RGPV (DIPLON BHOPAL	AA WING)	OB	<b>BE CURRICULUM</b> Artificial Intelligenc	I FOR THE COURSE e and Expert System	FORMAT-3	Sheet No. 1
Branch	COMPUTER	SCIE	ENCE AND ENGIN	NEERING	Semester	FIFTH
Course Code		Artificial Intelligence a	and Expert Sy	vstem		
					( <u>Hrs</u> )	( <u>Marks</u> )
Course Outcome 1	25	30				
Learning Outcome 1	8	PT 1(10)				
Contents	<ul> <li>Introduction to A AI, AI technique</li> <li>Introduction to M Machine Learnin</li> </ul>	I: Histo , Tic - 7 Iachine g, Appl	bry of AI, Overview of Art Fac - Toe problem. Learning, Machine Learn lications of Machine Learn	ificial intelligence- Problems of ing Definitions, Datasets for ing.		
Method of Assessment	Progressive Test-1	/ Quiz				
Learning Outcome 2	Compare basic and	l advar	nced search techniques.		10	ET(10)
Contents	<ul> <li>Problem Solving and Backward C</li> <li>Greedy best-firs</li> </ul>	g by Sea Chaining at search	arching: breadth first searc g. 1, Hill climbing search, A*	h, depth first search, forward and AO* search.		
Method of Assessment						
Learning Outcome 3		7	ET(10)			
Contents	• Games, optimal of alpha-beta prunir	decisior ng, addi	ns & strategies in games, the tional refinements, iterative	ne minimax search procedure, e deepening.		
Method of Assessment						

Course Outcome 2	Explain knowledge representation and reasoning technique.	20	20
Learning Outcome 4	Apply logic rules for knowledge discovery.	10	ET(10)
Contents	<ul> <li>Knowledge representation, representation &amp; mapping, approaches to knowledge representation, issues in knowledge representation, Representing simple fact in logic.</li> <li>Knowledge representation using propositional and predicate logic, comparison of propositional and predicate logic.</li> </ul>		
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	<ul> <li>Introduction to learning, Various techniques used in learning, Introduction to Neural networks:- basic, comparison of human brain and machine.</li> <li>Biological neuron, general neuron model, activation functions, Perceptron learning rule, applications and advantages of neural networks.</li> </ul>		
Method of Assessment	Progressive Test-2/ Quiz		

Learning Outcome 8	Summarize the Expert System.	10	ET(10)
Contents	<ul> <li>Definition and Characteristics of Expert System, Rule Based System Architecture, Non- Production System Architecture, Knowledge Acquisition and Validation.</li> <li>Expert System Life Cycle and Expert System Tools, MYCIN and DENDRAL examples of Expert System</li> </ul>		
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	<ul> <li>Agents &amp; environment, nature of environment, structure of agents, goal based agents, utility based agents, learning agents.</li> <li>Agent architectures (e.g., reactive, layered, cognitive), Multi-agent systems-Collaborating agents, Competitive agents.</li> </ul>		
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

BGDV	(Dinlon	na Wing ) Bhonal	SCH	EME FOR LEAR	NING	Bra	inch Co	ode	Cou	irse Co	ode	CO Code	LO Code	
NOFV				OUTCOME		С	0	4				1	1	Format No. 🖶
Course	Name			ARTIFICIAL INT	ELLIGE	NCE	AND	EXP	ERT S	SYST	EM			
CO Des	cription	Define basic concepts	of AI and	l its searching tech	niques.									
LO Des	cription	Explain Artificial Inte	elligence.											
				SCHEME	OF STU	DY								
S. No.	Learning	g Content		Teaching – Learning Method	Descrip Process	tion o	f T-L	Tea Hrs.	ch	Prac Tut.	t./ Hrs	LRs R	equired	Remarks
1	<ul> <li>Introd Over Probl Tac -</li> <li>Introd Mach Datas Appli</li> </ul>	luction to AI: History of view of Artificial intellig ems of AI, AI technique, Toe problem. luction to Machine Learn ine Learning Definitions sets for Machine Learnin cations of Machine Learnin	AI, gence- , Tic - ning, s, g, ming.	Traditional Lecture method + Handout	Teacher explain contents provide students	will the and hando	out to	5	Hrs.         Tut. Hrs           8         0				outs / s / E- nts	NIL
				SCHEME OF	ASSESS	MEN	т							
S. No.	Method	of Assessment	Descript	ion of Assessment	Ma	ximu ⁄Iarks	m	F	Resou	rces F	Requi	red	Exte	ernal / Internal
1	PROGE	RESSIVE TEST-I	Student define A and limit machine	will be asked to I, its application tations, to explain learning.		10		Test Paper						Internal
		ADDI	TIONAL	INSTRUCTIONS F	OR THE	HOD	/ FA	CULT	Y (IF /	ANY)				

