As per the NEP 2020
(Effective from Academic Year 2024-2025 onwards)

Skill Enhancement Courses

Faculty of Arts/Commerce/Science

For Under-Graduate Programmes

Pandit Deendayal Upadhyaya Shekhawati University
Sikar (Rajasthan) 332024

E-mail: reg.shekhauni@gmail.comWebsite: www.shekhauni.ac.in

Semester – I

Course Code	Course Title	Contact Hrs per Week			Credits	Weightage (%)		
		L	T	P		CWS	MTE	ETE
24BSC5101T	Data Analysis	3	0	0	3	10	20	70
24BSC5102T	Agricultural Marketing in North India	3	0	0	3	10	20	70
24BSC5103T	Environment Ethics	3	0	0	3	10	20	70
24BSC5104T	Film Appreciation	3	0	0	3	10	20	70
24BSC5105T	Making Effective Communication	3	0	0	3	10	20	70
24BSC5106T	Biological Tools & Techniques	3	0	0	3	10	20	70
24BSC5107T	Analytics/computing with Python	3	0	0	3	10	20	70
24BSC5108T	Mushroom Cultivation	3	0	0	3	10	20	70
24BSC5109T	Vermiculture	3	0	0	3	10	20	70
24BSC5110T	Data Analysis in Spreadsheets	3	0	0	3	10	20	70

Course Description:
Statistical tools and techniques are one of the basic necessities for analytical research works. This course is designed to teach the students about different statistical tools used in analytical research studies and its importance in answering different real world economic problems. Students will learn how to deal with different statistical techniques and tools, which are appropriate in which situation, interpretation of the results extracted from those techniques, etc.

Course Objective:
The course is developed and designed in such a way that the students can get the knowledge about 'Data Analysis in Research Works' as a future carrier option for them. They can practice their role as Data Analytics, Field Investigator, Research Associate, Research Assistant etc. in near future

Course Title:	Data Analysis	Course Code: 24BSC5101T
Total Lecture hour 45		
Unit I	Meaning and Significance of Research, Use and Importance of Data in Research, Types of Data and its Collection Methods (Census and Different Sampling Methods), Questionnaire and Interview Schedule.	Hours
		12
Unit II	Data Entry in Software like MS-Excel, STATA, etc., Creating Charts/Tables and Diagrams in MS-Excel/STATA –bar, line, pie, scatter, radar, bubble diagrams,etc.	12
Unit III	Measures of Central Tendency and Dispersion (Mean: Arithmetic Mean, Geometric Mean and Harmonic Mean; Median; Mode; Range, Mean Deviation, Quartile Deviations and Standard Deviation), Correlation (Pearson Correlation Co-efficient and Spearman's Rank Correlation Co-efficient).	11
Unit IV	Regression Analysis; Ordinary Least Squares Method; Descriptive Analysis, Correlation Analysis and Regression Analysis in Software like MS-Excel, STATA, etc	10

Reference and Reading Books:

1. Dr. S. P. Gupta, Statistical Methods, Sultan Chand & Sons.
2. S.C. Gupta and V.K. Kapoor, Fundamentals of Mathematical Statistics, Sultan Chand & Sons.
3. Webtech Solutions Inc., Mastering Microsoft Excel Functions and Formulas.
4. P.H. Karmel and M. Polasek (1978), Applied Statistics for Economists, 4th edition, Pitman.
5. Damodar N. Gujarati and Sangeetha, Basic Econometrics, Tata McGrow- Hill Education Private Limited.
6. Damodar Gujarati, Econometrics by Example, Palgrave Macmillan

Course Title:	Agricultural Marketing in North India	Course Code: 24BSC5102T

Total Lecture hour: 45

		Hours
Unit I	**Cleaning and Scope**	
	Definitions, Components of market, Market Structure, Market performance, Subject matter. Importance of Agricultural marketing in economic development,	12
Unit II	**Classification of Markets**	
	Basis of Location, Area Coverage, time span, Volume of transaction, nature of transaction, Commodities competition, population, public intervention.	12
Unit III	**Functions of Marketing And Quality Control**	
	Learning-Assembling-Grading and Standardization-Transportation-Storage-processing-Packing-Distribution-BuyingandSelling-Financing-Riskbearing-Marketing intelligence. Agricultural products- AGMARK-CODEX, Need of CODEX certification Relevance.	11
Unit IV	**Remedial Measures**	
	Regulated Markets- definition- Important features of regulate the markets-functions-progress and defects- Measures by Government to improve Agricultural Marketing.	10

