | | | |
| Theory | Practical | Tutorial | Theory | TW/Practical | Tutorial | Total |
| ITC503 | Advanced Data  Management  Technology | 04 | -- | -- | 04 | -- | -- | 04 |
| ITL503 | OLAP Lab | -- | 02 | -- | -- | 01 | -- | 01 |

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| Subject Code | Subject Name | **Examination Scheme** | | | | | | | |
| Theory Marks IA Test | | | End Sem. Exam Marks | TW | Practical | Oral | Total |
| IA 1 | IA 2 | Average of IA1 and IA2 |
| ITC503 | Advanced Data  Management  Technology | 20 | 20 | 20 | 80 | -- | -- | -- | 100 |
| ITL503 | OLAP Lab | -- | -- | -- | -- | 25 | -- | 25 | 50 |

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| **1.f** | **Faculty-Wise Distribution of all Lecture-Practical-Tutorial Hours for the Course** |

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| Divisions | Lecture (Hrs.) | Practical (Hrs.) | | | | Tutorial (Hrs.) | | | |
| Batch 1 | Batch 2 | Batch 3 | Batch 4 | Batch 1 | Batch 2 | Batch 3 | Batch 4 |
| **A** | DPL4 | DPL2 | DPL2 | DPL2 | DPL2 | -- | -- | -- | -- |
| **B** | DPL4 | DPL2 | DPL2 | ADR2 | ADR2 | -- | -- | -- | -- |
| **C** | ADR4 | ADR2 | ADR2 | ADR2 | ADR2 | -- | -- | -- | -- |

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| **1.g** | **Office Hours (Faculty will be available in office in this duration for solving students’ query)** |

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| Division | Day | Time (at least 1 Hr. / Division) | Venue (Office Room No.) |
| A | Tuesday | 11.15am-12.15 pm | CC01 |
| B | Tuesday | 12.15 pm -1.15 pm | CC01 |
| C | Monday | 4.00 pm – 5.00 pm | E-105 |

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| **2.a** | **Syllabus : Module Wise Teaching Hours and % Weightage in University Question Paper** |

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| --- | --- | --- | --- |
| Module No. | Module Title and Brief Details | Teaching Hrs. for each module | % Weightage in University Question Papers |
| 0 | **Prerequisites**  Reviewing basic concepts of a Relational database, SQL concepts | 02 | -- |
| 1 | **Query Processing and Optimization**  Overview, Measures of Query Cost Selection Operation, Sorting, Join  Operation, Other Operations, Evaluation of Expressions, Query  Optimization Overview, Transformation of Relational Expressions,  Estimating Statistics of Expression Results, Choice of Evaluation Plans | 06 | 10% |
| 2 | **Transactions Management and Concurrency**  Transaction concept, Transaction states, ACID properties, Implementation of atomicity and durability, Concurrent Executions, Serializability, Recoverability, Implementation of isolation, Concurrency Control: Lock-based, Time-stamp based, Deadlock handling, Recovery System: Failure, Classification, Storage structure, Recovery & atomicity, Log based recovery, Checkpoints, Shadow Paging, ARIES Algorithm. | 10 | 20% |
| 3 | **Advanced Data Management Techniques**  Advanced Database Access protocols: Discretionary Access Control Based on Granting and Revoking Privileges; Mandatory Access Control and Role-Based Access Control, Overview of Advanced Database models like Mobile databases, Temporal databases, Spatial databases. | 09 | 10% |
| 4 | **Distributed Databases**  Introduction: Distributed Data Processing, What is a Distributed  Database System? Design Issues, Distributed DBMS Architecture,  Distributed Database Design : Top-Down Design Process, Distribution  Design Issues, Fragmentation , Allocation, Overview of Query  Processing, Query Processing Problem, Objectives of Query Processing,  Complexity of Relational Algebra Operations, Characterization of  Query Processors, Layers of Query Processing, Query Optimization in  Distributed Databases; Overview of Transaction Management in DDB;  Overview of Concurrency Control in DDB; Overview of Recovery in DDB | 09 | 20% |
| 5 | **Data Warehousing, Dimensional Modelling and OLAP**  The Need for Data Warehousing; Data Warehouse Defined; Benefits of Data Warehousing ; Features of a Data Warehouse; Data Warehouse Architecture; Data Warehouse and Data Marts; Data Warehousing Design Strategies. Dimensional Model Vs ER Model; The Star Schema; How Does a Query Execute? The Snowflake Schema; Fact Tables and Dimension Tables; Factless Fact Table; Updates To Dimension Tables, Primary Keys, Surrogate Keys & Foreign Keys; Aggregate Tables; Fact Constellation Schema or Families of Star Need for Online Analytical Processing; OLTP vs OLAP; OLAP Operations in a cube: Roll-up, Drilldown, Slice, Dice, Pivot ; OLAP Models: MOLAP, ROLAP, HOLAP. | 10 | 25% |
| 6 | **ETL Process**  Challenges in ETL Functions; Data Extraction; Identification of Data  Sources; Immediate Data Extraction, Deferred Data Extraction; Data  Transformation: Tasks Involved in Data Transformation, Techniques of  Data Loading, Loading the Fact Tables and Dimension Tables | 06 | 15% |
| **\* Insert rows for more modules in the Course Total** | | **52** | **100%** |

