



DEPARTMENT OF COMPUTER APPLICATIONS
NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE OUTLINE TEMPLATE			
Course Title	Database Systems		
Course Code	CA712	No. of Credits	3
Department	Computer Applications	Faculty	Dr. N. P. Gopalan
Pre-requisites Course Code	CA711, CA713		
Course Coordinator(s)	Dr. B. Janet		
E-mail	npgopalan@nitt.edu	Telephone No.	0431-2503733
Course Type	Core Course		

COURSE OVERVIEW
File System versus DBMS – Advantages – Database Languages – ER-Model: Entities Relationships – Additional Features of ER Model – Conceptual Design with ER Model. Relational Model – Keys - Constraints – Querying – Views - Relational Algebra – Relational Calculus – SQL – QBE. File Organization – Organization of records in files – Indexing – Ordered Indices - B + Tree Index files – Hashing – Static – Dynamic – Query Optimization – Transformation of Relational Expressions – Choice of evaluation plans. Database Design – Pitfalls in Relational Database Design – Functional Dependencies – Decomposition – Normalization – I to V Normal Forms. DB Tuning – Security – Transaction Management – Transactions – Transaction state – Concurrent executions – Serializability – Concurrency Control – Protocols – Crash Recovery.

COURSE OBJECTIVES
<ul style="list-style-type: none">• To learn different database models and design of databases and to study query languages and transaction management

COURSE OUTCOMES (CO)	
Course Outcomes	Aligned Programme Outcomes (PO)
1. Illustrate the features of DBMS & Models for designing databases	1,2,3,5,7,8
2. Describe the nuances of data retrieval methods	1,3,5,7
3. Apply normalization techniques in DB design	1,2,3,7
4. Perform concurrency and Transaction Management operations.	2,3,7,8

COURSE TEACHING AND LEARNING ACTIVITIES			
S.No.	Week	Topic	Mode of Delivery
1	1	File System versus DBMS – Advantages – Database Languages – ER-Model: Entities	Chalk and Talk
2	2	Relationships – Additional Features of ER Model – Conceptual Design with ER Model.	PowerPoint Presentation
3	3	Relational Model – Keys - Constraints – Querying – Views	-do-
4	4	Relational Algebra – Relational Calculus	-do-
5	5	SQL – QBE.	-do-
6	6	File Organization – Organization of records in files – Indexing – Ordered Indices - B + Tree Index files	-do-
7	7	Hashing – Static – Dynamic – Query Optimization – Transformation of Relational Expressions – Choice of evaluation plans.	-do-
8	8	Database Design – Pitfalls in Relational Database Design	-do-
9	9	Functional Dependencies – Decomposition – Normalization – I to V Normal Forms.	-do-

S.No.	Week	Topic	Mode of Delivery
10	10	DB Tuning – Security – Transaction Management – Transactions – Transaction state	-do-
11	11	Concurrent executions – Serializability	-do-
12	12	Concurrency Control – Protocols – Crash Recovery.	-do-

COURSE ASSESSMENT METHODS				
Sl. No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Test 1	Week 4	1 Hr	20
2	Test 2	Week 8	1 Hr	20
3	Assignment	Week 6	1 Hr	10
4	Semester	At the end of course	1 Hr	50

ESSENTIAL READINGS : Textbooks, reference books Website addresses, journals, etc.
<ol style="list-style-type: none"> 1. Raghu Ramakrishnan and Johannes Gehrke, “Data Base Management Systems”, 3rd Edition, McGraw-Hill, 2003. 2. Silberschatz, Korth and Sudarshan, “Data Base System Concepts”, McGraw-Hill, 6th Edition, 2010. 3. C. J. Date, “An Introduction to Database Systems”, 8th Edition, Addison-Wesley, 2003. 4. R. Elmasri, S.B. Navathe, “Fundamentals of Database Systems”, 6th Edition, Pearson Education/Addison Wesley, 2011.

COURSE EXIT SURVEY (mention the ways in which the feedback about the course is assessed and indicate the attainment also)

- The students through the class representative may give their feedback at any time to the course faculty which will be duly addressed.
- The students may also give their feedback during class committee meeting.
- The Cos will be computed after arriving at the final marks.

COURSE POLICY (including plagiarism, academic honesty, attendance, etc.)

Plagiarism

The students are expected to come out with their original solution for problems given as assignment and tests/examinations.


Attendance


100% is a must. However, relaxation up to 25% will be given for leave on emergency requirements (medical, death etc) and representing institute events


ADDITIONAL COURSE INFORMATION

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

FOR SENATE'S CONSIDERATION


Course Faculty
Dr. N P Gopalan


CC-Chairperson
Dr. B. Janet


HOD
Dr. S R Balasundaram