Faculty of Vocational Studies

SYLLABUS FOR

Bachelor of Vocation

(Artificial Intelligence and Data Science)

(Semester I-IV)

(Under Credit Based Continuous Evaluation Grading System)

Session: 2022-23

The Heritage Institution

KANYA MAHA VIDYALAYA JALANDHAR

(Autonomous)

Bachelor of Vocation (Artificial Intelligence and Data Science) Semester I

Course Code: BVIL-1031

BASIC PUNJABI

Course outcomes:

CO1: ਮੁੱਢਲੀ ਪੰਜਾਬੀ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਨੂੰ ਸਿਖਾਉਣ ਦੀ ਪ੍ਰਕਿਰਿਆ ਵਿਚ ਪਾ ਕੇ ਇਕ ਹੋਰ ਭਾਸ਼ਾ ਸਿੱਖਣ ਦਾ ਮੌਕਾ ਪ੍ਰਦਾਨ ਕਰਨਾ ਹੈ।

CO2: ਇਸ ਵਿਚ ਵਿਦਿਆਰਥੀ ਨੂੰ ਬਾਰੀਕਬੀਨੀ ਨਾਲ ਭਾਸ਼ਾ ਦਾ ਅਧਿਐਨ ਕਰਵਾਇਆ ਜਾਵੇਗਾ।

CO3: ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਸ਼ਬਦ ਰਚਨਾ ਤੋਂ ਜਾਣੂ ਕਰਵਾਇਆ ਜਾਵੇਗਾ।

CO4: ਮੁੱਢਲੀ ਪੰਜਾਬੀ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਨਿੱਤ ਵਰਤੋਂ ਦੀ ਪੰਜਾਬੀ ਸ਼ਬਦਾਵਲੀ ਬਾਰੇ ਦੱਸਣਾ ਹੈ।

CO5: ਮੁੱਢਲੀ ਪੰਜਾਬੀ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਦਾ ਸ਼ਬਦ ਘੇਰਾ ਵਿਸ਼ਾਲ ਕਰਨਾ ਹੈ।

CO6: ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਵਿਚ ਹਫਤੇ ਦੇ ਸੱਤ ਦਿਨਾਂ ਦੇ ਨਾਂ, ਬਾਰ੍ਹਾਂ ਮਹੀਨਿਆਂ ਦੇ ਨਾਂ, ਰੁੱਤਾਂ ਦੇ ਨਾਂ, ਇਕ ਤੋਂ ਸੌ ਤੱਕ ਗਿਣਤੀ ਸ਼ਬਦਾਂ ਵਿਚ ਸਿਖਾਉਣਾ ਹੈ।

Bachelor of Vocation (Artificial Intelligence and Data Science) - Semester I
COURSE CODE: BVAI-1102
Communication Skills in English

COURSE OUTCOMES:

At the end of this course, the students will develop the following Skills:

CO 1: Reading skills that will facilitate them to become an efficient reader

CO 2: Through reading skills, the students will have an ability to have a comprehensive

understanding of the ideas in the text and enhance their critical thinking

CO 3: Writing skills of students which will make them proficient enough to express ideas in clear and

grammatically correct English

CO 4: The skill to use an appropriate style and format in writing letters (formal and informal) and

resume, memo, notices, agenda, minutes

Bachelor of Vocation (Artificial Intelligence and Data Science) - Semester I

Course Code: BVIL-1113

Introduction to Computers and Information Technology

COURSE OUTCOMES:

After Completing this course, the students will be able to:

CO1: Comprehend fundamentals of Computer and Software

CO2: Describe Information Technology and its Applications

CO3: Comprehend the concepts of I/O devices and memory.

CO4: Demonstrate the Introduction to Emerging Technologies: Big Data, IoT and Cloud

Bachelor of Vocation (Artificial Intelligence and Data Science) - Semester I

Course Code: BVIL-1114

Introduction to Artificial Intelligence and Data Science

COURSE OUTCOMES:

After completing this course the student will be able to:

CO1: Comprehend the concepts of Artificial Intelligence.

CO2: Demonstrate various concepts of Data Science domain and its difference with business intelligence.