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| **2.b** | **Prerequisite Courses** |

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| No. | Semester | Name of the Course | Topic/s |
| 1 | 3 | Database Management Systems | All concepts |

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| **2.c** | **Relevance to Future Courses** |

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| No. | Semester | Name of the Course |
| 1 | 6 | Data Mining & Business Intelligence |
| 2 | 8 | Big Data Analytics |

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| **2.d** | **Real Life Application Mapping – Mention Application from Very Common Day to Day Life** |

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| No. | Real Life Application Mapping with the Course |
| 1 | Online Applications like Net Banking, hotel booking, online shopping like flipkart.com, flight reservations |
| 2 | Content Management Systems, ERP, Data warehousing applications for large volumes of data |

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| **3.** | **Past Results – Division-Wise and Topic-Wise Result Based Analysis** |

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| --- | --- | --- | --- | --- |
| Details | Target – Dec 2019 | Dec 2018 | Dec 2017 | Dec 2016 |
| Course Passing % – Average of 3 Divisions | 100 | 92.75 | 96.90 | 88.16 |
| Marks Obtained by Course Topper ( mark/100) | 69 | 62 | 70 | 70 |

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|  | Division A | | Division B | | Division C | |
| Year | Initials of Teacher | % Result | Initials of Teacher | % Result | Initials of Teacher | % Result |
| Dec 2018 | DPL | 97.30 | AHR | 87.50 | DPL | 93.44 |
| Dec 2017 | RB | 94.67 | RB | 96.05 | RB | 100 |
| Dec 2016 | RB | 90 | RB | 88 | NKR | 86 |

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| Topics which affect results negatively | Module Number | Recommendations to overcome these issues & improve result in future |
| Problems and algorithms based on Query evaluation/ optimization | 1 | Thorough self-study of Solved problems from Korth. |

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| **4** | **All the Learning Resources – Books and E-Resources** |

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| **4.a** | **List of Text Books (T – Symbol for Text Books) to be Referred by Students** |

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| --- | --- | --- | --- | --- | --- | --- |
| Sr. No | Text Book Titles | | Author/s | Publisher | Edition | Module Nos. |
| 1 | | Database System Concepts | Korth, Slberchatz, Sudarshan | McGraw – Hill | 6th | 1-4 |
| 2 | | Fundamentals of Database  Systems | Elmasri, Navathe | PEARSON  Education. | 6th | 1-4 |
| 3 | | Data Warehousing | Thareja Reema | Oxford University  Press | 2009 | 5-6 |
| 4 | | Database Management Systems | Raghu Ramakrishnan,  Johannes Gehrke | McGraw Hill | 3rd | 1-4 |

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| **4.b** | **List of Reference Books (R – Symbol for Reference Books) to be Referred by Students** |

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| --- | --- | --- | --- | --- | --- |
| Sr. No | Reference Book Titles | Author/s | Publisher | Edition | Module Nos. |
| 1 | Data Warehousing: Fundamentals for IT Professionals | Paulraj Ponniah | Wiley India | Latest | 5-6 |
| 2 | Database System Implementation | Hector Garcia-Molina, Jeffrey  D. Ullman, Jennifer Widom | Pearson Ltd | 1/e | 1-4 |
| 3 | Database Systems : A Practical  Approach to Design,  Implementation and Management | Thomas M. Connolly Carolyn  Begg | Pearson Ltd. | 4/e | 1-4 |
| 4 | The Data Warehouse Toolkit: The  Definitive Guide To Dimensional  Modelling | Ralph Kimball, Margy Ross | Wiley India | 3rd | 5-6 |
| 5 | Data Mining Concepts and  Techniques | Han, Kamber | Morgan Kaufmann | 3rd | 5-6 |

