DELHI TECHNOLOGICAL UNIVERSITY

University School of Management and Entrepreneurship

Four Year Undergraduate Programme Curriculum

ECONOMICS

For Academic Session 2023-24 and Onwards

Four Year Undergraduate Programme

Economics

Curriculum and Credit Structure

The four year undergraduate program is proposed on the philosophy and structural elements proposed in the New Education Policy 2020, and the Curriculum and Credit Framework for undergraduate programs published by the UGC in December 2022. It has also kept in mind the structural and curricular elements which had been incorporated by USME, DTU in 2020, meant to enhance the learning of students in the Undergraduate Program in Economics by broadening the curriculum to include aligned complementary disciplines such as analytics and programming, as well as management, where students would aim to build their careers. The elements of learning in areas which inculcate better life skills and perspectives, which were present in the earlier design, such as ability and skill enhancement and value based education, have also been strengthened. The programme structure also includes an optional research track designed to equip students with advanced research skills and methodologies, fostering a deeper understanding of economic theories and practices.

The major elements of NEP 2020 such as a structure of certification providing flexibility of learning curriculum, multidisciplinary of learning, interdisciplinary courses, providing for deeper learning in dual disciplines such as through a Minor, have been brought into the curriculum. Fostering an integration of the humanities/social sciences with Science, Technology and Mathematical subject domains (STEM), to draw from the UGC Curricular Framework, would result in "positive learning outcomes, including increased creativity and innovation, critical thinking and higher-order thinking capacities, problem-solving abilities, teamwork, communication skills, more in-depth learning and mastery of curricula across fields". The current framework incorporates this idea to ensure a diversity of curricular components drawn from many of these fields, to nurture the above outcomes, through appropriate multidisciplinary, Ability, skill and value add based courses.

The option of multiple entry/exit has also made part of the curricular structure, following the guidelines of the NEP and the UGC framework. The unique focus on being a practise based school, with curricula based on holistic knowledge, skills and application orientation , with a focus on cutting edge areas of practise, has brought in the specific combination of disciplinary elements around management and data sciences for providing Minor around opportunity areas for careers normally associated with graduates form economics stream, including a focus on research and quantitative techniques. It is also imbued with a strong focus on the Major, the core discipline of Economics, ensuring that students would be able to build careers in Economics, research and related fields at an advanced level.

It is envisaged that with Economics, the streams of Management and Decision Sciences/Analytics that have proven to be of great value, will be strengthened with the provision of a minor in either area. The unique abilities and career choices will be further sustained and nurtured with flexibility of choice of courses from both streams, to allow

specialisation towards a thrust area or career domain like Finance, Financial analytics, consulting etc. along with research or analyst/banking related roles in Economics itself. The programme offers an optional research track in the fourth year, that aligns with the New Education Policy 2020 and the UGC's Curriculum and Credit Framework for undergraduate programs, emphasizing a multidisciplinary and interdisciplinary approach. Students enrolled in the research track will have the opportunity to engage in rigorous research projects, leveraging complementary disciplines such as data analytics, programming, and management.

PROGRAM OBJECTIVES – BA (H) Economics

Program Educational Objectives (PEOs)

PEO1: To acquire knowledge of basic principles of economics and understanding of rational decision making by economic agents.

PEO2: To develop critical, analytical and measurable approach towards problems of the economy, government and society.

PEO3: To practice mathematical, statistical, programming and analytical skills.

PEO4: To gain effective communication, interpersonal skill, motivational attitude as well as decision making and leadership skills.

PEO5: To inculcate social perspective on equity and inclusiveness.

Program Outcomes/Program Learning Outcomes (POs)

The Economics Graduates will be:

PO1: Grasp the knowledge of economics fundamentals.

PO2: Develop the ability to identify current economic issues, review and analyze relevant literature

PO3: Imbibe the ability to comprehend both theoretical and empirical models for analyzing various socio-economic problems.

