DEPARTMENT OF COMPUTER APPLICATIONS
NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE PLAN – PART I			
Name of the programme and specialization	M.Sc COMPUTER SCIENCE		
Course Title	**Database Technologies**		
Course Code	CAS767	**No. of Credits**	**3**
Course Code of Pre-requisite subject(s)	--		
Session	July 2018	**Section (if, applicable)**	-
Name of Faculty	CYNTHIA DEVI.A	**Department**	COMPUTER APPLICATIONS
E-mail	cynthia@nitt.edu	**Telephone No.**	9791957080
PAC Chairman	Dr.U.Srinivasulu Reddy		
Course Type	Core 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

COURSE OBJECTIVES
To learn different database models and design of databases   *To study query languages, transaction management, indexing and hashing*   *To be aware of emerging database technologies*

COURSE OUTCOMES (CO)												

Course Outcomes	Aligned Programme Outcomes (PO)											
	1	2	3	4	5	6	7	8	9	10	11	12
Illustrate the features of DBMS and models for designing database	M		H	H								
Apply logical database design principles in solving real world problems	M	H	H									
Describe the nuances of data retrieval methods				H								
Acquire the knowledge about emerging database systems.								H				

S=0.6   M=0.4   B=0

COURSE PLAN – PART II

COURSE OVERVIEW

Now a days data is spread in all the places in order to efficiently utilize the data user has to have some knowledge about the technologies used now and also the baasics from where the database system emerges. This Core Course teaches the basics of Database , organization of data in a database , security ,concurrency and recovery sshemes and also how the data can be used at present according to its structure.

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week / Contact Hours	Topic	Mode of Delivery
1	1	Database system – Terminologies – Views Data models – Database languages – Architecture	Chalk and Talk , ppt
2	2	E-R Model – Conceptual design with E-R -Extended E-R	Chalk and Talk, ppt
3	3	Relational Model -Codd's rule - Keys – Constraints– Relational database design – Anomalies - Functional dependencies	Chalk and Talk, ppt
4	4	1NF to 5NF – Decomposition - Denormalization	Chalk and Talk, ppt
5	5	Relational Query Languages – Relational Algebra – Tuple and domain Relational Calculus – SQL	Chalk and Talk, ppt
6	6	Query processing and optimization – Transformation of relational expressions – Evaluation plans	Chalk and Talk, ppt
7	7	Transaction – Properties – Concurrent execution – Serializability	Chalk and Talk, ppt
8	8	Concurrency control – Protocols – Recovery System – Database Security	Chalk and Talk, ppt
9	9	File organization – Organization of records in files – Indexing – B tree and B+ tree index files – Static	Chalk and Talk, ppt

		hashing – Dynamic hashing	
10	10	Parallel and distributed databases – Object-based databases - Mobile databases - XML and Web databases – Intelligent databases – Mongo DB – NOSQL - PostgreSQL	Chalk and Talk, ppt

COURSE ASSESSMENT METHODS (shall range from 4 to 6)

1. The assessment in theory component has cycle test, Assignment and end semester examination. The assessment in theory will be done for a total of 100 marks.
2. The passing minimum will be either 33 or (average mark of the class / 2), whichever is greater.

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Assessment 1	4th week of September	1 hr	20
2	Assessment 2	4th week of October	1 hr	20
3	Assessment 3	-	-	10
4	Final Assessment *	1st week of December	3 hrs	50
	Total			**100**
CPA	Compensation Assessment*			
5	Test1	2nd week of November	2 hr	40

ESSENTIAL READINGS (TEXTBOOKS, REFERENCE BOOKS, WEBSITES, JOURNALS, ETC.)

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.
7. Adam Fowler, "NoSQL for dummies", John Wiley & Sons, 2015.

COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)

> ➤ The students through the class representative may give their feedback at any time to the course chairman which will be duly addressed.
> ➤ The students may also give their feedback during class committee meeting.
> ➤ Course Outcome Survey' form will be distributed on the last working day to all the
> ➤ Students and the feedback on various rubrics will be analyzed.
> ➤ The COs will be computed after arriving at the final marks.

COURSE POLICY (preferred mode of correspondence with students, compensation assessment policy to be specified)
Plagiarism
The students are expected to come out with their original algorithm design and code for problems given during the class work, home work, term project, laboratory exercises, and tests/examinations assigned.
Attendance

100% attendance is highly recommended. However, relaxation upto 15% will be given for leave on emergency requirements (medical, death, etc.) and for representing institute-level events.

Academic Dishonesty

(i)If the student is found to be in possession of any electronic device like programmable calculators, mobile phones etc., during the test or exam, he/she will be debarred for 3 years from appearing for the exam and this will be printed in his/her Grade statement/Transcript.

MODE OF CORRESPONDENCE (E-mail / phone etc)   Email and phone

COMPENSATION ASSESSMENT POLICY
1. Students who are absent for both the assessment for a genuine reason will be given Compensation test.

ATTENDANCE POLICY (A uniform attendance policy as specified below shall be followed)
- At least 75% attendance in each course is mandatory.
- A maximum of 10% shall be allowed under On Duty (OD) category.
- Students with less than 65% of attendance shall be prevented from writing the final assessment and shall be awarded 'V' grade.
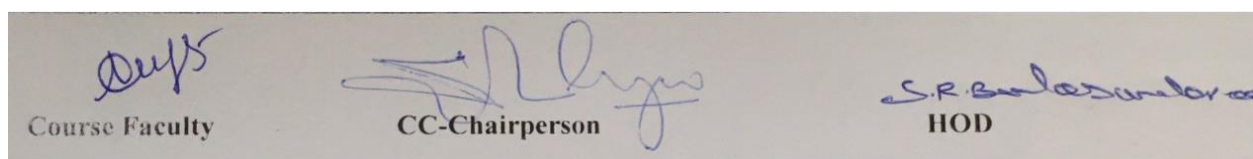
ACADEMIC DISHONESTY & PLAGIARISM
- Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.
- Zero mark to be awarded for the offenders. For copying from another student, both students get the same 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.

ADDITIONAL INFORMATION

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

FOR APPROVAL

Course Faculty   CC-Chairperson   HOD