CO3: Comprehend Data Science methodologies and steps involved in data analysis.

CO4: Apply learned techniques to solve problem associated with basic statistical operations on Real/Dummy data

Bachelor of Vocation (Artificial Intelligence and Data Science) - Semester I

Course Code: BVIL-1115

Office Fundamentals

COURSE OUTCOMES:

After completing this course, the students will be able to:

CO1: Comprehend basics and formatting concepts of word document.

CO2: Have knowledge of creating, customize Tables and working with Graphics in word.

CO3: Comprehend basics of presentation involved in text formatting, graphs and animation.

CO4: Comprehend basics of spreadsheet involved in creation, editing of graphs, sorting, querying and filtering of data.

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Bachelor of Vocation (Artificial Intelligence and Data Science) - Semester I

Course Code: BVIM-1116

Computational Problem Solving-I

COURSE OUTCOMES:

After completing this course, the students will be able to:

CO1: Understand the basic concepts and terminology of programming languages

CO2: Comprehend the concepts of computation problem, data and expressions

CO3: Demonstrate the usage of algorithms under several categories like list, string, dictionary and control structures

CO4: Comprehend the concepts of functions and Recursive problem solving

Course Code: BVID-1118

Minor Project – I

The primary objective of the course is to encourage students to learn various tools and to build AI/ Data Science based Model: This module is delivered using a combination of introductory lectures and participation activities by the students.

COURSE OUTCOMES:

After completing this course, the students will be able to:

CO1: Apply the tools and techniques learnt in the course to process and analyze data for problems associated with AI and Data science.

CO2: Apply their knowledge to work on assigned/self-identified project.

CO3: Work within defined time and resource constraints while working with real world applications.

Bachelor of Vocation (Artificial Intelligence and Data Science) Semester I

Course Code: AECD-1161

Drug Abuse: Problem, Management and Prevention

(COMPULSORY)

Course Outcomes:

After completing the course the students will be able to:

CO1: Learn how to include factual data about what substance abuse is; warning signs of addiction; information about how alcohol and specific drugs affect the mind and body;

CO2: Learn how to be supportive during the detoxification and rehabilitation process.

CO3: Focus on substance abuse education- is teaching individuals about drug and alcohol abuse and how to avoid, stop, or get help for substance use disorders.

CO4: Understand that substance abuse education is important for students alike; there are many misconceptions about commonly used legal and illegal substances, such as alcohol and marijuana

Bachelor of Vocation (Artificial Intelligence and Data Science) Semester II

Course Code: BVIL-2031

BASIC PUNJABI

Course outcomes:

CO1: ਮੁੱਢਲੀ ਪੰਜਾਬੀ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਨੂੰ ਸਿਖਾਉਣ ਦੀ ਪ੍ਰਕਿਰਿਆ ਵਿਚ ਪਾ ਕੇ ਇਕ ਹੋਰ ਭਾਸ਼ਾ ਸਿੱਖਣ ਦੇ ਮੌਕੇ ਪ੍ਰਦਾਨ ਕਰਨ ਹੈ।ਇਸ ਵਿਚ ਵਿਦਿਆਰਥੀ ਨੂੰ ਬਾਰੀਕਬੀਨੀ ਨਾਲ ਭਾਸ਼ਾ ਦਾ ਅਧਿਐਨ ਕਰਵਾਇਆ ਜਾਵੇਗਾ।

CO2: ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਸ਼ਬਦ ਰਚਨਾ ਤੋਂ ਜਾਣੂ ਕਰਵਾਇਆ ਜਾਵੇਗਾ।

CO3: ਸ਼ਬਦ ਸ੍ਰੇਣੀਆਂ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਦਾ ਅਤੇ ਬਾਰੀਕੀਆਂ ਨੂੰ ਸਮਝਣ ਲਈ ਵੱਖਰੇ ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।

CO4: ਮੁੱਢਲੀ ਪੰਜਾਬੀ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਦਾ ਸ਼ਬਦ ਘੇਰਾ ਵਿਸ਼ਾਲ ਕਰਨਾ ਹੈ।

