

PROGRAMME PROJECT REPORT (PPR)

Diploma in Artificial Intelligence & Data Science (DAIDS)

1. Introduction about the Programme

Artificial Intelligence and Data Science (AI&DS) is a new branch of study that deals with scientific methodologies, processes, and techniques drawn from different domains like statistics, cognitive science, and computing and information science to extract knowledge from structured data and unstructured data. This knowledge is applied in making various intelligent decisions in business applications. It is a specialized branch that deals with the development of data-driven solutions, data visualization tools and techniques to analyze big data. It also incorporates the concepts of machine learning model building for solving various computational and real-world problems.

2. Programme Mission & Objectives

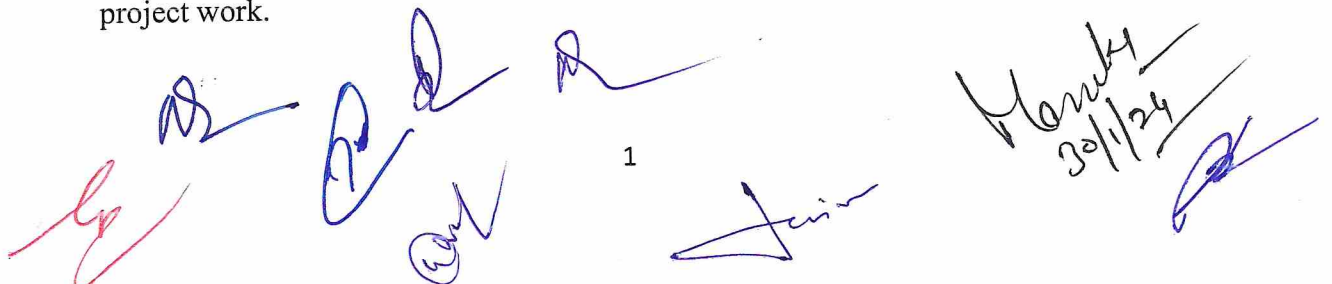
2.1 Mission Statement

To educate learners with high quality theoretical, practical, ethical, technological and skill-oriented education in the area of AI&DS that can help them in their professional career and prepare them for academics, industry and research.

2.2 Objectives

The Programme has been framed to achieve the following main objectives:

- To develop an understanding and knowledge of the fundamentals of AI&DS with good foundation on theory, systems and applications.
- To apply AI&DS theory and software development concepts to construct computing-based solutions.
- To become technology-oriented learners with the knowledge and ability to develop innovative solutions.
- To provide some development experience within a specific field of AI & DS, through project work.



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- To provide the knowledge about the recent developments in AI & DS, future possibilities and limitations, and understand the value of lifelong learning.

3. Relevance of the Programme

In this age of computers and everything being digitalized, knowledge about computer technology is very important. Presently, Data scientist is one of the fastest-growing job titles in the industry. To cater the need of the industry, a Programme in AI & DS will prove to be very helpful for learners and professionals those want to take up the job in the field of computer science.

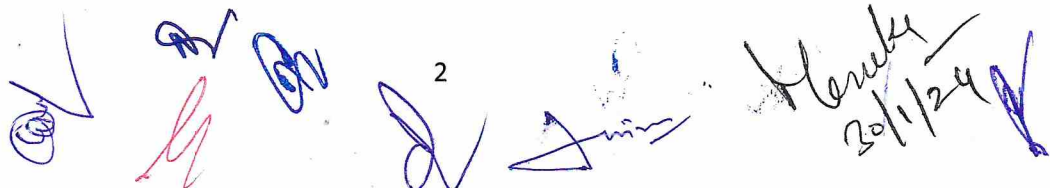
4. Prospective Target Group

- Having passed 10+2 in any Stream or the equivalence examination or the higher examination from the recognized Board/University.
- Having passed 2 Years ITI Programme in any trade after Matriculation from Punjab State Board of Technical Education & Industrial Training, Chandigarh or such examination from any other recognized State Board of Technical Education.
- Having passed 3 Years Diploma in any stream after Matriculation from Punjab State Board of Technical Education & Industrial Training, Chandigarh or such examination from any other recognized State Board of Technical Education.

Learners with above said eligibility may join this course to improve their knowledge, skills, employability, and entrepreneurship ability. The working persons and who cannot study through regular mode can continue their education through this open learning mode.