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| **4.c** | **List of E - Books (E – Symbol for E-Books) to be Referred by Students** |

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| --- | --- | --- | --- | --- | --- |
| Sr. No | E- Book Titles | Author/s | Publisher | Edition | Module Nos. |
| 1 | Database System Concepts | Korth, Slberchatz, Sudarshan | McGraw – Hill | 6th | 1-4 |
| 2 | Fundamentals of Database  Systems | Elmasri, Navathe | PEARSON  Education. | 6th | 1-4 |
| 3 | Data Warehousing | Thareja Reema | Oxford University  Press | 2009 | 5-6 |

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| **4.d** | **Web Links and Names of Magazines, Journals, E-journals – [VIT is member of IIT Bombay Library]** |

Refer online journals subscribed in VIT library. You can also access IIT Bombay online library for journals from IITB campus.

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| Sr. No. | Web-Links and Names of Journals and E-Journals Recommended to Students for this Course | Web-Links and Names of Magazines Recommended to Students for this Course | Module Nos. |
| 1 | International Journal of Data Warehousing and Mining (IJDWM) <https://dl.acm.org/citation.cfm?id=2438570> | 5-6 | 1 |
| 2 | International Journal of Database Management Systems (IJDMS) <http://airccse.org/journal/ijdms/ijdms.html> | 1-4 | 2 |
| 3 | IBM Systems Magazine, Analytics Magazine, Transforming Data with Intelligence | 1-6 | 3 |
| 4 | Data Mining and Databases: e-Journals  <https://igi-global.libguides.com/c.php?g=473557&p=3240243> | 1-6 | 4 |

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| **4.e** | **Module Best Available in - Tick ONE best resource [from *4.a* to *4.d* in this AAP] & give details** |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Module No. | Category ( Please Tick Mark ) - √ | | | | | | Available In VIT Library? | | Details of the Resource  (i.e. Name, Chapter & Page No., etc.) |
| Book | | | Maga-zine | Journals | |
| Text | Reference | E-Book | Regular | E-Journal | Y | N |
| 1 |  |  |  |  |  |  | Y |  | T1 Ch12 (Pg 537-572), Ch13 (Pg  579-615) |
| 2 |  |  |  |  |  |  | Y |  | T1 Ch14,15,16 (Pg 627-759) T2 Ch21, 22, 23 (Pg 743- 827) |
| 3 |  |  |  |  |  |  | Y |  | T2 Ch24 (Pg 835-870) |
| 4 |  |  |  |  |  |  | Y |  | T1 Ch19 (Pg 825-875)  T2 Ch25 (Pg 877-919) |
| 5 |  |  |  |  |  |  | Y |  | T3 Ch1,2,3 (Pg 3-86), Ch 6,7 (Pg 155-  214), Ch 10 (Pg 266-299)  R5 Ch4,5 (Pg 125-234) |
| 6 |  |  |  |  |  |  | Y |  | T3 Ch 8 (Pg 219-237) |

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| **4.f** | **Web Links for Online Notes/YouTube/VIT Digital Content/VIT Lecture Capture/NPTEL Videos** |

Students can view lectures by VIT professors, captured through LMS ‘Lecture Capture’ in VIT campus for previous years.

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| No. | Websites / Links | Module Nos. |
| 1 | Edureka: Datawarehousing for Beginners  <https://www.youtube.com/watch?v=J326LIUrZM8> | 1-6 |
| 2 | Query Processing and Optimization  <https://www.datacamp.com/community/tutorials/sql-tutorial-query> | 1 |
| 3 | Concepts on Distributed Databases  <https://www.youtube.com/watch?v=e_pGyzJrmqU> | 4 |
| 4 | An Introduction to Temporal Databases <https://www.youtube.com/watch?v=1VYhTOHhzbc> | 4 |
| 5 | NPTEL: Spatial database systems and their types  <https://www.youtube.com/watch?v=qH2-xwUz3tU> | 4 |
| 6 | ETL Tools  <https://www.guru99.com/top-20-etl-database-warehousing-tools.html> | 6 |

