RGPV (DIPLOMA WING) BHOPAL	OBE CURRICULUM FOR THE COURSE Artificial Intelligence and Expert System		FORMAT-3	Sheet No. 1
Branch	**COMPUTER SCIENCE AND ENGINEERING**		**Semester**	**FIFTH**
Course Code		**Course Name**	**Artificial Intelligence and Expert System**	
			(Hrs)	**(Marks)**
Course Outcome 1	**Define basic concepts of AI and its searching techniques.**		**25**	**30**
Learning Outcome 1	**Explain Artificial Intelligence.**		**8**	**PT 1(10)**
Contents	• Introduction to AI: History of AI, Overview of Artificial intelligence- Problems of AI, AI technique, Tic - Tac - Toe problem. • Introduction to Machine Learning, Machine Learning Definitions, Datasets for Machine Learning, Applications of Machine Learning.			
Method of Assessment	**Progressive Test-1 / Quiz**			
Learning Outcome 2	**Compare basic and advanced search techniques.**		**10**	**ET(10)**
Contents	• Problem Solving by Searching: breadth first search, depth first search, forward and Backward Chaining. • Greedy best-first search, Hill climbing search, A* and AO* search.			
Method of Assessment	**End Term Theory Examination**			
Learning Outcome 3	**Classify game playing techniques.**		**7**	**ET(10)**
Contents	• Games, optimal decisions & strategies in games, the minimax search procedure, alpha-beta pruning, additional refinements, iterative deepening.			
Method of Assessment	**End Term Theory Examination**			

Course Outcome 2	Explain knowledge representation and reasoning technique.	20	20
Learning Outcome 4	Apply logic rules for knowledge discovery.	10	ET(10)
Contents	• Knowledge representation, representation & mapping, approaches to knowledge representation, issues in knowledge representation, Representing simple fact in logic. • Knowledge representation using propositional and predicate logic, comparison of propositional and predicate logic.		
Method of Assessment	End Term Theory Examination		
Learning Outcome 5	Select knowledge reasoning techniques for logical reasoning.	10	TW (10)
Contents	• Procedural verses declarative knowledge, logic programming, forward verses backward reasoning, matching, control knowledge, representing knowledge in an uncertain domain, monotonic, non-monotonic, probabilistic Reasoning, the semantics of Bayesian networks.		
Method of Assessment	Internal Quiz/Assignments		
Course Outcome 3	Illustrate artificial neural network system and expert system.	25	30
Learning Outcome 6	Define Natural Language Processing.	7	ET(10)
Contents	• Introduction to natural language processing, Syntactic processing, semantic analysis, discourse & pragmatic processing.		
Method of Assessment	End Term Theory Examination		
Learning Outcome 7	Explain neural network with its components.	8	PT 2 (10)
Contents	• Introduction to learning, Various techniques used in learning, Introduction to Neural networks:- basic, comparison of human brain and machine. • Biological neuron, general neuron model, activation functions, Perceptron learning rule, applications and advantages of neural networks.		
Method of Assessment	Progressive Test-2/ Quiz		

Learning Outcome 8	Summarize the Expert System.	10	ET(10)
Contents	• Definition and Characteristics of Expert System, Rule Based System Architecture, Non- Production System Architecture, Knowledge Acquisition and Validation. • Expert System Life Cycle and Expert System Tools, MYCIN and DENDRAL examples of Expert System		
Method of Assessment	End Term Theory Examination		
Course Outcome 4	**Explain agents and planning techniques used in AI.**	**20**	**20**
Learning Outcome 9	Define agents and its architecture.	10	ET(10)
Contents	• Agents & environment, nature of environment, structure of agents, goal based agents, utility based agents, learning agents. • Agent architectures (e.g., reactive, layered, cognitive), Multi-agent systems-Collaborating agents, Competitive agents.		
Method of Assessment	End Term Theory Examination		
Learning Outcome 10	Outline AI planning techniques.	10	ET(10)
Contents	• Overview an example domain the block word, component of planning systems, goal stack planning, nonlinear planning, STRIPS.		
Method of Assessment	End Term Theory Examination		