5. Appropriateness of the Programme

The Programme will provide academic continuity to the learning community and will facilitate continuous professional development for the employees and entrepreneurs across the country and Punjab state, in particular. The Programme aims to reach the learners who are distant and those lacking access. To reach the unreached, the courses' instructions and specially prepared study material in the form of printed notes and audio-video lessons to the learners will be delivered at their door steps through postal correspondence and digital media like e-mail, website etc. Limited face-to-face contact sessions will be held at Learner Support Centres (LSC) set up by the university as close as possible to the learner's home. Communication with the university and interaction between the teacher and the learners will be further facilitated using electronic media options like telephone, e-mails, chat sessions, video conferencing and tele conferencing, if and



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when required. All of these characteristics will help learners to engage in relevant, purposeful and interesting lessons.

Apart from this, the learners will have the advantage to study at their own pace and convenience as the Programme can be completed in the time span ranging from one year to two years.

The multiple exit and enter option for learners is facilitated. Learners are allowed to exit the Programme after the six months obtained at least 20 credits with a relevant certificate and re-enter the same Programme at a later time.

6. Instructional Design

Annexure-A (Course Scheme of Diploma in AI&DS)

Annexure-B (Syllabi of Diploma in AI&DS)

7. Procedure for Admissions

Notifications regarding admission will be published in the leading national and regional newspapers. In addition to this, all the required information will be updated regularly on the university website


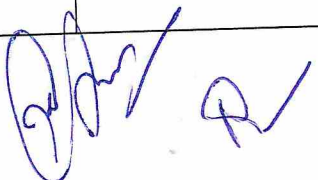
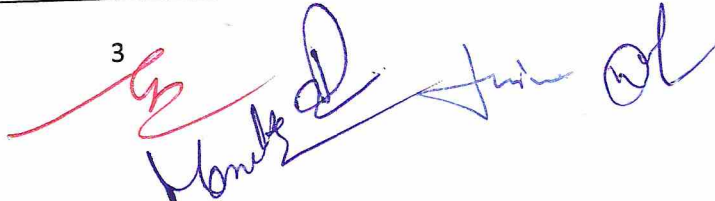
7.1 Programme Duration: 1 Year to 2 Years

7.2 The Medium of Examination: English

7.3 Eligibility:

- Having passed 10+2 in any Stream or the equivalence examination or the higher examination from the recognized Board/University.
- Having passed 2 Years ITI Programme in any trade after Matriculation from Punjab State Board of Technical Education & Industrial Training, Chandigarh or such examination from any other recognized State Board of Technical Education.
- Having passed 3 Years Diploma in any stream after Matriculation from Punjab State Board of Technical Education & Industrial Training, Chandigarh or such examination from any other recognized State Board of Technical Education.

7.4 Total Programme Fee:

Fee Head Details	Semester-1	Semester-2
		

Registration/ Continuation Fee	300	300
Tuition Fee	--	--
Examination Fee	1400	1400
I.T. and other Charges	1100	1100
Security Fee (Refundable)	--	--
Total Fee (Rs.)	2800	2800

7.5 Instructional Delivery Mechanisms:

The Programme has been designed with the aim to reach the distant and those lacking access to a regular mode of education. The courses' instructions and specially prepared study material will be made available through Learner Support Centres (LSCs) and digital media like e-mail, website etc. Limited face to face contact sessions will be held at the study centers set up by the university as close as possible to the learner's home. Communication with the university and interaction between the teacher and the learners will be further facilitated using electronic media options like telephone, e-mails, chat sessions, video conferencing and tele conferencing, if and when required.

Besides this, Counseling Sessions will be held at all the LSCs regularly during weekends. The university will also conduct live/virtual classes for learners using modern ICT methods. However, to ensure learner participation and interaction, online classes will be blended with face to face discussions and meetings with the learners.

8. Evaluation

The learners' progress is measured through the means of continuous evaluation and end semester examinations.

8.1 Continuous Internal assessment through assignments

Assignments help the learners to recapitulate the theory and go back to the text again in case they are unable to answer a particular question. Thus, assignments also help to reinforce learning in distance and open learning system of education. The assignments will consist of a set of questions and activities that have to be answered by the programme participants by remaining at their own place.

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Two assignments will be submitted for a 4 credits course and one assignment will be submitted by the learner for a 2 credits course. The assignments will cover all or any types of questions (long answer type, short answer type, objective type, multiple choice questions and case studies).

