

Department of Computer Science (Entire)
Revised Syllabus of II Year Diploma Program (UG)
(2020-21)

❖ **Title of Program: Artificial Intelligence with Python**

❖ **Syllabus Structure (UG)**

Year	Semester	Course No.	Course Code	Contact Hours	Credits (1Credit=15 H)	Total Marks
2	III	CT III	DCSET 303	30	2	75
		CL III	DCSEL303	60	2	75
	IV	CT IV	DCSET 404	30	2	75
		CL IV	DCSEL404	60	2	75
	Annual	CP II	DCSEP202	30	1	50
	Industrial and or Incubation and or Research and or Field Training				30	1
Total				240	10	350

D: Diploma, CSE: Computer Science (Entire), C: Course, T: Theory, L: Lab (Practical), P: Project

Total No. of Courses: 6 (Theory: 02, Practical: 02, Project: 01)

Theory and Practical: Semester, Project: Annual

❖ **Evaluation Structure :-**

Year	Semester	Theory (75 per Semester) (Marks = 150 per year)						Practical (75 per Semester) (Marks = 150 per year)						Project (Annual) (1 year:50, II, III =100)				Total Marks	
		Course No.	Course Code	Internal (35 Assessment)		DESE (40)	Total	Course No.	Course Code	Internal (35 Assessment)		DESE (40)	Total	Course No.	Course Code	Presenta-tion+ viva-Voce	Dissert-ation		Total
I	I	CT I	D*T 101	30	5	40	75	CL I	D*L102	30	5	30	10	75	CP I	D* P101	25	25	50
	II	CT II	D*T 202	30	5	40	75	CL II	D*L202	30	5	30	10	75					
		Total						Total						Total				350	
II	III	CT III	D*T 303	30	5	40	75	CL III	D*L303	30	5	30	10	75	CP II	D* P202	25	25	50
	IV	CT IV	D*T 404	30	5	40	75	CL IV	D*L404	30	5	30	10	75					
		Total						Total						Total				350	
III	V	CT V	D*T 505	30	5	40	75	CL V	D*L505	30	5	30	10	75	CP III	D* P303	50	50	100
	VI	CT VI	D*T 606	30	5	40	75	CL VI	D*L606	30	5	30	10	75					
		Total						Total						Total				400	
		Total of Three Years						Total						Total				1100	

D: Diploma, *: Departmental Code (C: Chemistry, MI: Microbiology, CSE: Computer Science (Entire), etc)

C: Course, T: Theory, L: Lab (Practical), P: Project

Theory and Practical: Semester, Project: Annual

DISE I and II: Diploma Internal Semester Examination (online) for I and II Semester

DESE I and II: Diploma End Semester Examination for I and II Semester

Diploma Programme: Total Marks I and II Year: 150 (Theory) + 150 (Practical) + 50 (Project) = 350

Total Marks III Year: 150 (Theory) + 150 (Practical) + 100 (Project) = 400

D CSET 303: Techniques of AI

(Contact Hrs: 30 Credits: 2)

Learning Objectives:

Students will be able to

1. To learn various types of algorithms useful in Artificial Intelligence (AI).
2. To convey the ideas in AI research and programming language related to emerging technology.
3. To understand the numerous applications and huge possibilities in the field of AI that goes beyond the normal human imagination

Unit I: Searching Techniques

(15)

Defining AI problems as a State Space Search: example, Search and Control Strategies, Problem Characteristics, Issues in Design of Search Programs, Production System. Blind Search Techniques: -BFS, DFS, DLS, Iterative Deepening, Search, Bidirectional Search, Uniform cost Search. Heuristic search techniques: -Generate and test, Hill Climbing, Best First search, Constraint Satisfaction, Mean-End Analysis, A*, AO*.

Unit II: Knowledge Representation

(15)

Representations and Mappings, Approaches to Knowledge Representation, Knowledge representation method, Propositional Logic, Predicate logic, Representing Simple facts in Logic, Resolution, Forward and backward chaining. Game Playing- Minimax Search Procedures, Adding alpha-beta cutoffs.

Learning Outcomes:

1. Student should understand knowledge representation.
2. Student should get knowledge about Searching Techniques.

Reference Books:

1. Stuart Russell and Peter Norvig (1995), Artificial Intelligence: A Modern Approach," Third edition, Pearson, 2003.
2. Shai shalev-shwartz, Shai Ben-David: Understanding Machine Learning from Theory to algorithms, Cambridge University Press
3. Artificial Intelligence by Elaine Rich, Kevin Knight and Nair, TMH
4. BoS Content: Books, Course Notes, Digital contents, Blogs developed by the BoS for bridging the gaps in the syllabus, problem solving approaches and advances in the course

DCSEL303: (Practical):
(Contact Hrs: 60 Credits: 02)

Learning Objectives:

Students will be able to

1. Understand Searching Techniques with Programming.
2. Learn the concept of forward and backward chaining.
3. Learn to create small game application.

