As per the NEP 2020
Skill Enhancement Course (SEC)
(Arts / Science / Commerce)
(Effective from Academic Year 2024-2025 onwards)
Semester - I

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Arts/Science/Commerce/Others
Skill Enhancement Courses Syllabus
(CBCS) As per the NEP 2020 (Semester I to IV)
w. e. f. the Academic Session 2024-25
Semester-I
Note: Select as per structure of the programme (any one)

Course title	Credits	Course Code	Credit distribution of the course			Eligibility criteria
			Lecture	Tutorial	Practical/ Practice	
Data Analysis	2	24BSC5101	2	0	0	10+2 from any recognized Board
Agricultural Marketing in North India	2	24BSC5102	2	0	0	
Environment Ethics	2	24BSC5103	2	0	0	
Film Appreciation	2	24BSC5104	2	0	0	
Making Effective Communication	2	24BSC5105	2	0	0	
Biological Tools & Techniques	2	24BSC5106	2	0	0	
Analytics/computing with Python	2	24BSC5107	2	0	0	
Mushroom Cultivation	2	24BSC5108	2	0	0	
Vermiculture	2	24BSC5109	2	0	0	
Data Analysis in Spreadsheets	2	24BSC5110	2	0	0	

Skill Enhancement Course (SEC)

Semester-I

Data Analysis

Course Code: 24BSC5101

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.

Graduate Attributes:

1. This course helps students in understanding use of data in research, processes involved in collection of data, presentation and summarization of data using computer software's like MS- Excel, SPSS, etc.

2. Students will learn theoretical knowledge and be involved practically in preparation of questionnaires/interview schedules, collection of both primary and secondary data and its presentation.

3. Students will learn about theoretical knowledge on different types of Statistical Tools used to analyse data for drawing statistical inferences and practical knowledge about data analysis using different statistical software packages (like – SPSS, STATA, etc.).

4. Students will also gather a practical knowledge about preparation of a report on collected data.

5. To prepare the students for the 4th Year Honors Program (in Research) under FYUGP and to encourage them to research in higher level of studies. End Semester and Sessional Examination will be held following the academic calendar of the university covering the syllabus of the course and both will be theory papers in nature. The questions will be set following the guidelines of the university in both the examinations.

   Each candidate is required to complete and submit a project work as Practical based on a self-designed interview schedule/questionnaire and collected data to be evaluated via Project Report and Seminar Presentation.

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.

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.

Unit II:

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).

Unit IV:

Regression Analysis; Ordinary Least Squares Method; Descriptive Analysis, Correlation Analysis and Regression Analysis in Software like MS-Excel, STATA, etc.

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 PrivateLimited.
6. Damodar Gujarati, Econometrics by Example, Palgrave Macmillan

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Skill Enhancement Course (SEC)

Agricultural Marketing in North India

Course Code: 24BSC5102

UNIT-I: CLEANING AND SCOPE:

Definitions, Components of market, Market Structure, Market performance, Subject matter. Importance of Agricultural marketing in economic development,

UN1T-2:-CLASSIFICATIONOFMARKETS:

Basis of Location, Area Coverage, time span, Volume of transaction, nature of transaction, Comiiiodities competition, population, public intervention.

UNIT-3:-FUNCTIONS OF MARKETING and QUALITY CONTROL:

Learning-Assembling-Grading and Standardization-Transportation-Storage-processing- Packing- Distribution-Buying and Selling-Financing- Risk bearing- Marketing intelligence .Agricultural products- AGMARK-CODEX, Need of CODEX certification Relevance.

UNIT-4:-REMEDIALMEASURES:-

Regulated Markets-definition-Important features of regulate the markets-functions- progress and defects- Measures by Government to improve Agricultural Marketing.

Note: A Project must be Prepared by Students go through field study

Reference and Reading Books:

Acharya S. S and Agarwal N L, 2021, Agricultural Marketing in India. Oxford &IBH Publishing Co.Pvt.Ltd. New Delhi

Kahlon, A.S and Tyagi. DS, 1983 Agricultural Price Policy in India. Allied Publishers Pvt. Ltd., New Delhi.

Kulkarni, KR.1964, Agricultural Marketing in India. The Co-operators Books Depot. Mumbai.

Mamoria, C.B. and Joshi. RL 1995, Principles and Practices of Marketing in India, Kitab Mahal, Allahabad

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Skill Enhancement Course (SEC)
Environmental Ethics

Course Code: 24BSC5103

Course Objective

- 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 theprotection of environment and to use natural resources in a sustainable manner.

Unit 1: Understanding Environmental Ethics

a. Concept of environmental ethics
b. Importance of environmental ethics

Unit 2: Environmental issues

a. Pollution- various types, sources and control measures

Unit 3: Environment and Politics
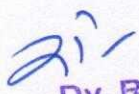
a. Ecologism
b. Ecofeminism
c. Sustainable Development

Unit 4: Water Harvesting Techniques

a. Micro and Macro Catchment
b. Traditional Methods of Water conservation
c. Green and Blue Water Harvesting Techniques

A Project/ Assignment must be Prepared by Students go through field study

Suggested Readings:

1. Attfield. Robin, *Environmental Ethics A Very Short Introduction*, Oxford, 2019
2. Baker. Susan, *Sustainable Development*, Routledge, New York, 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 InternationalPublishers, 2018
7. Raju. Parlapalli, Anand. Konkala, Palve. Anil. E. & Kumar. Ashok, *Environmental Principles andEthics*, AG Publishing House, 2022
8. Shiva. Vandana, *Ecofeminism*, London, Zed Books, 1984

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Skill Enhancement Course (SEC)
Film Appreciation

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 ad 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 quip the student with an ability to engage with cinema in its societal context. The historical, social, aesthetic aspects of cinema are to be learnt.