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| **4.g** | **Recommended MOOC Courses like Coursera / NPTEL / MIT-OCW / edX etc.** |

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| Sr. No. | MOOC Course Link | Course conducted by – Person / University / Institute / Industry | Course Duration | Certificate (Y / N) |
| 1 | Data Warehousing Fundamentals - online training course | Elearningcurve.com | 5.5 hours | N |
| 2 | Database Management System | SWAYAM-NPTEL IITKGP, Prof. Partha Pratim Das | 8 weeks | Y |

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| **4.h** | **Recommended Value Added Courses (VAC)** |

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| Sr. No. | Name of the Value Added Course | | Conducted by – Person / Institute / Industry | Course Duration | Certificate (Y / N) |
| 1 | Delivering a Relational Data Warehouse  <https://www.edx.org/course/delivering-relational-data-warehouse> | | Peter Myers: Consultant, Trainer and Presenter, Bitwise Solutions Chris Randall: Senior Content Developer, Microsoft Learning Experiences | 4 weeks | Y |
| **4.i** | | **Study Material Distributed among Students** | | | | |

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| Tick if distributed among students | | | | | |
| GQ | Notes | Digital Content | PPT | EQ (updated till the Last Exam) | Other (Write Details) |
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| **5.** | **Consolidated Course Lesson Plan** |

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|  | From (date/month/year) | From (date/month/year) | Total Number of Weeks |
| Semester Duration | 08-07-2019 | 26-10-2019 | 16 |

| Week | Lecture no. | Module No. | Lecture Topics / IA 1 and IA 2 / BSA planned to be covered | Actual date of Completion | COs | Recommended  Prior Viewing / Reading | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Lect No. (on LMS) | Chapter No. / Page Nos./ Books/ Web Site |
| 1 | 1 | 0 | Reviewing basic concepts of a Relational database, SQL concepts |  | -- | -- | **--** |
| 2 | 1 | Overview, Measures of Query Cost Selection Operation, Sorting, Join Operation |  | CO1 | -- | T1 Ch12 (Pg 537-572), Ch13 (Pg 579-615)  W2 |
| 2 | 3 | 1 | Other Operations, Evaluation of Expressions, Query Optimization Overview, Transformation of Relational Expressions |  | CO1 |  | -- |
| 4 | 1 | Estimating Statistics of Expression Results, Choice of Evaluation Plans |  | CO1 |  | -- |
| 3 | 5 | 2 | Transaction concept, Transaction states, ACID properties |  | CO2 | W7 | T1 Ch14,15,16 (Pg 627-759)  T2 Ch21, 22, 23 (Pg 743- 827) |
| 6 | 2 | Implementation of atomicity and durability, Concurrent Executions, Serializability |  | CO2 | -- | -- |
| 4 | 7 | 2 | Recoverability, Implementation of isolation, Concurrency Control: Lock-based, Time-stamp based |  | CO2 | -- | -- |
| 8 | 2 | Deadlock handling, Recovery System: Failure, Classification, Storage structure, Recovery & atomicity, Log based recovery, Checkpoints |  | CO2 |  | -- |
| 5 | 9 | 2 | Shadow Paging, ARIES Algorithm |  | CO2 |  | -- |
| 10 | 3 | Advanced Database Access protocols: Discretionary Access Control Based on Granting and Revoking Privileges |  | CO3  CO4 | W7 | T2 Ch24 (Pg 835-870) |
| 6 | -- | -- | Internal Assessment 1 | -- | -- | -- | -- |
| 7 | 11 | 3 | Mandatory Access Control |  | CO3  CO4 | W7 | T2 Ch24 (Pg 835-870)  W4, W5 |
| 12 | 3 | Role-Based Access Control |  | CO3CO4 | -- | -- |
| 8 | 13 | 3 | Overview of Advanced Database models like Mobile databases, Temporal databases, Spatial databases. |  | CO3  CO4 | -- | -- |
| 14 | 3,4 | Introduction: Distributed Data Processing, What is a Distributed Database System? Design Issues |  | CO3CO4 | W7 | -- |
| 9 | -- | -- | Ganpati Holidays | -- | -- | -- | -- |
| 10 | 15 | 4 | Distributed DBMS Architecture, Distributed Database Design : Top-Down Design Process, Distribution Design Issues |  | CO4 | W7 | T1 Ch19 (Pg 825-875)  T2 Ch25 (Pg 877-919) |
| 16 | 4 | Fragmentation , Allocation |  | CO4 | W7 | -- |
| 11 | 17 | 4 | Overview of Query Processing, Query Processing Problem, Objectives of Query Processing, Complexity of Relational Algebra Operations, Characterization of Query Processors, Layers of Query Processing, |  | CO4 | -- | -- |
| 18 | 4 | Query Optimization in Distributed Databases; Overview of Transaction Management in DDB; Overview of Concurrency Control in DDB; Overview of Recovery in DDB |  | CO4 | --- | -- |
| 12 | 19 | 5 | The Need for Data Warehousing; Data Warehouse Defined; Benefits of Data Warehousing ; Features of a Data Warehouse; Data Warehouse |  | CO5 | W7 | T3 Ch1,2,3 (Pg 3-86), Ch 6,7 (Pg 155-214), Ch 10 (Pg 266-299)  R5 Ch4,5 (Pg 125-234) |
| 20 | 5 | Architecture; Data Warehouse and Data Marts; Data Warehousing Design Strategies. |  | CO5 | -- | -- |
| 13 | 21 | 5 | Dimensional Model Vs ER Model; The Star Schema; How Does a Query Execute? The Snowflake Schema; Fact Tables and Dimension Tables; Factless Fact Table; Updates To Dimension Tables, Primary Keys, Surrogate Keys & Foreign Keys; Aggregate Tables; Fact Constellation |  | CO5 | -- | -- |
| 22 | 5 | Schema or Families of Star Need for Online Analytical Processing; OLTP vs OLAP; OLAP Operations in a cube: Roll-up, Drilldown, Slice, Dice, Pivot ; OLAP |  | CO5 | -- | -- |
| 14 | 23 | 5 | Models: MOLAP, ROLAP, HOLAP |  | CO5 | -- | -- |
| 24 | 6 | Challenges in ETL Functions; Data Extraction; Identification of Data Sources; Immediate Data Extraction, Deferred Data Extraction |  | CO6 | -- | T3 Ch 8 (Pg 219-237)  W6 |
| 15 | 25 | 6 | Data Transformation: Tasks Involved in Data Transformation |  | CO6 | -- | -- |
| 26 | 6 | Data Loading, Loading the Fact Tables and Dimension Tables |  | CO6 | -- | -- |
| 16 | -- | -- | Internal Assessment 2 | -- | -- | -- | -- |