Reference and Reading Books:

1. Acharya S. S and Agarwal N L, 2021, Agricultural Marketing in India. Oxford &IBH
2. Publishing Co.Pvt.Ltd. New Delhi
3. Kahlon, A.S and Tyagi. DS, 1983 Agricultural Price Policy in India. Allied Publishers Pvt. Ltd., New Delhi.
4. Kulkarni, KR.1964, Agricultural Marketing in India. The Co-operators Books Depot. Mumbai.
5. Mamoria, C.B. and Joshi. RL 1995, Principles and Practices of Marketing in India, KitabMahal, Allahabad

Course Objectives

- To provide an understanding of the environmental ethics
- To create environmental awareness among the students
- To rethink and rectify the lapses in our relationship with nature
- To provide insights among students about environment and politics

Course outcomes:

Students will be able to understand the environmental problems and will learn environmental ethics for the protection of environment and to use natural resources in a sustainable manner.

Course Title:	Environment Ethics	Course Code: 24BSC5103T

Total Lecture hour: 45

		Hours
Unit I	**Understanding Environmental Ethics** a. Concept of environmental ethics b. Importance of environmental ethics	12

Unit II	Environmental issues	
	a. Pollution- various types, sources and control measures	12
Unit III	**Environment and Politics**	
	a. Ecologism	
	b. Ecofeminism	11
	c. Sustainable Development	
Unit IV	**Water Harvesting Techniques**	
	a. Micro and Macro Catchment	
	b. Traditional Methods of Water conservation	10
	c. Green and Blue Water Harvesting Techniques	

Reference and Reading Books:

1. Attfield. Robin, *Environmental Ethics A Very Short Introduction*, Oxford, 2019
2. Baker. Susan, *Sustainable Development*, Routledge, NewYork, 2006
3. Basak. Anindita, *Environmental Studies*, Pearson, 2009
4. Carter. Neil, *The Politics of the Environment: Ideas, Activism, Policy,* Cambridge University Press, New York, 2007
5. Heywood. Andrew, *Political Ideologies An Introduction*, Red Globe, 2022
6. Kaushik. Anubha & Kaushik, C.P., *Perspectives in Environmental Studies*, New Age International Publishers, 2018
7. Raju. Parlapalli, Anand. Konkala, Palve. Anil. E. & Kumar. Ashok, *Environmental Principles and Ethics*, AG Publishing House, 2022
8. Shiva. Vandana, *Ecofeminism*, London, Zed Books,1984

Course Objectives:
The course is an introduction to film appreciation - it focuses on helping the students to appreciate cinema by understanding its distinct language, its narrative complexity, and the way films control and stimulate our thoughts and feelings in context of ideologies and social practices. It also discusses on film history, genre, and film analysis – fiction and documentary. The students will be encouraged to analyze a few selected films.

Learning Outcomes:
The course aims to see the impact of cinema in society and equip the student with an ability to engage with cinema in its societal context. The historical, social, aesthetic aspects of cinema are to be learnt.

Course Title:	**Film Appreciation**	Course Code: 24BSC5104T
Total Lecture hour: 45		

Unit I	**Understanding Films**	Hours
	• History of films - silent era, sound cinema, the contemporary period	
	• Major film movements - Hollywood, Soviet, French, Korean, Iranian cinema	12
	• Indian cinema - Dadasaheb Phalke, Satyajit Ray, Jyoti Prasad Agarwala	
Unit II	**Cinema and Society**	
	• Ideology in Cinema - nationalism, welfarism, subaltern perspective	
	• Language of cinema and songs therein	12
	• Characters in Cinema - Portrayal of patriarchy, caste-class angle	
Unit III	**Films for Analysis and Appreciation - I**	
	• The Great Dictator	
	• Children of Heaven	11
	• Mississippi Masala	
Unit IV	**Films for Analysis and Appreciation - II**	
	• Rang De Basanti	10

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- The Great Indian Kitchen
- Jatinga Ityadi
- Village Rockstar

Reference and Reading Books:

1. The History of Cinema: A Very Short Introduction, Oxford Publication
2. Our Cinema, Their Cinema - Satyajit Ray
3. History of Motion Picture - Britannica Online S.V
4. Book Series on Cinema and Society by Routledge
5. Indian Cinema, Society and Culture by Ambrish Saxena
6. Critical Social Science Perspectives on Indian Cinema by Anirudh Deshpande and Anagha Kamble (Aakar Books)
7. Social Importance of Assamese Cinema in Perspective - Vivekananda Kendra Prakashan

Objectives:

This paper is designed

- To share in, to give to another, or the interchange of thoughts, opinions, information.
- To involve the effort of the students to get in touch with another and to make themselves understood.
- To communicate with the objective of entertaining a listener.
- To communicate with the intention of convincing someone to do something that can benefit him/her.
- To employ motivation as an objective so as to convince someone else to do something.
- To transmit the message with meaning and understanding.