CO5: ਵਿਦਿਆਰਥੀ ਵਾਕ ਦੀ ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਇਸ ਦੀ ਬਣਤਰ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ ਅਤੇ ਭਾਸ਼ਾ ਤੇ ਪਕੜ ਮਜਬੂਤ ਹੋਵੇਗੀ।

CO6: ਪੈਰ੍ਹਾ ਰਚਨਾ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣ ਕਰਦਿਆਂ ਉਨਾਂ ਦੀ ਲਿਖਣ ਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰ ਕਰਨਾ ਹੈ।

CO7: ਸੰਖੇਪ ਰਚਨਾ ਕਰਨ ਨਾਲ ਵਿਦਿਆਰਥੀ ਆਪਣੀ ਗੱਲ ਨੂੰ ਸੰਖੇਪ ਵਿਚ ਕਹਿਣ ਦੀ ਜਾਚ ਸਿੱਖਣਗੇ ਅਤੇ ਇਹ ਦਿਮਾਗੀ ਕਸਰਤ ਵਿਚ ਸਹਾਈ ਹੋਵੇਗੀ।

CO8: ਘਰੇਲੂ ਅਤੇ ਦਫਤਰੀ ਚਿੱਠੀ ਪੱਤਰ ਲਿਖਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਇਸ ਕਲਾ ਵਿਚ ਨਿਪੁੰਨ ਕਰਨਾ ਹੈ।

CO9: ਮੁਹਾਵਰਿਆਂ ਦੀ ਵਰਤੋਂ ਨਾਲ ਗੱਲਬਾਤ ਵਿਚ ਪਰਪੱਕਤਾ ਆਉਂਦੀ ਹੈ।ਇਹ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਗੱਲਬਾਤ ਵਿਚ ਨਿਖਾਰ ਲਿਆਉਣ ਦਾ ਕੰਮ ਕਰਨਗੇ।

Bachelor of Vocation (Artificial Intelligence and Data Science) Semester II
Punjab History and Culture (From Earliest Times to C. 320) (Special paper in lieu of Punjabi Compulsory) (For those students who are not domicile of Punjab)
Course Code: BVIL-2431

After completing Semester II and course on Ancient History of Punjab, students of History will be able to identify and have a complete grasp on the sources & writings of Ancient History of Punjab

CO 1: Analyse the emergence of Mauryan, Gupta empires during the classical age in India

CO 2: To understand the various factors leading to rise and fall of empires and emergence of new dynasties and their Culture, society, administration , polity and religion specifically of Kushans and Vardhanas in the Punjab

CO 3: Students will be adept in constructing original historical argument based on primary source material research

CO4: To have an insight on the existing Literature of this period and understand the past developments in the light of present scenario.

CO 5: To enable students to have thorough insight into the various forms/styles of Architecture and synthesis of Indo - Muslim Art and Architecture in Punjab

Bachelor of Vocation (Artificial Intelligence and Data Science) Semester II

COMMUNICATION SKILLS IN ENGLISH (Theory)

Course Code: BVAI-2102

COURSE OUTCOMES:

At the end of this course, the students will develop the following Skills:

CO 1: Enhancement of listening skills with the help of listening exercises based on conversation, news and TV reports

CO 2: The ability of Note-Taking to be able to distinguish the main points from the supporting details and the irrelevant information from the relevant one using Listening Skills

CO 3: Acquisition of knowledge of phonetics which will help them in learning about correct pronunciation as well as effective speaking

CO 4: Speaking skills of the students enabling them to take active part in group discussion and present their own ideas

Bachelor of Vocation (Artificial Intelligence and Data Science) Semester II

Course Code: BVIL-2113

Computational Problem Solving-II

COURSE OUTCOMES:

After completing this course, the students will be able to:

CO1: Comprehend the concepts of Object Oriented Programming and file handling

CO2: Implement Database programming in Python

CO3: Develop Graphical user interface using tkinter programming

CO4: Understand the uses of various Python Libraries

Bachelor of Vocation (Artificial Intelligence and Data Science) Semester- II

Course Code: BVIL-2114

Mathematical Foundation

COURSE OUTCOMES:

After passing this course the student will be able to reflect on

CO1: Set and operations on sets

CO2: Relation, Representation of Relation, Types of Relation and their Properties

CO3: To encode information in form of logical sentences through propositional and predicate logic

CO4: Concept of Duality law, Algebra of propositions, Propositional Functions, Predicates, Quantifiers, Negation of Quantified Statements

Bachelor of Vocation (Artificial Intelligence and Data Science) Semester- II
Course Code: BVIL-2115

Technical Writing

COURSE OUTCOMES:

After completing this course the students will be able to:

CO1: Write effective reports, proposals and papers.