Learners will be required to obtain 40% marks as pass percentage in each assignment separately. In the final result, assignments will carry 30% weightage.

8.2 Semester End Examination

Semester end examination is the major component of the evaluation system and carries 70% weightage in the final result. The university will conduct end semester examination twice a year i.e., in June and in December. The learners can take the examination only after the completion of the course, failing which they can take the same in December or June of subsequent years but within the total span of the programme. In case any student fails to get a passing score in the semester end examination, they will be eligible to reappear in the next semester end examination for that course as and when it is held but within the total span of the programme only.

In order to claim Certificate/Diploma in AI&DS, the learner is required to score at least 40% marks in both continuous evaluations (i.e.in assignments) as well as in semester end examinations separately.

8.3 Updated Notification for the Learners

The information regarding the university policies and procedures, academic activities like assignment submissions, question papers, results and other notices related to examination and evaluation will be uploaded on the official website of the university.

9. Laboratory Support

Modernize Computer Labs at the Learner Support Centres (LSCs) will be provided with all latest computers and software required for this Programme.

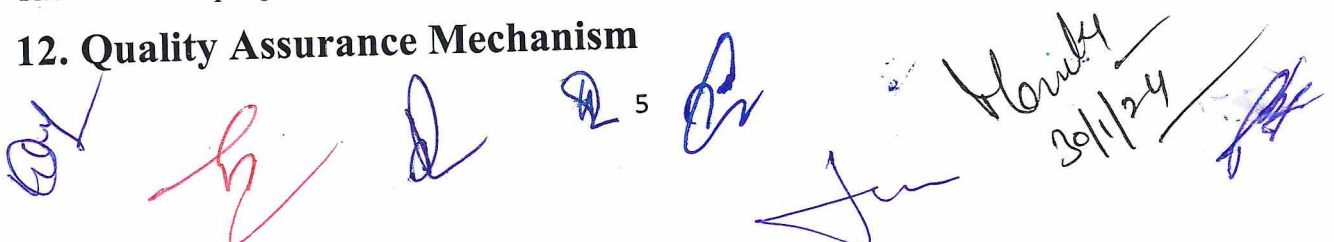
10. Library Resources

The students may avail the library facilities at their Learner Support Centres (LSCs).

11. Cost Estimation

The cost of the programme will be as per the fee decided upon.

12. Quality Assurance Mechanism



The university has constituted a “Centre of Internal Quality Assurance (CIQA) as per UGC (Open and Distance Learning) Regulations, 2020.

13. Programme Outcomes (POs)

Programme: Diploma in AI&DS

Programme Outcomes (POs)	
On successful completion of this programme, the students will be able to:	
PO1	Develop an understanding of basic theoretical principles in AI & DS and perspectives in Data Science by critical thinking.
PO2	Identify, formulate, review research literature, and analyze problems reaching substantiated conclusions using principles of AI & DS.
PO3	Design solutions for problems and design system processes that meet the specified needs with appropriate consideration for the public health and safety, and the environmental considerations.
PO4	Create, select and use appropriate techniques, skills, and modern IT tools necessary for computing practice with an understanding of the limitations.
PO5	Apply ethical principles in their research and professional activities and familiar with the professional standards and practices of the field of artificial intelligence and data science.
PO6	Work collaboratively with others, both within and outside of their discipline, to solve complex problems and develop innovative solutions.
PO7	Demonstrate knowledge and understanding of the science and management principles and apply these to one’s own work, as a member and leader of diverse teams, to manage projects and in multidisciplinary environments.
PO8	Recognize the need for, and have the preparation and ability to engage in continuing professional development and life-long learning in the broadest context of technological change.

14. Programme Specific Outcomes (PSOs)

Programme: Diploma in AI & DS

Programme Specific Outcomes (PSOs)	
On successful completion of this programme, the students will be able to:	
PSO1	Apply statistical and data analysis techniques to extract meaningful insights from datasets.
PSO2	Demonstrate proficiency in Python programming language for AI and data science

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PSO3	Understand and apply fundamental machine learning concepts and algorithms.
PSO4	Demonstrate project management skills, including planning, execution, and documentation.
PSO5	Stay abreast of emerging trends and technologies in AI & DS.