Course outcomes

- To understand the process of communication.
- Speak with confidence and clarity in both formal¬ & informal situations.
- It creates a collegial culture that fosters teamwork and encourages cooperation.
- It reduces the cost associated with conflicts, misunderstanding, and mistakes.
- It provides clarity of thoughts making roles, responsibilities, and relationships clear.
- Identify different purposes for listening in academic and other contexts.

Course Title:	**Making Effective Communication**	Course Code: 24BSC5105T
Total Lecture hour: 45		

		Hours
Unit I	Understanding communication Nature of Communication Importance of Communication Process of Communication	12
Unit II	Forms of Communication Classification of communication, verbal communication, Non-verbal communication, kinesics, Paralanguage, proxemics or territory or space. Formal & informal communication, Modern form of communication.	12
Unit III	Qualities of Effective Communication & Barriers of Communication Reading, listening intelligently, thinking and Planning using appropriate language, using appropriate channel, an environment conducive to communication, overcoming differences of language. Mechanical Barriers, Physical Barriers, Psychological Barriers, Semantic & language Barriers, Status Barriers.	11
Unit IV	Listening as a tool of Communication & Job related letters, Group Discussion and Interviews (Practical) Listening Skills, Approaches to listening, Barriers to effective listening, Tips of effective listening	10

	Job Application, CV (Bio-data, Resume), Group discussion, Personal interview, Appointment and discharge letters.	

Reference and Reading Books:

1. Business communication by V.K. Jain and Om Prakash Biyani, S. Chand and company ltd. Ram Nagar, New Delhi – 110055.
2. Better English pronunciation by J.D. O'Conner
3. Business communication by Dr. Prakash M. Herekar, Modern publisher, Gulab Bhawan, Bahadur Shah Zafar Marg, New Delhi

Course Objective:

This course aims to provide students with a basic understanding of various techniques used in biological sciences and to familiarize students with the basic tools and techniques of scientific study with emphasis on biological sciences.

Course Outcomes:

- Develop basic understanding of the equipment's and their usage.
- Understand various types of Microscopes and their applications in biological sciences.
- Understand the analytical techniques like centrifugation, spectrophotometry, pH meter, Chromatography, Electrophoresis, PCR and ELISA.

Course Title:	**Biological Tools & Techniques**	**Course Code: 24BSC5106T**
Total Lecture hour: 45		

Unit I	**Microscopy:** Magnification and Resolving Power, Principle and Application of Microscopy, Light (bright-field, dark-field and phase contrast), Electron (SEM and TEM), Fluorescence Microscope	**Hours**
		12
Unit II	Principles and use of Analytical Instruments: Centrifugation (Density and Differential), Spectrophotometer (UV-Visible), Chromatography (Paper and TLC), Electrophoresis (Agarose and PAGE), PCR, ELISA	12
Unit III	The Internet and the Biologists: The Genebank sequence database, Structure database, Sequence analysis using GCG	11
Unit IV	Preparation of solutions, pH Meter, BOD Incubator, Oven.	10
Reference and Reading Books:		

1. Wilson and Walker. Practical Biochemistry. Cambridge, 2000
2. Introduction to Instrumental Analysis - Robert Braun, McGraw Hill.
3. Ocquin and Langeron. Handbook of Microscopy. Butterworths, 1983

Learning Objectives

The Learning Objectives of this course are as follows:
• To introduce machine learning techniques to students using Python programming
• To enable students to use various tools and packages for advanced data analysis

Learning Outcomes

The Learning Outcomes of this course are as follows:
• After studying this course, students will be able to learn about Python's main features and how they make Python a great tool for financial analysts.
• After studying this course, students will be able to get familiarized with Anaconda and Jupyter Notebook.
• After studying this course, students will be able to learn basics of Machine Learning.
• After studying this course, students will be able to apply these techniques on data.