Abbreviation: PT: Progressive Test   TW: Term Work   ET: External Theory

REFERENCE BOOKS:

S. No.	Title & Publication	Author
1.	Artificial Intelligence	Elaine Rich and Kerin Knig ht, Tata McGraw Hill Edition
2.	Introduction to AI & ES	DAN W. Patterson, PHI learning
3.	Introduction to Artificial Intelligence	Eugene Charniak and Drew McDermott
4.	Principles of Artificial Intelligence	Nils J. Nilson
5.	Machine Learning	Tom M. Mitchell, Tata McGraw-Hill

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code			Course Code		CO Code	LO Code	Format No. **4**
		C	0	4			1	1	

Course Name	ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEM
CO Description	**Define basic concepts of AI and its searching techniques.**
LO Description	Explain Artificial Intelligence.

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract./ Tut. Hrs	LRs Required	Remarks
1	• Introduction to AI: History of AI, Overview of Artificial intelligence- Problems of AI, AI technique, Tic - Tac - Toe problem. • Introduction to Machine Learning, Machine Learning Definitions, Datasets for Machine Learning, Applications of Machine Learning.	Traditional Lecture method + Handout	Teacher will explain the contents and provide handout to students.	8	0	Handouts / Books / E-Contents	NIL

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	**PROGRESSIVE TEST-I**	Student will be asked to define AI, its application and limitations, to explain machine learning.	**10**	**Test Paper**	**Internal**

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code			Course Code		CO Code	LO Code	Format No. **4**
		C	0	4			1	2	

Course Name	ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEM
CO Description	**Define basic concepts of AI and its searching techniques.**
LO Description	Compare basic and advanced search techniques.

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract./ Tut. Hrs	LRs Required	Remarks
1	• Problem Solving by Searching: breadth first search, depth first search, forward and Backward Chaining. • Greedy best-first search, Hill climbing search, A* and AO* search.	Traditional Lecture method + Handout	Teacher will explain the contents and provide handout to students.	10	0	Handouts / Books / E-Contents,	Teacher may use working animation for Searching techniques.

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	**END SEM THEORY**	Student will be asked to compare and apply for given problem any of searching technique.	**10**	**Test Paper**	**External**

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code		Course Code		CO Code	LO Code	Format No. **4**
		C	0	4		1	3	

Course Name	ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEM
CO Description	**Define basic concepts of AI and its searching techniques.**
LO Description	**Classify game playing techniques.**

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract./ Tut. Hrs	LRs Required	Remarks
1	• Games, optimal decisions & strategies in games, min-max search procedure, alpha-beta pruning, additional refinements, iterative deepening.	Traditional Lecture method + Handout	Teacher will explain the contents and provide handout to students.	7	0	Handouts / Books / E-Contents	NIL

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	**END SEM THEORY**	Student will be asked to define or apply min max search for given problem.	**10**	**Test Paper**	**External**

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME		Branch Code		Course Code		CO Code	LO Code	Format No. **4**
			C	**0**	**4**		**2**	**4**	

Course Name	ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEM
CO Description	**Explain knowledge representation and reasoning technique.**
LO Description	**Apply logic rules for knowledge discovery.**

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract./ Tut. Hrs	LRs Required	Remarks
1	• Knowledge representation, representation & mapping, approaches to knowledge representation, issues in knowledge representation, representing simple fact in logic. • Knowledge representation using propositional and predicate logic, comparison of propositional and predicate logic.	Traditional Lecture method + Handout	Teacher will explain the contents and provide handout to students.	10	0	Handouts / Books / E-Contents	NIL

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	**END SEM THEORY**	Student will be asked to apply logical rules to derive knowledge from given problem.	**10**	**Test Paper**	**External**

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code		Course Code		CO Code	LO Code	Format No. **4**
		C	0	4		2	5	

Course Name	ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEM
CO Description	**Explain knowledge representation and reasoning technique.**
LO Description	**Select knowledge reasoning techniques for logical reasoning.**