PCD)		ma Wing ) Bhonal	SCHEME FOR LEAR	NING	Bra	inch C	ode	Cοι	urse Co	ode	CO Code	LO Code	
			OUTCOME		С	0	4				1	2	Format No. 🕂
Course	Name		ARTIFICIAL INT	ELLIGH	ENCE	AND	EXPE	ERT	SYST	EM			
CO Des	cription	Define basic concepts	of AI and its searching tech	niques.									
LO Dese	cription	Compare basic and ad	lvanced search techniques.										
			SCHEME	OF STU	IDY								
S. No.	Learning	g Content	Teaching – Learning Method	Descrip Process	tion o	f T-L	Teac Hrs.	h	Prac Tut.	t./ Hrs	LRs Re	equired	d Remarks
1	<ul> <li>Prob brea seare Chai</li> <li>Gree clim seare</li> </ul>	blem Solving by Searchin dth first search, depth fir ch, forward and Backwar ining. edy best-first search, Hill bing search, A* and AO <sup>2</sup> ch.	g: Traditional st Lecture d method + Handout	Teacher explain content provide student	r will the s and hando s.	out to	10 0 it to				Hando Books Conte	outs / s / E- nts,	Teacher may use working animation for Searching techniques.
			SCHEME OF	ASSESS	<b>MEN</b>	т							
S. No.	Method	of Assessment	Description of Assessment	Ma	aximu Marks	m	R	lesou	irces l	Requi	red	Ext	ernal / Internal
1	END SE	CM THEORY	Student will be asked to compare and apply for given problem any of searching technique.		10 Test Paper E					External			
		ADDI	TIONAL INSTRUCTIONS F	OR THE	HOD	/ FA	CULTY	(IF	ANY)				

RGPV	/ (Diplo	ma Wing ) Bhopal	SCH	IEME FOR LEAR	NING	ING Branch C		ode	Co	ourse C	Code	CO Code	LO Code	Format No. <b>4</b>
				OUTCOME		С	0	4				1	3	
Course	Name			ARTIFICIAL INT	ELLIGE	INCE	AND	EXP	ERT	SYS	ГЕМ		<u> </u>	
CO Des	cription	Define basic concepts of	of AI an	d its searching tech	niques.									
LO Dese	cription	Classify game playing	techniq	ues.										
				SCHEME	OF STU	DY								
S. No.	Learning	g Content		Teaching – Learning Method	Descrip Process	tion o	f T-L	Tea Hrs	ch	Pra Tut	ct./ . Hrs	LRs R	equired	Remarks
1	Gam strat proc addi deep	nes, optimal decisions & egies in games, min-max edure, alpha-beta pruning tional refinements, iterativ pening.	search , ve	Traditional Lecture method + Handout	Teacher explain contents provide students	Teacher will explain the contents and provide handout to students.					0	Hande Books Conte	outs / s / E- nts	NIL
				SCHEME OF	ASSESS	MEN	т							
S. No.	Method	of Assessment	Descrip	tion of Assessment	Ma	aximui Marks	m		Reso	urces	Requi	red	Exte	rnal / Internal
1	L END SEM THEORY defin search			t will be asked to or apply min max for given problem.	ed to max 10 Test Paper E blem.						External			
		ADDI	IONAL	INSTRUCTIONS F	OR THE	HOD	/ FA	CULT	Y (IF	ANY	<b>'</b> )			