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Course Title:	Analytics/computing with Python	Course Code: 24BSC5107T	

Total Lecture hour: 45

		Hours
Unit I	Python: General overview, Python vs. Excel, Anaconda and Jupyter notebook: Interface overview, Data types in Python, Python basic syntax: Assignment statements, creating variables, indentation, conditionals, and loops, writing user defined functions. Working with libraries:Pandas, NumPy, Matplotlib, and Seaborn.	12
Unit II	Python SQL Database Access: Introduction, Installation, DB Connection, Creating DB Table.	11
Unit III	Pandas: Working with Data Frame, Importing from Excel or .csv files, Powerful filters and indexes. Numpy: Selecting data with locandiloc, Using NumPy for speed,Trade-offs between arrays and lists, Array functions. Data cleansing and normalization: Libraries for data visualization, Types of cha11s/graphs and how to build them.	12
Unit IV	Machine learning: Introduction, Definitions, Supervised, unsupervised, python libraries for machine learning: Sci-kit learn, Regression: Linear regression, logistic regression, over-fitting and regularization.	10

Reference and Reading Books:

1. Pilgrim, M. (2004). *Dive Into Python.* Apress. Ch. 1, 2, 4
2. S. Raschka, *Python Machine Learning*, V. Mirjalili (2020), Ch. 3
3. Mitchell, T. M. (1997). *Machine Learning.* New York: McGraw-Hill.
4. Liu, Y. (2019). *Python Machine Learning by Example: Implement Machine Learning Algorithms and Techniques to Build Intelligent Systems (Second Edition).* Packt Publishing.
5. Boschetti, A. (2016). *Regression Analysis with Python (1st ed.).* Packt Publishing. Retrieved from https://www.perlego.com/book/4457/regression-analysis-with-python-pdf (Original work published 2016)
6. Sivanandam, S. N., & Deepa, S. N. (2011). *Principles of Soft Computing.*

Course Title:	Mushroom Cultivation	Course Code: 24BSC5108T	

Total Lecture hour: 45

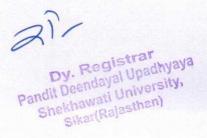|		Hours
Unit I	**INTRODUCTION** : Morphology and life cycle of mushroom , Differentiation of edible and poisonous mushroom , Nutritional and medicinal value of edible mushroom ,Edible mushrooms available in India , Volvariellavolvacea , Pleurotuscitrinopileatus, Agaricusbisporous	12
Unit II	**CULTIVATION TECHNOLOGY-I:** Basic materials required in mushroom cultivation . Infrastructure: Polythene bag, vessels, inoculation hook, inoculation loop, low-cost stove, sieves, culture rack, mushroom unit (Thatched house), water sprayer, tray, small polythene bag , mushroom substrate selection, substrate soaking, pasteurization etc.	12
Unit III	**CULTIVATION TECHNOLOGY-II:** Preparation of spawn: process of spawn culture, selection of correct spawn, culture maintenance, mother spawn production and storage of spawn ,Preparation of mushroom bed: paddy straw, sugarcane trash, maize straw, banana leaves. ,Factors affecting the mushroom bed preparation: Low-cost technology, composting technology in mushroom production	11
Unit IV	**STORAGE** : Storage of fresh and dry mushroom , Short-term storage (Refrigeration-up to 24 hours) , Long-term storage (canning, pickels, papads) , Processing of mushrooms (canning, dehydration, and packing) **Demonstration** Identification of edible mushroom, Demonstration of spawn preparation, Demonstration of culture & packaging technique of mushroom	10

Aims & Objectives:

- Students will learn to prepare compost and know about the decomposing process.
- To generate self-employment.
- To create interest in participants towards organic farming.
- The course can help to maintain the environment pollution-free.
- This course will help the students to learn about the biodiversity of local earthworms.

Outcome of the Course & Future Prospects:

- Students can construct their own compost farm and thereby can get monthly income of Rs. 9000-Rs 10000.
- Students/farmers by using vermicompost in their field can increase the crop yield.
- Students residing in cities can produce vermicompost in small scale for garden.
- Recycling of garbage has become necessary in order to sustain our health and environment and therefore it will help to keep our environment clean.

