

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE PLAN – PART I			
Name of the programme and specialization	B. Tech.		
Course Title	ADVANCED DATABASE MANAGEMENT SYSTEMS		
Course Code	CSPE17	No. of Credits	3
Course Code of Pre-requisite subjects	CSPC33, CSPE14		
Semester/Year	VII Semester / IV Year		
Session	July 2018	Section (if, applicable)	A & B
Name of the Faculty	M. Brindha	Department	CSE
Email	brindham@nitt.edu	Telephone No.	0431 - 2503218
Name of Course Coordinator(s) (if, applicable)	Nil		
E-mail	Nil	Telephone No.	Nil
Course Type	Core course		
COURSE OVERVIEW			
This course mainly describes about advanced concepts in Database management systems.			
COURSE OBJECTIVES			
<ul style="list-style-type: none"> • To understand the different database models and language queries to access databases • To understand the normalization forms in building an effective database tables. • To protect the data and the database from unauthorized access and manipulation. 			
COURSE LEARNING OUTCOMES (CLO)			
Course Outcomes		Aligned Programme Outcomes (PO)	
<ul style="list-style-type: none"> • Ability to comprehend the complex query processing techniques • Ability to design and implement multimedia databases and writing query structure 		CO₁ – PO₁, PO₂, PO₃, PO₇ CO₂ – PO₁, PO₂, PO₄, PO₅	

<ul style="list-style-type: none"> Ability to develop skill set in file organization, query optimization, Transaction management, and database administration techniques 	CO ₃ - PO ₁ , PO ₂ , PO ₃ , PO ₅
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COURSE CONTENT

Unit – I

Relational Model Issues: ER model -Normalization-Query Processing-Query Optimization-Transaction Processing-Concurrency Control-Recovery-Database Tuning

Unit – II

Distributed Databases: Parallel databases- Inter and intra query Parallelism-Distributed Database features-Distributed Database Architecture-Fragmentation-Distributed Query Processing-Distributed Transactions Processing-Concurrency Control-Recovery-Commit protocols

Unit – III

Object Oriented databases: Introduction to Object Oriented databases- approaches modelling and Design-Persistence-Query Languages-Transaction-Concurrency-Multi-Version Locks-Recovery- POSTGRES-JASMINE-GEMSTONE-ODMG Model

Unit – IV

Emerging systems: Enhanced data Models-Client/Server Model-Data warehousing and Data Mining- Web databases- Mobile Databases- XML and Web databases

Unit – V

Current Issues: Rules-Knowledge Bases-Active and deductive Databases-Multimedia Databases- Multimedia Data structures -Multimedia Query Languages-Spatial databases

COURSE TEACHING AND LEARNING ACTIVITIES

S. No.	Week	Topic	Mode of Delivery
1.	II week of July	ER model	Lecture
2.	II week of July	Normalization, 1NF, 2NF	Lecture <i>Chalk and Talk</i>
3.	II week of July	Normalization, 3NF, 4NF, BCNF	Lecture <i>Chalk and Talk</i>

4.	III week of July	Query Processing	Lecture <i>Chalk and Talk</i>
5.	III week of July	Query Optimization	Lecture <i>Chalk and Talk</i>
6.	III week of July	Query Optimization	Lecture <i>Chalk and Talk</i>
7.	IV week of July	Transaction Processing	Lecture <i>Chalk and Talk</i>
8.	IV week of July	Transaction Processing	Lecture <i>Chalk and Talk</i>
9.	IV week of July	Transaction Processing	Lecture <i>Chalk and Talk</i>
10.	V week of July	Concurrency Control	Lecture <i>Chalk and Talk</i>
11.	I week of August	Concurrency Control	Lecture <i>Chalk and Talk</i>
12.	I week of August	Recovery	Lecture <i>Chalk and Talk</i>
13.	I week of August	Recovery	Lecture <i>Chalk and Talk</i>
14.	II week of August	Database Tuning	Lecture <i>Chalk and Talk</i>
15.	II week of August	Parallel databases	Lecture <i>Chalk and Talk</i>

