GURUGRAM UNIVERSITY
SCHEME OF STUDIES AND EXAMINATION
M.TECH 2nd YEAR (COMPUTER SCIENCE & ENGINEERING)
SEMESTER 4th

Sl. No	Course No.	Subject	Teaching Schedule				Examination Schedule (Marks)				No of Credits
			L	T	P	Total	Marks of Class works	Theory	Practical	Total	
1.	17CSE24C1	Dissertation and viva (Dissertation Stage 2)	-	-	-	-	250	-	500	750	**20**
		TOTAL	**-**	**-**	**-**	**-**					

NOTE:

1. **Students have to publish a research paper in a journal / conference of the research work done in the semester.**

17CSE23C1 KNOWLEDGE BASED SYSTEM DESIGN

	Marks	Credits
L T P	**Exam:** 100	4
4 - -	**Sessional:** 50	
	Total: 150	4

Duration of Exam: 3 hrs.

Course Outcomes:
At the end of the course the student will:
CO1. Be able to understand the knowledge-based systems representation.
CO2. Be able to understand automatic reasoning.
CO3. Be able to understand inductive and deductive learning.
CO4. Be able to implement a small knowledge- based system

NOTE:
Examiner will set nine questions in total. Question One will be compulsory and will comprises of all sections and remaining eight questions to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each Unit.

UNIT-I
Introduction to Logic, Propositional Logic concepts, SemanticTebleaux and Resolution in Propositional Logic, FOPL, SemanticTebleaux in Predicate Logic, and Resolution in Predicate Logic, Logic Programming in Prolog.

UNIT-II
Knowledge Representation, Semantic Nets, Partitioned Nets, Parallel Implementation of Semantic Nets. Frames, Common Sense Reasoning and Thematic Role Frames, Architecture of Knowledge Based System, Rule Based Systems,Framebasedsystems. Forward and Backward Chaining,

UNIT-III
Search Techniques. Uninformed Search: DFS, BFS, Iterative Deepening, Heuristic Search: A*, Hill Climbing etc.

UNIT-IV
Uncertainty Management in Expert Systems, Fuzzy Logic, ProbabilisticMethods, Bayesian Theory, Dempster Shafer Theory, Bayes Network,
Introduction to Agents and their Application in Intelligent Systems.

References:
1. Artificial Intelligence-Nilsl J Nilson
2. Artificial Intelligence-Elain Rich and Kevin Knight
3. Artificial Intelligence: A modern approach-Staurt Russel and Peter Norvig
4. Artificial Intelligence-Patrick Henry Winston
5. The Essence of Logic- John Kelly

17CSE23C2 **NETWORK SECURITY**

	Marks	Credits
L T P	**Exam:** 100	4
4 - -	**Sessional:** 50	
	Total: 150	4

Duration of Exam: 3 hrs.

Course Outcomes:
After completing this course the student must demonstrate the knowledge and ability to:
CO1. Independently understand basic computer network technology.
CO2. Understand and explain Data Communications System and its components.
CO3. Identify the different types of network topologies and protocols.
CO4. Understand and explain OSI architecture, cryptography and internet security protocols
CO5. Identify the different types of network devices and their functions within a network

NOTE:
Examiner will set nine questions in total. Question One will be compulsory and will comprises of all sections and remaining eight questions to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each Unit.

Unit -1
Introduction: Services, Mechanisms and attacks-the OSI security architecture-Network security model-Classical Encryption techniques (Symmetric cipher model, substitution techniques, transposition techniques, steganography).Plain text and cipher text, substitution techniques, transposition techniques, encryption and decryption, symmetric and asymmetric key cryptography.

UNIT -II
BLOCK CIPHERS &PUBLIC KEY CRYPTOGRAPHY : Data Encryption Standard-Block cipher principles-block cipher modes of operation-Advanced Encryption Standard (AES)-Triple DES-Blowfish-RC5 algorithm.
Public key cryptography: Principles of public key cryptosystems-The RSA algorithm-Key management – Diffie Hellman Key exchange-Elliptic curve arithmetic-Elliptic curve cryptography.