RGPV	(Diplon	na Wing ) Bhopal	SCH		NING	Bra	nch C	ode	Со	urse C	ode	CO Code	LO Code	Format No. <b>4</b>
Course	Name			ARTIFICIAL INT	ELLIGE	C NCE	0 AND	4 EXP	ERT	SYST	rem	2	4	
CO Des	cription	Explain knowledge rep	presenta	tion and reasoning	techniqu	е.								
LO Dese	cription	Apply logic rules for k	nowled	ge discovery.										
			SCHEME	OF STU	DY									
S. No.	Learning	g Content		Teaching – Learning Method	Descrip <sup>®</sup> Process	tion of	f T-L	Tea Hrs.	ch	Prac Tut.	:t./ Hrs	LRs R	equired	Remarks
1	<ul> <li>Kno repro appr repro fact</li> <li>Kno prop com pred</li> </ul>	wledge representation, esentation & mapping, oaches to knowledge esentation, issues in know esentation, representing s in logic. wledge representation us ositional and predicate lo parison of propositional a icate logic.	vledge imple ing ogic, and	Traditional Lecture method + Handout	Teacher explain contents provide students	will the and hando	out to	Hrs.         Tut. Hrs.           10         0				Hand Book Conte	outs / s / E- ents	NIL
				SCHEME OF	ASSESS	MEN	т							
S. No.	Method	of Assessment	Descrip	tion of Assessment	Ma	ximur ⁄Iarks	n	F	Resou	irces	Requi	red	Exte	ernal / Internal
1	END SE	CM THEORY	Student apply lo knowle problen	will be asked to ogical rules to derive dge from given n.		10		Test Paper						External
		ADDI	TIONAL	INSTRUCTIONS F	OR THE	HOD	/ FA	CULT	Y (IF	ANY	)			

RGD	/ (Dinlo	ma Wing ) Bhonal	SCH	IEME FOR LEAR	NING	Bra	inch C	ode	Сс	ourse C	ode	CO Code	LO Code	Format No.
				OUTCOME		С	0	4				2	5	Format No. 🗬
Course	Name			ARTIFICIAL INT	ELLIGE	NCE	AND	EXP	ERT	SYST	ГЕМ			
CO Des	cription	Explain knowledge rej	presenta	ation and reasoning	techniqu	e.								
LO Des	cription	Select knowledge reas	oning te	chniques for logical	reasonir	g.								
				SCHEME	OF STU	DY								
S. No.	Learning	; Content		Teaching – Learning Method	Descrip Process	tion o	f T-L	Tea Hrs	ch	Prac Tut.	ct./ Hrs	LRs R	equired	Remarks
1	Proce know forwa match repres uncer mono the se	dural verses declarative ledge, logic programming and verses backward reason ning, control knowledge, senting knowledge in an tain domain, monotonic, tonic, probabilistic Reason mantics of Bayesian network	g, oning, non- oning, vorks.	Traditional Lecture method + Handout	Teacher explain contents provide students	will the and hando	out to	1	.0		0	Hande Books Conte	outs / s / E- ents	NIL
				SCHEME OF	ASSESS	MEN	т							
S. No.	Method	of Assessment	Descrip	otion of Assessment	Ma	iximu Aarks	m		Reso	urces	Requi	red	Exte	ernal / Internal
1	TERM	WORK	Student compar backwa summa networl	t will be asked to re forward and ard reasoning or rize Bayesian k.		10			7	ſest P	aper			Internal
		ADDI	TIONAI	LINSTRUCTIONS F	OR THE	HOD	/ FA	CULT	Y (IF	ANY	)			