16.	II week of August	Inter and intra query Parallelism	Lecture <i>Chalk and Talk</i>
17.	III week of August	Distributed Database features	Lecture <i>Chalk and Talk</i>
18.	III week of August	Distributed Database Architecture	Lecture <i>Chalk and Talk</i>
19.	III week of August	Fragmentation	Lecture <i>Chalk and Talk</i>
20.	V week of August	Distributed Query Processing	Lecture <i>Chalk and Talk</i>
21.	V week of August	Distributed Query Processing	Lecture <i>Chalk and Talk</i>
22.	V week of August	Distributed transactions processing	Lecture <i>Chalk and Talk</i>
23.	I week of September	Concurrency Control	Lecture <i>Chalk and Talk</i>
24.	I week of September	Recovery	Lecture <i>Chalk and Talk</i>
25.	I week of September	Commit protocols	Lecture <i>Chalk and Talk</i>
26.	II week of September	Introduction to Object Oriented databases	Lecture <i>Chalk and Talk</i>
27.	II week of September	Approaches modelling and Design for OODBMS	Lecture <i>Chalk and Talk</i>
28.	II week of September	ORDBMS, Persistence	Lecture <i>Chalk and Talk</i>

29.	III week of September	Query Languages- Transaction-Concurrency	Lecture <i>Chalk and Talk</i>
30.	III week of September	Multi-Version Locks- Recovery- POSTGRES- JASMINE-GEMSTONE- ODMG Model	Lecture <i>Chalk and Talk</i>
31.	III week of September	Enhanced data models- Client/Server model	Lecture <i>Chalk and Talk</i>
32.	IV week of September	Data warehousing and Data Mining- Web databases	Lecture <i>Chalk and Talk</i>
33.	IV week of September	Mobile Databases- XML and Web databases	Lecture <i>Chalk and Talk</i>
34.	I week of October	Rules-Knowledge bases- Active and deductive databases	Lecture <i>Chalk and Talk</i>
35.	I week of October	Multimedia Databases & Data structures	Lecture <i>Chalk and Talk</i>
36.	II week of October	Multimedia query languages- Spatial databases	Lecture <i>Chalk and Talk</i>

COURSE ASSESSMENT METHODS

S. No.	Mode of Assessment	Week/Date	Duration	% Weightage
1.	Cycle test 1	IV week of August	1 hr	20 %
2.	Cycle test 2	III week of October	1 hr	20 %
3.	Assignment	I week of September	-	10%
CPA	Compensation Assessment*	IV week of October	1 hr	20%

4.	Written exam - semester exam	III week of November	3 hrs	50%
LEARNING HOURS				
<p>Lecture – 36 hrs</p> <p>Total contact classes – 36 hrs (This is compulsory for all students)</p>				
ESSENTIAL READINGS				
<p>Text Book</p> <p>1. Thomas Connolly and CarlolynBegg, “Database Systems: A Practical Approach to Design, Implementation, and Management”, 5th Edition, Addison-Wesley, 2009</p> <p>Reference Books</p> <p>1. R. Elmasri and S. B. Navathe, “Fundamentals of Database Systems”, Fifth Edition, Pearson/Addison Wesley, 2006</p> <p>2. Abraham Silberschatz, Henry F. Korth, and S. Sudharshan, “Database System Concepts”,Fifth Edition, Tata McGraw Hill, 2006</p> <p>3. C. J. Date, A. Kannan, and S. Swamynathan, “An Introduction to Database Systems”, Eighth Edition, Pearson Education, 2006</p>				
COURSE EXIT SURVEY				
<p>1. Students’ feedback through class committee meetings</p> <p>2. Feedback questionnaire from students – from MIS at the end of the semester</p>				
COURSE POLICY				
<p><u>MODE OF CORRESPONDENCE (email/ phone etc)</u></p> <p>Phone</p>				
<p><u>COMPENSATION ASSESSMENT POLICY</u></p> <p>In case of emergency, the student may submit compensatory assignments on submission of appropriate documents as proof. Compensatory assessments would be framed according to the time frame available and the assessment task missed by the students.</p>				
<p><u>ATTENDANCE POLICY</u> (A uniform attendance policy as specified below shall be followed)</p> <ul style="list-style-type: none"> ➤ 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.

The above policy against academic dishonesty shall be applicable for all the programmes.

ADDITIONAL COURSE INFORMATION

1. The Course Coordinator is available for consultation during the time intimated to the students then and there.
2. Students need to turn off electronic devices during classes, such as cell phones, iPods, and laptops.

FOR SENATE'S CONSIDERATION

Course Faculty *M. S. S. S.* CC-Chairperson *dmdbbhan* HOD *Abul*
12/7/2018