Unit-III
Internet security protocols: basic concepts, Secure Socket Layer (SSL), Transport Layer Security (TLS), Secure Hyper Text Transfer protocol (SHTTP), Time Stamping Protocol (TSP), Secure Electronic Transaction (SET), SSL versus SET, Electronic Money, Email Security.

UNIT -IV
SECURITY PRACTICE & SYSTEM SECURITY : Authentication applications – Kerberos – X.509 Authentication services – Internet Firewalls for Trusted System: Roles of Firewalls – Firewall related terminology- Types of Firewalls – Firewall designs – SET for E-Commerce Transactions. Intruder – Intrusion detection system – Virus and related threats –

Countermeasures – Firewalls design principles – Trusted systems – Practical implementation of cryptography and security

Reference :

1. Cryprotography and Network Security, 2nd Edition by AtulKahate, TMH
2. Network Management Principles & Practices by Subramanian, Mani (AWL)
3. SNMP, Stalling, Willian (AWL) SNMP: A Guide to Network Management (MGH)
4.Network Management by U. Dlack (MGH)
5. Behrouz A. Ferouzan, "Cryptography & Network Security", Tata Mc Graw Hill, 2007.

17CSE23C3 LITERATURE SURVEY

(DISSERTATION STAGE-1)

L	T	P		Marks	Credits
-	-	2	Sessional Exam :	100	2

COURSE OUTCOMES:

By the end of this course every student is expected to be able to

CO1 understand the process of research.
CO2 do literature survey to identify a research problem.
CO3 communicate and discuss research ideas.
CO4 plan and write dissertation synopsis.

A candidate has to prepare a report covering identification of research topic, literature review, planning of research scheme and systematic documentation. The marks will be given on the basis of a report prepared covering the above said contents, contents of the presentation, communication and presentation skills.

16CSE23C4 **SEMINAR**

		Marks	Credits
L T P	Sessional Exam:	50	2
- - 2			

At the end of this course the student shall be able to
CO1 prepare the topic and contents on a technical topic
CO2 speak on a technical topic effectively
CO3 enhance communication skills

A candidate has to present a seminar on a recent topic/ technology/ research advancement and has to submit a seminar report. The marks will be given on the basis of seminar report, contents of the presentation, communication and presentation skills.

17CSE23CL1 **KNOWLEDGE BASED SYSTEM LAB**

		Marks	Credits
L T P	Exam:	50	2
- - 2	Sessional :	50	

Course Outcomes:
Upon successful completion of this course student will:
CO1. Able to design a knowledge based system,
CO2. Familiar with terminology used in this topical area,
CO3. Read and analyzed important historical and current trends addressing artificial intelligence.

Practical's based on theory paper

Experiment-1
Turbo Prolog features and format.
Experiment-2
Write a program using variables in Prolog.
Experiment-3
Write a program for usage of rules in Prolog.
Experiment-4
Write a program for using Input, Output and fail predicates in prolog.
Experiment-5
Write program for studying Usage of Arithmetic operators in Prolog.
Experiment-6
Write program to study usage of Cut, Not, Fail predicates in Prolog.
Experiment-7
Write program to study usage of Recursion in prolog.
Experiment-8
Write programs to study usage of Logical , Arithmetic ,String operators in Prolog.
Experiment-9
WAP for studying usage of Compound Object and List in prolog.
Experiment-10
Write a program for studying usage of Dynamic Database in prolog.

17CSE23CL2 **Project**

L	T	P		Marks	Credits
-	-	2	Exam :	50	2
			Sessional :	50	

At the end of this course the student shall be able to
CO1 have an understanding how software is to be developed
CO2 utilise different models for SDLC
CO3 write detailed project reports
CO4 implement project in a suitable platform

A student has to make a Project based on latest technology.

17CSE24C1 DISSERTATION and Viva (Stage-II) (IV sem)

COURSE OUTCOMES:

By the end of this course every student is expected to be able to

CO1 handle research problems and use modern research tools/methods.
CO2 analyse and review the existing literature on a research problem.
CO3 design and conduct experiments.
CO4 write dissertation and technical reports.
CO5 publish research papers.