PO4: Develop sensitivity to societal concerns and understand various socio-economic problems and be able to work towards development of sustainable solutions

PO5: Acquire ability to apply mathematical/econometric methods for measurement of economic problems and their interpretation

PO6: Acquire managerial and communication skills

Program Specific Outcomes (PSOs)

PSO1: Demonstrate knowledge of core, pure and applied economics

PSO2: Exhibit managerial skills with economics knowledge

PSO3: Specialize in application of economics principles and methods, in fields related to Economics of Health and Education, Political Economy, Comparative Economic Development, Economic History of India, Financial Economics, Environmental Economics Money and Financial Markets, International Economics, Energy Economics and Public Economics

PSO4: Able to understand theoretical and empirical economic models and be able to develop new theoretical models with testable hypothesis and have the ability to collect corresponding data and test the validity of models on real life problems

Requirements for Award of Certificate/Diploma/Degree in Economics

1) UG Certificate in Economics: A student opting for exit after completion of 1st year will be awarded a **UG certificate in Economics** after fulfilling following conditions:

a) Secured 40 credits as per BA Economics 1st year curriculum.

b) One vocational course of 4 credits during the summer vacation of the first year.

These students are allowed to re-enter the degree program within three years and complete the degree program within the stipulated maximum period of seven years.

2) UG Diploma in Economics: A student opting for exit after completion of 2nd year will be awarded a **UG diploma in Economics** after fulfilling following conditions:

a) Secured 80 credits as per BA Economics 1st and 2nd year curriculum.

b) One vocational course of 4 credits during the summer vacation of the second year.

These students are allowed to re-enter the degree program within three years and complete the degree program within the stipulated maximum period of seven years.

3) 3-Year BA Economics Degree: A student opting for exit after completion of 3 years will be awarded a **3-Year BA Economics Degree** after fulfilling following conditions:

a) Secured 120 credits as per BA Economics 1st, 2nd and 3rd year curriculum.

b) Out of the above 120 credits, secured 24 credits in GEC courses by studying a combination of Management and Data Science courses over six semesters.

These students are allowed to re-enter the degree with honours program within three years and complete the degree program within the stipulated maximum period of seven years.

4) 3-Year BA Economics Degree with a Minor Degree: A student opting for exit after completion of 3 years will be awarded a **3-Year BA Economics Degree with a Minor in Management/Data Science** after fulfilling following conditions:

a) Secured 120 credits as per BA Economics 1st, 2nd and 3rd year curriculum.

b) Out of the above 120 credits, secured 24 credits by studying all GEC courses in Management to get Minor in Management Or secured 24 credits by studying all GEC courses in Data Science to get Minor in Data Science.

These students are allowed to re-enter the degree with honours program within three years and complete the degree program within the stipulated maximum period of seven years.

5) 4-Year BA Economics (Honours) Degree: A **4-Year BA Economics (Honours) Degree** will be awarded after fulfilling following conditions:

a) Secured 160 credits as per BA Economics 1st, 2nd, 3rd and 4th year curriculum.

b) Out of the above 160 credits, secured 32 credits in GEC courses by studying a combination of Management and Data Science courses over eight semesters.

6) 4-Year BA Economics (Honours) Degree with a Minor Degree: A **4-Year BA Economics (Honours) Degree with a Minor in Management/Data Science** will be awarded after fulfilling following conditions:

a) Secured 160 credits as per BA Economics 1st, 2nd, 3rd and 4th year curriculum.

b) Out of the above 160 credits, secured 32 credits by studying all GEC courses in Management to get Minor in Management Or secured 32 credits by studying all GEC courses in Data Science to get Minor in Data Science.