Course Title:	Vermiculture	Course Code: 24BSC5109T
Total Lecture hour: 45		

Unit		Hours
Unit I	**Basic of Vermiculture**	
	Introduction to vermiculture: Definition, meaning, history, economic importance, their value in maintenance of soil structure, role as four R's of Recycling - Reduce, Reuse, Recycle, Restore, Choosing the right worm. Useful species of Earthworms - Local and Exotic species. Complementary activities of Auto evaluation, the matter and humus cycle. Transformation process of organic matter.	12
Unit II	**Eisenia fetida - Biology**	
	Taxonomy, Anatomy and Physiology of Eisenia fetida. Vital cycle of Eisenia fetida: alimentation, fecundity, annual reproductive potential and limit factors (gases, diet, humidity, temperature, pH, light, and climatic factors)	11
Unit III	**Eudrilus eugineae - Biology**	
	Taxonomy, Anatomy and Physiology of Eudrilus eugineae. Vital cycle of Eudrilus eugineae: alimentation, fecundity, annual reproductive potential and limit factors (gases, diet, humidity, temperature, pH, light, and climatic factors).	10
Unit IV	Small Scale Earthworm Farming for Home Gardens	
	Earthworm compost for home gardens. Commercial scale vermicomposting, harvesting and processing. Packaging, transport and storage of Vermicomposts. Nutritional composition of Vermicompost for plants, comparison with other fertilizers. Vermiwash collection, composition & use. Enemies of Earthworms, Sickness and worm's enemies. Frequent problems of earthworms and their remedies.	12

Reference and Reading Books:

1. Bhatt J.V. & S.R. Khambata (1959) "Role of Earthworms in Agriculture" Indian Council of Agricultural Research, New Delhi
2. Edwards, C.A. and J.R. Lofty (1977) "Biology of Earthworms" Chapman and Hall Ltd., London.
3. Lee, K.E. (1985) "Earthworms: Their ecology and Relationship with Soils and Land Use" Academic Press, Sydney.
4. Wallwork, J.A. (1983) "Earthworm Biology" Edward Arnold (Publishers) Ltd. London.
5. Kevin, A and K.E.Lee (1989) "Earthworm for Gardeners and Fisherman" (CSIRO, Australia, Division of Soils).

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Course Objectives

The Learning Objectives of this course are as follows:
- To enable students to develop IT skills that are a pre-requisite in today's work environment.
- To equip them with basic computing skills that will enhance their employability in general. To enable the student to analyse and present information in a meaningful manner.

Course Outcomes

The Learning Outcomes of this course are as follows:
- By studying this course, students will be able to use word processor to generate documents with appropriate formatting, layout, review and referencing.
- By studying this course, students will be able to manage data in worksheets and workbooks and analyze it using spreadsheet functions and inbuilt formulas.
- By studying this course, students will be able to draw analysis on data using spreadsheets to make decisions.
- By studying this course, students will be able to make meaningful representations of data in the form of charts and pivot tables.
- By studying this course, students will be able to manage data in database tables and use the same for generating queries, forms and reports.

Course Title:	Data Analysis in Spreadsheets	Course Code: 24BSC5110T	
Total Lecture hour 45			
Unit I	**Introduction to Spreadsheet-I:**		Hours
	Spreadsheets: Concept of worksheets and workbooks, creating, opening, closing and saving workbooks, moving, copying, inserting, deleting and renaming worksheets, working with multiple worksheets and multiple workbooks, controlling worksheet views, naming cells using name box, name create and name define; Exchanging data using clipboard, object linking and embedding; Printing and Protecting worksheets		12
Unit II	**Introduction to Spreadsheet-II:**		
	Adjusting margins, creating headers and footers, setting page breaks, changing orientation, creating portable documents and printing data and formulae; Implementing file level security and protecting data within the worksheet; Understanding absolute, relative and mixed referencing in formulas, referencing cells in other worksheets and workbooks, correcting common formula errors, working with inbuilt function categories like mathematical, statistical, text, lookup, information, logical, database, date and time and basic financial functions.		12
Unit III	**Data Analysis in Spreadsheets-I:**		
	Consolidating worksheets and workbooks using formulae and data consolidate command; Choosing a chart type, understanding data points and data series, editing and formatting chart elements, and creating sparkline graphics, Analysing data using pivot tables: Creating, formatting and modifying a pivot table, sorting, filtering and grouping items.		11
Unit IV	**Data Analysis in Spreadsheets-II:**		
	Creating, formatting and modifying a pivot table, sorting, filtering and grouping items, creating calculated field and calculated item, creating pivot table charts, producing a report with pivot tables. Introduction to recording and execution of macros.		10

Reference and Reading Books:
1. Swinford, E., Dodge, M., Couch, A., Melton, B.A.(2013). Microsoft Office Professional 2013. United States: O'Reilly Media.
2. Wang, W. (2018). Office 2019 For Dummies. United States: Wiley. Microsoft
3. Lambert, J. (2019). Microsoft Word 2019 Step by Step. United States: Pearson Education.