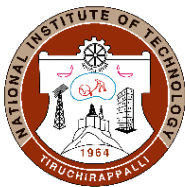




DEPARTMENT OF COMPUTER APPLICATIONS

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 2020	Section (if, applicable)	NA
Name of Faculty	Dr. Divya Lakshmi K	Department	Computer Applications
Official Email	divyak@nitt.edu	Telephone No.	9486118638
Name of Course Co-ordinator	Dr. Michael Arock		
Official E-mail	michael@nitt.edu	Telephone No.	0431-2503736
Course Type (please tick appropriately)	<input checked="" type="checkbox"/> Core course	<input type="checkbox"/> Elective course	
Syllabus (approved in BoS)			
<p>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</p> <p>Relational Query Languages – Relational Algebra – Tuple and domain Relational Calculus – SQL – Query processing and optimization – Transformation of relational expressions – Evaluation plans</p> <p>Transaction – Properties – Concurrent execution – Serializability – Concurrency control – Protocols – Recovery System – Database Security</p> <p>File organization – Organization of records in files – Indexing – B tree and B+ tree index files – Static hashing – Dynamic hashing</p> <p>Parallel and distributed databases – Object-based databases - Mobile databases - XML and Web databases – Intelligent databases – Mongo DB – NOSQL - PostgreSQL</p> <p>References:</p> <ol style="list-style-type: none"> 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 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

MAPPING OF COs with POs

Course Outcomes	Programme Outcomes (PO) (Enter Numbers only)
Illustrate the features of DBMS and models for designing databases	1, 2
Apply logical database design principles in solving real world problems	1, 2, 3
Describe the nuances of data retrieval methods	1, 4
Acquire the knowledge about emerging database systems.	1, 5

COURSE PLAN – PART II

COURSE OVERVIEW

This course focusses on various design methodologies, query languages, aspects for the creation, maintenance of a data base for an application. The concepts such as transaction, concurrency control for transaction based applications are also discussed. The course finally introduces to the students the emerging data bases in addition to the basic foundation given on the relational databases.

COURSE TEACHING AND LEARNING ACTIVITIES

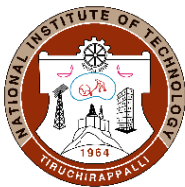
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Week	Contact Hours	Topic	Mode of Delivery
1	1	Database system – Terminologies – Views – Data models	PPT
	2	– Database languages – Architecture	PPT
	3	E-R Model – Notations and Symbols	PPT
2	4	Conceptual design with E-R	PPT



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	5	Extended ER	PPT
	6	ER to Relational Schema	PPT
3	7	ER Model, ER to Relational Schema	PPT
	8	Relational Algebra	PPT
	9	Relational Languages – SQL Basics	PPT and Demo
4	10	SQL – Intermediate	PPT and Demo
	11	RDBMS Design – Anomalies – Functional Dependency	PPT
	12	Normal Forms	PPT
5	13	Normal Forms	PPT, Tutorial
	14	Denormalisation	PPT
	15	Tuple and Domain Calculus	PPT
6	16	Query processing and optimization	PPT
	17	Transformation of relational expressions	PPT
	18	Evaluation plans	PPT
7	19	Transaction – Properties	PPT
	20	Concurrent Execution	PPT
	21	Serializability	PPT
8	22	Concurrency Control –Protocols	PPT
	23	Recovery System	PPT
	24	Database Security	PPT
9	25	File Organization – Organization of Records in files	PPT
	26	Indexing	PPT
	27	B tree	PPT
10	28	B+ Tree	PPT
	29	Static Hashing	PPT
	30	Dynamic Hashing	PPT
11	31	Parallel and distributed databases	PPT
	32	Object-based databases	PPT
	33	Mobile databases	PPT
12	34	XML and Web databases	PPT
	35	Intelligent databases: NOSQL, Mongo DB	PPT
	36	PostgreSQL	PPT
COURSE ASSESSMENT METHODS (shall range from 4 to 6)			



S.No.	Mode of Assessment	Week/Date	Duration	% Weight age
1	Cycle Test 1	6 th Week	1 hour	20
2	Cycle Test 2	10 th Week	1 hour	20
3	Assignments	6 th , 10 th Weeks	-	15
4	Seminar	11 th 12 th Weeks	-	15
CPA	Compensation Assessment*	11 th Week	1 hour	20
5	Final Assessment *	End of the course	2 hours	30

***mandatory; refer to guidelines on page 4**

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 faculty which will be duly addressed.
- The students may give their feedback during class committee meetings.

COURSE POLICY (including compensation assessment to be specified)

Compensation Assessment

One compensation assessment for absentees in assessment (other than the final assessment) is mandatory. Only genuine cases of absence shall be considered.

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.



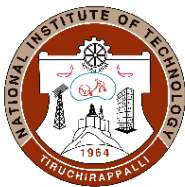
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- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
- The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall 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

FOR APPROVAL

Course Faculty K. Divya Lateshmi CC- Chairperson Gowd HOD [Signature]



Guidelines

- a) The number of assessments for any theory course shall range from 4 to 6.
- b) Every theory course shall have a final assessment on the entire syllabus with at least 30% weightage.
- c) One compensation assessment for absentees in assessments (other than final assessment) is mandatory. Only genuine cases of absence shall be considered.
- d) The passing minimum shall be as per the regulations.

B.Tech. Admitted in				P.G.
2018	2017	2016	2015	
35% or (Class average/2) whichever is greater.		(Peak/3) or (Class Average/2) whichever is lower		40%

- e) Attendance policy and the policy on academic dishonesty & plagiarism by students are uniform for all the courses.
- f) Absolute grading policy shall be incorporated if the number of students per course is less than 10.
- g) Necessary care shall be taken to ensure that the course plan is reasonable and is objective.