7) 4-Year BA Economics (Honours with Research) Degree: The research track will be offered to students with an average SGPA greater than or equal to 8 in the first six semesters. A **4-Year BA Economics (Honours with Research) Degree** will be awarded after fulfilling following conditions:

a) Secured 160 credits as per BA Economics 1st, 2nd, 3rd year curriculum, and the 4th year curriculum of research track.

b) Out of the above 160 credits, secured 32 credits in GEC courses by studying a combination of Management and Data Science courses over eight semesters.

8) 4-Year BA Economics (Honours with Research) Degree with a Minor Degree: The research track will be offered to students with an average SGPA greater than or equal to 8 in the first six semesters. A **4-Year BA Economics (Honours with Research) Degree with a Minor in Management/Data Science** will be awarded after fulfilling following conditions:

a) Secured 160 credits as per BA Economics 1st, 2nd, 3rd curriculum, and the 4th year curriculum of research track.

b) Out of the above 160 credits, secured 32 credits by studying all GEC courses in Management to get Minor in Management Or secured 32 credits by studying all GEC courses in Data Science to get Minor in Data Science.

Definitions

1. Courses of study

The various disciplines available at USME, or streams offered such as decision sciences and analytics, shall offer a pool of courses at various levels of coverage and intent – from courses which may have a wide and comprehensive coverage of topics in the Discipline such as core courses (from introductory to advanced levels of study), to courses in specialised domains within the discipline, such as Elective courses, and courses which expand the conceptual horizons in related areas/multidisciplinary areas or interdisciplinary subjects which normally are required in real life applications such as Generic Electives/Multidisciplinary streams (like data sciences and analytics) or provide skills in use of frameworks theories and practises (discipline focussed practicum courses such as management). The programme also includes courses to enhance the research capabilities of students through quantitative and qualitative subjects and a year-long dissertation. The following course types are thus proposed in the curriculum:

a) Discipline Specific Core Course (DCC): The Discipline Specific core courses are mandatory courses considered essential for a chosen engineering/science discipline including, engineering design, seminar, industrial training and project.

b) Discipline Specific Elective Course (DEC): Every department offers a wide variety of elective courses to students providing them opportunity to discover their academic interest and enhance their engagement in learning process. When a student opt elective courses from a pool of elective courses offered for his/her program it will be termed as DEC.

c) Generic Elective Course (GEC): Generic Elective courses are meant to provide multidisciplinary or interdisciplinary education to students. When student of a particular discipline opt for a DEC/DCC or Specific Multidisciplinary stream within the department the pool of such courses being offered by the USME will be termed as Generic elective (GEC) for the student. There are two streams specified – (1) Management and (2) Data Science and Analytics, in the context of the program in Economics.

d) Interdisciplinary core courses (ICC): Many fields of study in social sciences other than Economics provide a perspective that is essential to grasp the broader nature of Economics, such as development theory, with inputs in Sociology of Development for instance.

These three courses shall be a pool of courses offered by various Disciplines/ Streams within USME, from which students can opt course.

Broader and holistic Skill and Ability enhancement courses, which focus on soft skills, personality development, life skills, value systems and perspectives, as well as specific technical skills that may be required over and above ones functional/disciplinary domain skills: These include the skills required in communication, language, logical ability, entrepreneurship, perspectives in environmental and social sustainability, Indian society, ethos and culture, the practise of happiness and similar subjects that develop the students in an all-round, integrated

and holistic manner in all spheres of life. The following types of courses are proposed to provide learning opportunities in these areas:

e) Ability Enhancement course (AEC): These relate to the abilities as an individual in a larger organisational, social and community context, involving soft skills, personality development, language and communication, etc.

f) Skill Enhancement Course (SEC): These include technical skills that are broader and useful across domains such as computing and programming skills, financial literacy, basic mathematics and statistics, etc.

g) Value Addition Course (VAC): These courses will enhance the overall holistic learning by focusing on a diverse set of subjects – broadening the perspective and learning about society and its needs (environmental sustainability for instance) or skills required in life across contexts, such as logical reasoning.

h) Dissertation: The basic objective of this course is to facilitate students to understand the nitty-gritty of academic research through working on a research problem-related to their field of specialization under a faculty supervisor.