RGPV	(Diplon	na Wing ) Bhopal	SCH	HEME FOR LEAR	NING	G Branch Code		ode	Cou	irse Co	ode	CO Code	LO Code	Format No. <b>4</b>
	(2.6.0.			OUTCOME		С	0	4				3	6	
Course	Name			ARTIFICIAL INT	ELLIGE	NCE	AND	EXP	ERT S	SYST	<b>TEM</b>			
CO Dese	cription	Illustrate artificial net	iral net	work system and exp	oert syste	m.								
LO Desc	cription	Define Natural Langu	age Pro	cessing.										
				SCHEME	OF STU	DY								
S. No.	Learning	Content		Teaching – Learning Method	Descript Process	tion o	f T-L	Tea Hrs.	ch	Prac Tut.	t./ Hrs	LRs R	equired	Remarks
1	Introce proce seman pragn	luction to natural languag ssing, Syntactic processin ntic analysis, discourse & natic processing.	ge ng,	Traditional Lecture method + Handout	Teacher explain contents provide students	reacher will explain the contents and provide handout to tudents.			7	(	)	Hande Books Conte	outs / s / E- ents	NIL
				SCHEME OF	ASSESS	MEN	т							
S. No.	Method	of Assessment	Descrip	otion of Assessment	Ma N	ximuı 1arks	n	F	Resou	rces F	Requi	red	Exte	rnal / Internal
1	1     END SEM THEORY     Stude define techn			t will be asked to NLP and various ues used in NLP.	10 Test Paper					External				
		ADDI	TIONA	L INSTRUCTIONS F	OR THE	HOD	/ FA	CULT	Y (IF /	ANY)	)			

RGP	/ (Diplo	ma Wing ) Bhopal	SCH	HEME FOR LEAR	NING	Bra	inch C	ode	Со	urse C	ode	CO Code	LO Code	Format No. <b>4</b>
	. (= .6.0			OUTCOME		С	0	4				3	7	
Course	Name			ARTIFICIAL INT	ELLIGE	NCE	AND	EXP	ERT	SYST	ГЕМ			
CO Des	cription	Illustrate artificial neu	iral net	work system and exp	pert syste	m.								
LO Des	cription	Explain neural networ	<b>k with</b> i	its components.										
				SCHEME	OF STU	DY								
S. No.	Learning	g Content		Teaching – Learning Method	Descrip Process	tion o	f T-L	Tea Hrs.	ch	Prac Tut.	ct./ Hrs	LRs R	equired	Remarks
1	<ul> <li>Introctechn</li> <li>Introctechn</li> <li>Introctechn</li> <li>Biolo</li> <li>mode</li> <li>Perceand and a</li> </ul>	luction to learning, Vario iques used in learning, luction to Neural netwo , comparison of human nachine. gical neuron, general neu l, activation functions, ptron learning rule, applie dvantages of neural netwo	us rks:- brain ron cations orks.	Traditional Lecture method + Handout	Teacher explain contents provide students	will the and hando	out to		8		0	Hand Book Conte	outs / s / E- ents	NIL
				SCHEME OF	ASSESS	MEN	т							
S. No.	Method	of Assessment	Descrip	otion of Assessment	Ma	iximui Aarks	m	I	Reso	urces	Requi	red	Exte	rnal / Internal
1	PROGR	RESSIVE TEST-II	Student explain compar brain, a in neura	t will be asked to neural network, re NN with human nd explain a neuron al network.		10			J	lest P	aper			Internal
		ADDI	ΓΙΟΝΑΙ	LINSTRUCTIONS F	OR THE	HOD	/ FA	CULT	Y (IF	ANY	)			