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| **6.** | **Rubric for Grading and Marking of Term Work (inform students at the beginning of semester)** |

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| Lecture + Practical (% Attendance) & Marks | Assign-ments | Tutorial | Lab / Practical Performance | Lab Journal Assessment | Class Tests (Other than IA) | Other (1)  specify | Other (2)  specify | Total |
| 05 | 05 | -- | 10 | 05 | -- | -- | -- | 25 |

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| **7.** | **Assignments / Tutorials Details (must attach print out of all questions together with AAP)** |

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| --- | --- | --- | --- | --- |
| Assignment/ Tutorial No. | Title of the Assignments / Tutorials | CO Map | Assnmnt./ Tuts given to Students on | Date of Submission |
| 1 | Assignment 1 | CO1 CO2 CO3 | W4 | W5 |
| 2 | Assignment 2 | CO4 CO5 CO6 | W12 | W13 |
| 3 | Take Home Test | CO1-6 | W7 | W8 |

**Analysis of Assignment / Tutorial Questions and Related Resources**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Assignment / Tutorial No. | Week No. | Type\* (√) | | | Module No. | Based on # | | | Question Type (√) | |
| R | PQ | OBT | Text Book | Reference  Book | Other Learning Resource | MU EQ | Thought Provoking |
| 1 | 5 |  |  |  | 1, 2, 3 | T1, T2 | R2 | -- |  |  |
| 2 | 13 |  |  |  | 4, 5, 6 | T3, T4 | R1 | -- |  |  |
| 3 | 7 |  |  |  | 1-6 | T3, T4 | -- | -- |  |  |

\* Tick (√) the Type of the Assignment: Regular (R); Pop Quiz (PQ) ; Open Book Test for TE/BE/ME (OBT)