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract./ Tut. Hrs	LRs Required	Remarks
1	• Procedural verses declarative knowledge, logic programming, forward verses backward reasoning, matching, control knowledge, representing knowledge in an uncertain domain, monotonic, non-monotonic, probabilistic Reasoning, the semantics of Bayesian networks.	Traditional Lecture method + Handout	Teacher will explain the contents and provide handout to students.	10	0	Handouts / Books / E-Contents	NIL

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	**TERM WORK**	Student will be asked to compare forward and backward reasoning or summarize Bayesian network.	**10**	**Test Paper**	**Internal**

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code			Course Code		CO Code	LO Code	Format No. **4**
		C	0	4			3	6	

Course Name	ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEM
CO Description	Illustrate artificial neural network system and expert system.
LO Description	Define Natural Language Processing.

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract./ Tut. Hrs	LRs Required	Remarks
1	• Introduction to natural language processing, Syntactic processing, semantic analysis, discourse & pragmatic processing.	Traditional Lecture method + Handout	Teacher will explain the contents and provide handout to students.	7	0	Handouts / Books / E-Contents	NIL

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	**END SEM THEORY**	Student will be asked to define NLP and various techniques used in NLP.	**10**	**Test Paper**	**External**

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

Course Name	**ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEM**
CO Description	**Illustrate artificial neural network system and expert system.**
LO Description	**Explain neural network with its components.**

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract./ Tut. Hrs	LRs Required	Remarks
1	• Introduction to learning, Various techniques used in learning, Introduction to Neural networks:- basic, comparison of human brain and machine. • Biological neuron, general neuron model, activation functions, Perceptron learning rule, applications and advantages of neural networks.	Traditional Lecture method + Handout	Teacher will explain the contents and provide handout to students.	8	0	Handouts / Books / E-Contents	NIL

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	**PROGRESSIVE TEST-II**	Student will be asked to explain neural network, compare NN with human brain, and explain a neuron in neural network.	**10**	**Test Paper**	**Internal**

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code		Course Code		CO Code	LO Code	Format No. **4**
		C	0	4		3	8	

Course Name	ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEM
CO Description	**Illustrate artificial neural network system and expert system.**
LO Description	**Summarize the Expert System.**

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract./ Tut. Hrs	LRs Required	Remarks
1	• Definition and Characteristics of Expert System, Rule Based System Architecture, Non- Production System Architecture, Knowledge Acquisition and Validation. • Expert System Life Cycle and Expert System Tools, MYCIN and DENDRAL examples of Expert System	Traditional Lecture method + Handout	Teacher will explain the contents and provide handout to students.	10	0	Handouts / Books / E-Contents	NIL

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	**END SEM THEORY**	Student will be asked to explain expert system and its Life cycle.	**10**	**Test Paper**	**External**

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code			Course Code		CO Code	LO Code	Format No. **4**
		C	0	4			4	9	

Course Name	ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEM
CO Description	**Explain agents and planning techniques used in AI.**
LO Description	**Define agents and its architecture.**

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract./ Tut. Hrs	LRs Required	Remarks
1	• Agents & environment, nature of environment, structure of agents, goal based agents, utility based agents, learning agents. • Agent architectures (e.g., reactive, layered, cognitive), Multi-agent systems- Collaborating agents, Competitive agents.	Traditional Lecture method + Handout	Teacher will explain the contents and provide handout to students.	10	0	Handouts / Books / E-Contents	NIL

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	**END SEM THEORY**	Student will be asked to write note on agent and draw architecture of an agent.	**10**	**Test Paper**	**External**

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME		Branch Code		Course Code		CO Code	LO Code	Format No. **4**
			C	0	4			4	10	

Course Name	ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEM
CO Description	**Explain agents and planning techniques used in AI.**
LO Description	**Outline AI planning techniques.**

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract./ Tut. Hrs	LRs Required	Remarks
1	• Overview an example domain the block word, component of planning systems, goal stack planning, nonlinear planning, STRIPS.	Traditional Lecture method + Handout	Teacher will explain the contents and provide handout to students.	10	0	Handouts / Books / E-Contents	NIL

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	**END SEM THEORY**	Student will be asked to list of planning techniques or to write short note on STRIPS.	**10**	**Test Paper**	**External**

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)