CO2: Correspond effectively through different modes of written communication.

CO3: Present himself/ herself professionally through effective resumes and interviews.

CO4: Understand different technical writing style and concept of editing.

Bachelor of Vocation (Artificial Intelligence and Data Science) Semester- II

COURSE CODE: BVIL-2116

Data Collection and Analysis

COURSE OUTCOMES:

After completing this course, the students will be able to:

CO1: Comprehend the term Data Collection and Analytics and Data Collection methods

CO2: Describe the application of basic Data Analysis Tools.

CO3: Understand the process of Data Analysis along with its applications.

CO4: Comprehend Data Analysis using spreadsheet software and Data Analysis tools.

Bachelor of Vocation (Artificial Intelligence and Data Science) Semester- II

Course Code: BVIM-2117

Relational Database Management System

COURSE OUTCOMES:

After completing this course, the students will be able to:

CO1: Understand the various terms like database, database models and ER diagrams.

CO2: Comprehend Relational Algebra and Relational Calculus

CO3: Explain the concept of database normalization and its various forms

CO4: Demonstrate the use of SQL to create basic to intermediate level of databases

CO5: Comprehend the concept of Cursors and Triggers

Bachelor of Vocation (Artificial Intelligence and Data Science) Semester- II

Course Code: BVID-2119

Minor Project-II

Course Outcomes:

After completing this course, the students will be able to:

CO1: Apply the tools and techniques learnt in the course to process and analyze data for problems associated with AI and Data science.

CO2: Apply their knowledge to work on assigned/self-identified project.

CO3: Demonstrate an ability to work in teams and manage the conduct of the research study.

CO4: Describe the observations through project report submission.

Bachelor of Vocation (Artificial Intelligence and Data Science) Semester- II

Course Code: AECD-2161

DRUG ABUSE

COURSE OUTCOMES:

CO1: This information can include factual data about what substance abuse is; warning signs of addiction; information about how alcohol and specific drugs affect the mind and body

CO2. Learn to be supportive during the detoxification and rehabilitation process.

CO3: Main focus of substance abuse education is teaching individuals about drug and alcohol abuse and how to avoid, stop, or get help for substance use disorders.

CO4: Substance abuse education is important for students alike; there are many misconceptions about commonly used legal and illegal substances, such as alcohol and marijuana.

Bachelor of Vocation (Artificial Intelligence and Data Science) Semester- III
Course Code: BVIL-3111

Statistical Inference-I

Course Outcomes:

After completion of this course, the students will be able to:

CO1: Comprehend the concepts of random variables.

CO2: Implement Laplace theorem.

CO3: Identify various probability distributions and sampling distributions.

Bachelor of Vocation (Artificial Intelligence and Data Science) Semester- III
Course Code: BVIL-3112

Data Mining and Data Warehousing

Course Outcomes:

After completion of this course, the students will be able to:

CO1: Comprehend Data Mining, Data Warehousing concepts and techniques.

CO2: Comprehend various classification and clustering algorithms.

CO3: Study basic concepts of OLAP.

CO4: Describe frequent pattern mining and its applications.

Bachelor of Vocation (Artificial Intelligence and Data Science) Semester- III
Course Code: BVIL-3113

Data Processing and Visualization

Course Outcomes:

After completion of this course, the students will be able to:

CO1: Comprehend various types of data processing methods.

CO2: Identify different data formats and their conversion involved in a dataset.

CO3: Comprehend human perception in visualization of data.

CO4: Apply various visualization tools such as Histograms, Bar Charts, Pie Charts, Box Plots, Scatter Plots, etc.