2. Major and Minor Disciplines

a) Major discipline is the discipline to which a student is admitted to obtain his/her degree which is his/her primary field of study.

b) Minor discipline is a secondary area of study opted by a student which may be either other discipline or any other stream offered by USME. Minor discipline helps to gain a broader understanding beyond the major discipline.

3. Provision of earning credits from online courses/ any other Institute/University/ through online/offline mode

Course credits may be earned in online mode through the approval process initiated through the MOOCs Coordinator, USME. In the offline mode from any other Institute/University it will be offered to the student with prior approval of BOS of USME with maximum limit as detailed below, and only for course types mentioned below. For online courses, only SWAYAM/NPTEL platforms shall be considered for credits transfer. This can be for any number of credits, across any combination of course types mentioned:

Category	Credits
VAC, AEC, DEC and GEC	16

Abbreviations

L	Lecture	T	Tutorial	P	Practical
CWS	Class Work Sessional	PRS	Practical Sessional	MTE	Mid Term Examination
ETE	End Term Examination	PRE	Practical Examination	MOOC	Massive Open Online Course
DCC	Discipline Specific Core Course	DEC	Discipline Specific Elective Course	GEC	Generic Elective Course/Minor Stream Course
AEC	Ability Enhancement Course	SEC	Skill Enhancement Course	VAC	Value Addition Course
ICC	Interdisciplinary Core Course				

Summary of Program Curricular Structure
BA Economics Honours Four Year Program

S. No.	Broad Category of Course	Course Nomenclature	Minimum Credit Requirement					
			3-year UG		4-Year UG		4-Year UG (with research track)	
1	Major (Core)	Discipline Specific Core Course (DCC) Interdisciplinary Core Course (ICC)	74 04	78	90 04	110	90 04	94
2	Major (Electives)	Discipline Specific Elective Course (DEC)	0		16		0	
3	Multidisciplinary/Minor Stream	Minor Stream Electives/Generic Elective Course-GEC	24		32		32	
4	Ability Enhancement Courses (AEC)	Ability Enhancement Course (AEC)	06		06		06	
5	Skill Enhancement Courses (SEC)	Skill Enhancement Course (SEC)	04		04		04	
6	Value Addition Courses (VAC)	Value Addition Course (VAC)	06		06		06	
7	Summer Internship	Summer Internship Project Report (SIP)	02		02		02	
8	Dissertation	Dissertation					16	
	Total		120		160		160	

Semester-Wise Courses and Credit Structure

First Semester

Course Code	Course Title	Subject Area	Credits	Contact Hours/Week			Relative Weights				
				L	T	P*	CWS	PRS	MTE	ETE	PRE
BAE101	Introductory Microeconomics	Discipline Specific Core Course (DCC)	4	3	1	0	25	-	25	50	-
BAE103	Introductory Macroeconomics	Discipline Specific Core Course (DCC)	4	3	1	0	25	-	25	50	-
MGM1xx or DSC1xx	GEC in Management (MGM101) or GEC in Data Science (DSC101)	Generic Elective Course (GEC)**	4								
BAE105	Computers and Programming Fundamentals	Interdisciplinary Core Course (ICC)	2	1	0	2	15	25	20	40	-
BAE107	English Communication	Ability Enhancement Course (AEC)	2	2	0	0	25	-	25	50	-
BAE109	Basic Mathematics & Statistics	Skill Enhancement Course (SEC)	2	2	0	0	25	-	25	50	-
BAE111	Environmental Studies	Value Addition Course (VAC)	2	2	0	0	25	-	25	50	-
Total			**20**								

*In case of practical, 2 contact hours=1 credit

**Each student must compulsorily opt for a Generic Elective Course (GEC) of 4 credits in Management or Data Science stream in every semester.

