NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

DEPARTMENT OF COMPUTER APPLICATIONS

COURSE PLAN – PART I

Name of the programme and specialization	MSC - Computer Science		
Course Title	DATABASE TECHNOLOGIES		
Course Code	CAS767	No. of Credits	3
Course Code of Pre-requisite subject(s)			
Session	July , 2019	Section (if, applicable)	NA
Name of Faculty	Sashi Chandrasegaran	Department	Computer Applications
Official Email		Telephone No.	9842267874
Name of Course Coordinator(s) (if, applicable)			
Official E-mail		Telephone No.	
Course Type (please tick appropriately)	✓ Core course	☐ Elective course	

Syllabus (approved in BoS)

Database system – Terminologies – Views – Data models – Database languages – Architecture – E-R Model – Conceptual design with E-R – Extended E-R - Relational Model - Codd's rule - Keys – Constraints – Relational database design – Anomalies - Functional dependencies – 1NF to 5NF – Decomposition - Denormalization

Relational Query Languages – Relational Algebra – Tuple and domain Relational Calculus – SQL – Query processing and optimization – Transformation of relational expressions – Evaluation plans

Transaction – Properties – Concurrent execution – Serializability – Concurrency control – Protocols – Recovery System – Database Security

File organization – Organization of records in files – Indexing – B tree and B+ tree index files – Static hashing – Dynamic hashing

Parallel and distributed databases – Object-based databases - Mobile databases - XML and Web databases – Intelligent databases – Mongo DB – NOSQL - PostgreSQL

References:

1. Silberschatz, Korth and Sudarshan, —Data Base System Concepts‖, McGraw-Hill, 6th Edition, 2011.
2. R. Elmasri, S.B. Navathe, —Fundamentals of Database Systems‖, 7thEdition, Pearson Education, 2017.
3. Raghu Ramakrishnan and Johannes Gehrke, —Data Base Management Systems‖, 3rd Edition, McGraw-Hill, 2014.
4. C. J. Date, —An Introduction to Database Systems‖, 8th Edition, Addison-Wesley, 2006.
5. Guy Harrison, —Next Generation Databases‖, Apress, 2015.
6. Eric Redmond, Jim R Wilson, —Seven Databases in Seven Weeks‖, LL. 2012.

No.	Week/hrs	Topic	Method
11.	Week 4/ 4hrs	Relational Query Languages – Relational Algebra	Tutorial & chalk and talk
12.		Tuple and domain Relational Calculus	Tutorial & chalk and talk
13.		SQL – Basics	Tutorial & Demonstration
14.		SQL - Advanced	Tutorial & Demonstration
15.	Week 5/ 3hrs	Query processing and optimization,	Power Point Presentation
16.		Transformation of relational expressions, Evaluation plans	Power Point Presentation
17.		Transactions, Properties	Power Point Presentation
18.	Week 6/ 3hrs	Concurrent Execution, Serializability	Power Point Presentation
19.		Concurrency Control - Protocols	Power Point Presentation
20.		Database Backup & Recovery Systems	Power Point Presentation
21.	Week 7/ 4hrs	Database Security	Power Point Presentation
22.		File organization	Power Point Presentation
23.		Organization of records in files	Power Point Presentation
24.		Indexing, B Trees	Tutorial & chalk and talk
25.	Week 8/ 3hrs	B+ tree index files	Tutorial & chalk and talk
26.		Static hashing	Power Point Presentation
27.		Dynamic hashing	Power Point Presentation
28.	Week 9/ 4hrs	Parallel and distributed databases	Power Point Presentation
29.		Object-based databases	Power Point Presentation
30.		Mobile databases	Power Point Presentation
31.		XML and Web Databases	Power Point Presentation
32.	Week 10/ 3hrs	Intelligent Databases	Power Point Presentation
33.		NoSQL Databases	Power Point Presentation
34.		Case Study - Mongo DB	Power Point Presentation
35.	Week 11/ 2hrs	Case Study- Neo4j	Power Point Presentation
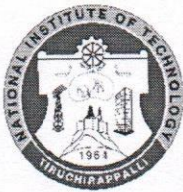
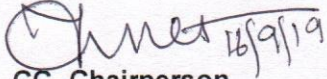## ACADEMIC DISHONESTY & PLAGIARISM

- Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.

- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.

- The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.

- The above policy against academic dishonesty shall be applicable for all the programmes.
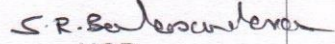
ADDITIONAL INFORMATION, IF ANY

The students can get their doubts clarified at any time with their faculty member with prior appointment

FOR APPROVAL

Course Faculty	CC- Chairperson	HOD