Bachelor of Vocation (Artificial Intelligence and Data Science) Semester- III
Course Code: BVIL-3114

Entrepreneurship basics

Course Outcomes:

After completion of this course, the students will be able to:

CO1: Examine the challenges associated with defining the concepts of entrepreneur and entrepreneurship.

CO2: Comprehend the concepts of entrepreneurial uniqueness, entrepreneurial personality traits.

CO3: Understand the process of building a Start Up.

CO4: Comprehend the concepts of Business Intelligence and its importance.

Bachelor of Vocation (Artificial Intelligence and Data Science) Semester- III
Course Code: BVIL- 3115

Machine Learning-I

Course Outcomes:

After completion of this course, the students will be able to:

CO1: Comprehend the Machine Learning Techniques.

CO2: Describe Linear Regression and Multiple Linear Regressions.

CO3: Identify Clustering and Classification Techniques.

CO4: Comprehend various machine learning models.

Bachelor of Vocation (Artificial Intelligence and Data Science) Semester- III
Data Storytelling and Presentation
Course Code: BVIP-3117

Course Outcomes:

After completion of this course, the students will be able to:

CO1: Understand importance of Data Storytelling.

CO2: Identify various graphs and plots.

CO3: Present a data story.

Bachelor of Vocation (Artificial Intelligence and Data Science) Semester- III
Course Code: BVID-3119

Minor Project-III

Course Outcomes:

After completion of this course, the students will be able to:

CO1: Apply machine learning techniques on various datasets.

CO2: Apply their knowledge to work on Machine Learning related project.

CO3: Work within defined time and resource constraints while working with real world applications.

Bachelor of Vocation (Artificial Intelligence and Data Science) Semester- IV
Course Code: BVIL-4111

Statistical Inference-II

Course Outcomes:

After completion of this course, the students will be able to:

CO1: Discuss various Basic Estimators.

CO2: Apply various sampling distributions.

CO3: Comprehend basic hypothesis techniques.

CO4: Comprehend One way and Two way ANOVA

Bachelor of Vocation (Artificial Intelligence and Data Science) Semester- IV
Course Code: BVIL- 4112

Applied Statistical Programming

Course Outcomes:

After passing this course the student will be able to:

CO1: Comprehend basics of Statistical Computing and role of constructs like control statements, string functions, array, list, etc in programming language.

CO2: Create, operate and manage data frames.

CO3: Simulate various descriptive and analytical algorithms using programming language.

CO4: Apply programming on statistical concepts.

Bachelor of Vocation (Artificial Intelligence and Data Science) Semester- IV
Course Code: BVIL-4113

Non-Relational Databases

Course Outcomes:

After completion of this course, the students will be able to:

CO1: Comprehend fundamental concepts of Big Data and learn about various components of

Hadoop ecosystems

CO2: Comprehend concepts of MapReduce framework.

CO3: Comprehend various types of databases in NoSQL.

CO4: Execute CRUD: Create, Update, Delete and Query operation on database

CO5: Implement indexing, projection, aggregation, etc on existing database.

Bachelor of Vocation (Artificial Intelligence and Data Science) Semester- IV
Course Code: BVIL-4114

Workplace Management

Course Outcomes:

After completion of this course, the students will be able to:

CO1: Comprehend Formal and Informal Communication.

CO2: Identify Skills required to be an efficient employee

CO3: Apply workplace etiquettes and learn to handle difficult situations.

Minor Project-IV

Course Outcomes:

After completion of this course, the students will be able to:

CO1: Apply CRUD: Create, Update, Delete and Query operation operations on Database.

CO2: Apply their knowledge to work on small/medium scale database related project.

CO3: Work within defined time and resource constraints while working with real world applications.

Bachelor of Vocation (Artificial Intelligence and Data Science) Semester- IV

Course Code: AECE-4221

Environmental Studies (Compulsory)

COURSE OUTCOMES:

CO1. Reflect upon the concept and need of environmental education.

CO2. Define major eco-systems and their conservation.

CO3. Understand the role of different agencies in the protection of environment.

CO4. Develop desirable attitude, values and respect for protection of environment.