List of Practical's

1. Write a program to implement Simple Chatbot.
2. Write a program to implement Breadth First Search Traversal.
3. Write a program to implement Depth First Search Traversal.
4. Write a program to implement Water Jug Problem
5. Write a program to implement Bidirectional Search
6. Write a program to implement heuristic search procedure.
7. Program to implement a* algorithm.
8. Write a program to implement tic tac toe game for 0 and X.
9. Write a program to implement Uniform cost Search.
10. Write a program to implement Forward and backward chaining

Learning Outcomes:

Student should get knowledge about-

1. How to use different control structures
2. How to implement Depth First Search
3. How to implement heuristic search
4. How to implement a* algorithm.

Reference Books:

5. Stuart Russell and Peter Norvig (1995), Artificial Intelligence: A Modern Approach," Third edition, Pearson, 2003.
6. Shai shalev-shwartz, Shai Ben-David: Understanding Machine Learning from Theory to algorithms, Cambridge University Press
7. Artificial Intelligence by Elaine Rich, Kevin Knight and Nair, TMH
8. BoS Content: Books, Course Notes, Digital contents, Blogs developed by the BoS for bridging the gaps in the syllabus, problem solving approaches and advances in the course

Semester IV

DCSET 404: Python Programming

(Contact Hrs: 30 Credits: 2)

Learning Objectives:

Students will be able to

1. To learn advanced modules and packages of AI.
2. To learn Symbolic and Statistical Reasoning.

Unit I: AI with Python

(15)

Introduction to Python , why python with AI, Basic and advanced modules & Packages, Python Decorators and generators .Advanced Objects & Data structures.

Start coding with Python, drawing upon libraries and automation scripts to solve complex problems quickly.

Unit II: Symbolic Reasoning under uncertainty and Statistical Reasoning

(15)

Introduction to non monotonic reasoning, logic for non monotonic reasoning, implementation issues, probability and Baye's Theorem in certainty factor and Rule – Based systems, Bayesian Networks, Demster Shafer Theory, Fuzzy logic.

Learning Outcomes:

1. Student should get Knowledge of Advanced Objects & Data structures of AI.
2. Student should get Knowledge of non monotonic reasoning.

Reference Books:

9. Stuart Russell and Peter Norvig (1995), "Artificial Intelligence: A Modern Approach," Third edition, Pearson, 2003.
10. Shai shalev-shwartz, Shai Ben-David: Understanding Machine Learning from Theory to algorithms, Cambridge University Press
11. Artificial Intelligence by Elaine Rich, Kevin Knight and Nair, TMH
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DCSEL404: (Practical):
(Contact Hrs: 60 Credits: 02)

Learning Objectives:

1. Learn the concept of Modules and Packages
2. Learn the concept of Module as a script.
3. Learn Artificial Intelligence problems and techniques

List of Practical's (15)

1. Write a program to use Math module.
2. Write a program to use OS module.
3. Write a program to use different packages.
4. Write a program to use sub packages.
5. Write a program to Executing a Module as a Script
6. Write a Case study on AI with python.
7. Write a Case study on AI in Medicals.
8. Write a Case study on AI in Agriculture.
9. Write a Case study on AI in Education.
10. Write a Case study on AI in Manufacturing.

Learning Outcomes:

1. Student should get Knowledge Modules and Packages.
2. Student should get Knowledge of various fields of AI.

Reference Books:

13. Stuart Russell and Peter Norvig (1995), "Artificial Intelligence: A Modern Approach," Third edition, Pearson, 2003.
14. Shai shalev-shwartz, Shai Ben-David: Understanding Machine Learning from Theory to algorithms, Cambridge University Press
15. Artificial Intelligence by Elaine Rich, Kevin Knight and Nair, TMH
16. BoS Content: Books, Course Notes, Digital contents, Blogs developed by the BoS for bridging the gaps in the syllabus, problem solving approaches and advances in the course

DCSEP202 (Project):
(Contact Hrs. 30/60, Credits: 1/2)

BOS Sub-Committee		Expert Committee	
1.	Mr.R.P.Waghamare	Chairman	1. Mr.Mayur More(Academic Expert) (S.G.M.College,Karad)
2.	Ms.B.A.Pawar	Member	2. Santosh Kapase(Industrial Expert) (Capgemini India)