RGP	/ (Dinlo	ma Wing ) Bhonal	SCH	HEME FOR LEAR	NING	Bra	nch Co	ode	Cou	urse C	ode	CO Code	LO Code	
				OUTCOME		С	0	4				3	8	Format No. –
Course	Name			ARTIFICIAL INT	ELLIGE	NCE	AND	EXP	ERTS	SYST	EM			
CO Dese	cription	Illustrate artificial neu	iral net	work system and exp	pert syste	m.								
LO Deso	cription	Summarize the Expert	t Systen	1.										
				SCHEME	OF STU	DY								
S. No.	Learning	Content		Teaching – Learning Method	Descrip Process	tion o	f T-L	Tea Hrs.	ch	Prac Tut.	:t./ Hrs	LRs R	equired	Remarks
1	<ul> <li>Defin Exper Archi Syster Acqui</li> <li>Exper Syster DENI Syster</li> </ul>	ition and Characteristics et System, Rule Based Sy tecture, Non- Production m Architecture, Knowled isition and Validation. et System Life Cycle and m Tools, MYCIN and DRAL examples of Exper- m	of stem ge Expert rt	Traditional Lecture method + Handout	Teacher explain contents provide students	will the and hando	out to	10 0				Hande Books Conte	outs / s / E- nts	NIL
				SCHEME OF	ASSESS	MEN	Т							
S. No.	Method	of Assessment	otion of Assessment	Ma	iximui Aarks	m		Resou	rces l	Requi	red	Exte	ernal / Internal	
1	END SE	M THEORY	Student explain its Life	t will be asked to expert system and cycle.		10			T	est Pa	aper			External
		ADDI	TIONAI	LINSTRUCTIONS F	OR THE	HOD	/ FA	CULT	Y (IF	ANY	)			

PCD\		ma Wing ) Bhonal	SCHEME FOR LEAR	HEME FOR LEARNING		Branch Code			ourse Co	ode	CO Code	LO Code		
KGPV (Diploma wing ) Bhopai			OUTCOME	OUTCOME			4				4	9	Format No. 4	
Course	Name		ARTIFICIAL INT	ELLIGE	INCE	AND	EXP	ERT	SYST	EM		·		
CO Description		Explain agents and planning techniques used in AI.												
LO Description		Define agents and its architecture.												
			SCHEME	OF STU	DY									
S. No.	Learning	g Content	Teaching – Learning Method	Descrip Process	tion of T-L 1		Tea Hrs	ch	Prac Tut.	t./ Hrs	LRs R	equired	Remarks	
<ul> <li>Agents &amp; environment, nature of environment, structure of agents, goal based agents, utility based agents, learning agents.</li> <li>Agent architectures (e.g., reactive, layered, cognitive), Multi-agent systems- Collaborating agents, Competitive agents.</li> </ul>			of Traditional tts, Lecture d method + Handout ive, nt	Teacher explain contents provide students	ner will in the nts and de handout to nts.			0	(	)	Handouts / Books / E- Contents		NIL	
			SCHEME OF	ASSESS	MEN	Т								
S. No.	Method	of Assessment	Description of Assessment	Maximum Marks			Resources Requ			ired Ex		ternal / Internal		
1	END SE	EM THEORY	Student will be asked to write note on agent and draw architecture of an agent.		10		Test Paper				Exte		External	
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)														

RGPV (Diploma Wing ) Bhopal			SCHEME FOR LEARNING		Branch Code		Course Code		CO Code	LO Code	Format No. <b>4</b>			
			OUTCOME			С	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			Tea Hrs.	ch	Pra Tut	ct./ . Hrs	LRs Required		Remarks
<ul> <li>Overview an example domain block word, component of pla systems, goal stack planning, nonlinear planning, STRIPS.</li> </ul>			the nning	Traditional Lecture method + Handout	Teacher will explain the contents and provide handout to students.			1	0		0	Handouts / Books / E- Contents		NIL
SCHEME OF ASSESSMENT														
S. No.	Method	of Assessment	Description of Assessment		Ma	Maximum Marks			Resources Requi				red External / Inter	
1	END SEM THEORY St of W1			t will be asked to list ning techniques or to hort note on STRIPS.		10			Test Paper				External	
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)														