15. Course Outcomes (COs)

Course Outcomes (COs) of Courses of Semester-1

Course#1



Course: Introduction to Artificial Intelligence	
Course Code: DAIDS-1-01T	
Course Outcomes (COs)	
After the completion of this course, the students will be able to:	
CO1	Explain the basic concepts, principles, and techniques of artificial intelligence.
CO2	Explore real-world applications of AI in various domains such as healthcare, finance, and robotics.
CO3	Develop the ability to identify and formulate problems that can be solved using AI techniques.
CO4	Apply AI solutions to address real-world challenges.
CO5	Describe the basic concepts, principles, and techniques for the development of expert systems.

Course#2

Course: Introduction to Data Science	
Course Code: DAIDS-1-02T	
Course Outcomes (COs)	
After the completion of this course, the students will be able to:	
CO1	Understand tools and techniques to analyze and extract insights from data received from different data sources such as social media, IoT devices, and sensors.
CO2	Understand the general techniques and frameworks that can be used to handle special types of data, such as acoustic, image, sensor, and network data
CO3	Apply mathematical or logical operations to the data to derive new insights.
CO4	Apply tools for understanding complex data structures and relationships.
CO5	Explore various applications of data science in the field of business, energy, health care, biotechnology, manufacturing, telecommunication, pharmaceuticals etc.

Course#3

Course: Python Programming


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Course Code: DAIDS-1-03T	
Course Outcomes (COs)	
After the completion of this course, the students will be able to:	
CO1	Explain the basic syntax and structure of Python programs.
CO2	Understand variables, data types, and basic operations.
CO3	Understand and use common programming constructs like loops and conditionals.
CO4	Define and use functions in Python.
CO5	Understand the basics of object-oriented programming in Python.

Course#4

Course: Python Programming Lab	
Course Code: DAIDS-1-03P	
Course Outcomes (COs)	
After the completion of this course, the students will be able to:	
CO1	Demonstrate proficiency in writing Python code to solve simple problems.
CO2	Use and manipulate basic data structures in Python, such as lists, tuples, and dictionaries.
CO3	Solve algorithmic problems using Python.
CO4	Utilize common Python libraries for specific tasks (e.g., NumPy for numerical computing, Pandas for data manipulation).
CO5	Use libraries for data manipulation, analysis, and visualization.

Course Outcomes (COs) of Courses of Semester-2

Course#5

Course: Machine Learning	
Course Code: DAIDS-2-01T	
Course Outcomes (COs)	
After the completion of this course, the students will be able to:	
CO1	Understand the fundamental concepts and principles of machine learning.
CO2	Apply and evaluate various supervised learning algorithms
CO3	Explore and apply unsupervised learning techniques
CO4	Apply machine learning techniques to solve real-world problems
CO5	Evaluate the strengths and limitations of different machine learning approaches

Course#6

Course: Machine Learning Lab	
Course Code: DAIDS-2-01P	
Course Outcomes (COs)	
After the completion of this course, the students will be able to:	
CO1	Apply a perceptron to solve binary classification problems.

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CO2	Apply ADALINE and MADALINE to solve binary classification problems.
CO3	Write code to implement the backpropagation algorithm from scratch.
CO4	Implement and experiment with different clustering algorithms.
CO5	Work with real-world datasets to apply machine learning algorithms or training neural networks.

Course#7

Course: Data Mining & Visualization	
Course Code: DAIDS-2-02T	
Course Outcomes (COs)	
After the completion of this course, the students will be able to:	
CO1	Understand Data Warehouse fundamentals and Data Mining tools.
CO2	Understand Data Mining Techniques
CO3	Apply clustering methods like K means, hierarchical clustering, agglomerative clustering, divisive clustering to solve problems and evaluate clusters
CO4	Gain knowledge related to application areas of data mining
CO5	Understand the components involved in data visualization design.

Course#8

Course: Project	
Course Code: DAIDS-2-03P	
Course Outcomes (COs)	
After the completion of this course, the students will be able to:	
CO1	Demonstrate a sound technical knowledge of their selected project topic.
CO2	Gain ability to identify research gaps through literature survey, problem identification, formulation and solution.
CO3	Design solutions to problems utilizing a systems approach.
CO4	Gain ability of communication, management, leadership and entrepreneurship skills.
CO5	Obtain capability and enthusiasm for self-improvement through continuous professional development and life-long learning

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