Pedagogy:

Screening of films, lectures accompanied with presentations, interactive discussions, assignment forcompletion outside the class.

Unit 1: understanding films

- History of films- silent era, sound cinema, the contemporary period
- Major film movements- Hollywood, Soviet, French, Korean, Iranian cinema
- Indian cinema- Dadasaheb Phalke, Satyajit Ray, Jyoti Prasad Agarwala

Unit 2: Cinema and society

- Ideology in Cinema- nationalism, welfarism, subaltern perspective
- Language of cinema and songs therein
- Characters in Cinema- Portrayal of patriarchy, caste-class angle,

Unit 3: Films for analysis and appreciation-I

- The Great Dictator
- Children of heaven
- Mississippi Masala

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Unit 4: Films for analysis and appreciation-I

- Rang De Basanti
- 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- Britanicca 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 AnaghaKamble(/Aakar books)
7. Social importance of Assamese cinema in perspective- Vivekananda Kendra Prakashan

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Skill Enhancement Course (SEC)
Making Effective Communication

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 themselvesunderstood.
- To communicate with the objective of entertaining a listener.
- Tocommunicatewiththeintentionofconvincingsomeonetodosomethingthatcanbenefithim/her.
- Toemploymotivationasanobjectivesoastoconvincesomeoneelsetodosomething.
- To transmit the message with meaning and understanding.

Course outcomes (Graduate attributes)
- To understand the process of communication.
- Speak with confidence and clarity in both formal & informal situation.
- It creates a collegial culture that fosters team work 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.

Unit–I

Understanding communication

Nature of Communication
Importance of Communication
Process of Communication

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 ofcommunication.

Unit–III

Qualities of Effective Communication & Barriers of Communication

Reading, listening intelligently, thinking and Planning using appropriate language, using appropriatechannel, an environment conductive to communication, overcoming differences of language. Mechanical Barriers, Physical Barriers, Psychological Barriers, Semantic & language Barriers, StatusBarriers.

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

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

References 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

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Skill Enhancement Course (SEC)
Biological Tools & Techniques

Course Code: 24BSC5106

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.

Corse Outcomes:

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

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

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

Unit-III

The Internet and the Biologists: The Gene bank sequence database, Structure data base, Sequence analysis using GCG

Unit-IV

Preparation of solutions, pH Meter, BOD Incubator, Oven

References Books:

1. Wilson and Wlaker. Practical Biochemistry. Cambridge, 2000
2. Introduction to instrumental analysis-Robert Braun-McGraw Hill.
3. Ocquin and Langeron. Handbook of Microscopy. Butterwaths, 1983

Skill Enhancement Course (SEC)
Analytics/computing with Python

Course Code: 24BSC5107

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.

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.

Unit II

Python SQL Database Access: Introduction, Installation, DB Connection, Creating DB Table.

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Unit III

Pandas: Working with Data Frame, Importing from Excel or .csv files, Powerful filters and indexes. Numpy: Selecting data with loc and iloc, 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.

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.

References 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.

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Skill Enhancement Course (SEC)
Mushroom Cultivation

Code: 24BSC5108

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 , Volvariella volvacea , Pleurotus citrinopileatus, Agaricus bisporous

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.

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

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

Skill Enhancement Course (SEC)
Vermiculture

Code: 24BSC5109

Aims & Objectives:

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

Outcome of the Course & Future Prospects:

1. Students can construct their own compost farm and thereby can get monthly income of Rs.9000- Rs10000.
2. Students/ farmers by using vermicompost in their field can increase the crop yield.
3. Students residing in cities can produce vermicompost in small scale for garden.
4. Recycling of garbage has become necessary in order to sustain our health andenvironment and therefore it will help to keep our environment clean.

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.

UNIT – II
Eisenia fetida- Biology
Taxonomy, Anatomy and Physiology of *Eisenia fetida*. Vital cycle of *Eisenia fetida*: alimentation, fecundity, annual reproducer potential and limit factors (gases, diet,humidity, temperature, PH, light, and climatic factors

UNIT – III
Eudrilus eugineae- Biology

Taxonomy, Anatomy and Physiology of *Eudrilus eugineae*. Vital cycle of *Eudrilus eugineae*: alimentation, fecundity, annual reproducer potential and limit factors (gases, diet, humidity, temperature, PH, light, and climatic factors

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 fertilizer Vermiwash collection, composition & use Enemies of Earthworms, Sickness and worm's enemies. Frequent problems of earthworms and their remedies

References 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).

Skill Enhancement Course (SEC)
Data Analysis in Spreadsheets

Code: 24BSC5110

Course Objectives

The Learning Objectives of this course are as follows:

- To enable students 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.

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- 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.

Unit 1

Introduction to Spreadsheet-I: 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

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.

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,

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.

References 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.