# Write number for text book, reference book, other learning resource from this AAP – *from* *Points 4.a to 4.d*

|  |  |
| --- | --- |
| **8.** | **Internal Assessment / Other Class Test / Open Book Test (OBT)/Take Home Test (THT) Details** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Tests | Test Dates | Module No. | CO Map | IA Question Paper Pattern | Policy |
| 1st IA Test |  |  |  | Q1 – MCQ - 10 Marks  Q2 – 1 numerical 5 Marks  Q3 – 1 numerical 5 Marks  20 marks each for IA 1 & 2 | No IA Re-test  IA is a Head of passing **\*** |
| 2nd IA Test |  |  |  |

**\* Failures of IA test (IA1+IA2) shall appear for IA test in the next semester. There is no provision for re-test in the same semester.**

|  |  |
| --- | --- |
| **9.a** | **Practical Activities – Regular Experiments** |

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| --- | --- | --- | --- | --- | --- |
| Practical No. | Module No. | Title of the **Regular Experiments** | Concepts to be highlighted | CO Map | Audit / Quality Rate  (0 to 4) |
| 1 | 1 | To implement query evaluation path expressions | Query processing | LO2 | 4 |
| 2 | 3 | To study Temporal Databases | Overview of Advanced Database | LO3 | 4 |
| 3 | 3 | To study Mobile Databases | Overview of Advanced Database | LO3 | 4 |
| 4 | 3 | To study Spatial Databases | Overview of Advanced Database | LO3 | 4 |

|  |  |
| --- | --- |
| **9.b** | **Practical Activities – Newly Added Experiments** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Practical No. | Module No. | Title of the **Newly Added Experiments** | Concepts to be highlighted | CO Map | Audit / Quality Rate  (0 to 4) |
| 1 | 1 | To implement Query Optimizer using python | Optimizing SQL query | LO2 | 4 |
| 2 | 2 | To implement concurrency control | Transaction Management | LO1 | 4 |
| 3 | 4 | To implement data fragmentation | Distributed Databases | LO4 | 4 |
| 4 | 5 | To construct data warehouse Star Schema & Snowflake Schema | Working of DW | LO5 | 4 |
| 5 | 5 | To perform ETL operations | ETL concepts | LO5 | 4 |
| 6 | 5 | To perform OLAP Operations | OLAP queries | LO6 | 4 |

|  |  |
| --- | --- |
| **9.c** | **Practical Activities – PBL Experiments** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Practical No. | Module No. | Title of the **PBL Experiments** | Concepts to be highlighted | CO Map | Audit / Quality  (0 to 4) |
| 1 | 5 | To create global schema | ER diagram | LO4 | 4 |
| 2 | 6 | To design DW architectures from given business scenarios | Mapping of business to DW | LO6 | 4 |

|  |  |
| --- | --- |
| **10.** | **Beyond Syllabus Activities for Gap Mitigation** |

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Type of the Activity | Activities | Details – no of attendees, guest, feedback, mark sheet, report |
| 1 | Interaction with Outside World | Guest Lecture / Workshops | Yes- Workshop on “Feature Extraction to design Data warehouse using Python” by VIT student in W10 |
| 2 | Industrial Visit | NA |
| 3 | Collaborative and Group  Activity | Poster Presentation | Yes, Dimensional Modelling |
| 4 | Minute Papers | NA |
| 5 | Students Seminars | NA |
| 6 | Students Debates | NA |
| 7 | Panel Discussion / Mock GD | NA |
| 8 | Mock Interview | NA |
| 9 | Co-curricular Courses | MOOC-NPTEL/Coursera Videos | Yes, Database Management System, Prof. Partha Pratim Das, 8 weeks |
| 10 | Value Added Courses | NA |
| 11 | Lecture Capture Usage | Yes |
| 12 | Test and Assessments | Class Tests / Weekly Tests | NA |
| 13 | Mini Projects | NA |
| 14 | Pop Quiz | NA |
| 15 | Mobile App Based Quiz | NA |
| 16 | Open Book and Take Home Test | Yes, Take Home test, week12 |

**\* Do not delete any activity. Give details for planned events. Write ‘NA’ for activity Not Planned.**

Consolidated Academic Administration PlanPrepared by (mention all theory teaching faculty names with signature)

Please write below your name and sign with date of the external cluster mentor meeting

|  |  |  |
| --- | --- | --- |
| Faculty 1 | Faculty 2 | Faculty 3 |

|  |  |  |  |
| --- | --- | --- | --- |
| External Industry Mentor | External Academic Mentor | VIT Cluster Mentor | Program HOD |