a) If a student takes all GEC courses in Management stream only, securing 24/32 credits over 3 year/4 year, he will get an Economics degree/Economics (honours) or Economics (honours with research) degree with a Minor in Management. If a student takes all GEC courses in Data Science stream only, securing 24/32 credits in 3 year/4 year, he will get

an Economics degree/Economics (honours) or Economics (honours with research) degree with a Minor in Data Science.

b) However, if a student takes a combination of Management and Data Science GEC courses over the six/eight semesters, securing 24/32 credits in 3 year/4 years, he will be awarded an Economics degree/Economics (honours) or Economics (honours with research) degree only, with no mention of the Minor stream.

Hence, at the start of Semester I, the student must specify whether he wants degree/honours degree with minor in management or minor in data science or without any minor stream. Once a choice has been made, students must choose GEC courses accordingly in each semester. Details on the courses, evaluation, and marking scheme in the Management and Data Science streams are shown in Tables 1 and 2, respectively.

Note: In Semester I, students also have to register for a Compulsory 02 Credits Course MS199: Community Engagement (Mentoring School Students), duration of which will be one year and the evaluation will be done at the end of Semester II. Further details of this course are mentioned in the Syllabi section for Semester I.

Second Semester

Course Code	Course Title	Subject Area	Credits	Contact Hours/Week			Relative Weights				
				L	T	P*	CWS	PRS	MTE	ETE	PRE
BAE102	Intermediate Microeconomics I	Discipline Specific Core Course (DCC)	4	3	1	0	25	-	25	50	-
BAE104	Intermediate Macroeconomics I	Discipline Specific Core Course (DCC)	4	3	1	0	25	-	25	50	-
BAE106	Mathematical Methods for Economics I	Discipline Specific Core Course (DCC)	4	3	1	0	25	-	25	50	-
MGM1xx or DSC1xx	GEC in Management (MGM102) or GEC in Data Science (DSC102)	Generic Elective Course (GEC)	4								
BAE108	Sociology of Development	Interdisciplinary Core Course (ICC)	2	2	0	0	25	-	25	50	-
BAE110	Financial Literacy	Skill Enhancement Course (SEC)	2	2	0	0	25	-	25	50	-
Total			**20**								

*In case of practical, 2 contact hours=1 credit

Third Semester

Course Code	Course Title	Subject Area	Credits	Contact Hours/Week			Relative Weights				
				L	T	P*	CWS	PRS	MTE	ETE	PRE
BAE201	Intermediate Microeconomics II	Discipline Specific Core Course (DCC)	4	3	1	0	25	-	25	50	-
BAE203	Intermediate Macroeconomics II	Discipline Specific Core Course (DCC)	4	3	1	0	25	-	25	50	-
BAE205	Mathematical Methods for Economics II	Discipline Specific Core Course (DCC)	4	3	1	0	25	-	25	50	-
MGM2xx or DSC2xx	GEC in Management (MGM201) or GEC in Data Science (DSC201)	Generic Elective Course (GEC)	4								
BAE207	Soft Skills and Personality Development	Ability Enhancement Course (AEC)	2	2	0	0	25	-	25	50	-
BAE209	Science and Practice of Happiness	Value Addition Course (VAC)	2	2	0	0	25	-	25	50	-
Total			**20**								

*In case of practical, 2 contact hours=1 credit

Fourth Semester

Course Code	Course Title	Subject Area	Credits	Contact Hours/Week			Relative Weights				
				L	T	P*	CWS	PRS	MTE	ETE	PRE
BAE202	Advanced Microeconomics	Discipline Specific Core Course (DCC)	4	3	1	0	25	-	25	50	-
BAE204	Advanced Macroeconomics	Discipline Specific Core Course (DCC)	4	3	1	0	25	-	25	50	-
BAE206	Statistical Methods for Economics	Discipline Specific Core Course (DCC)	4	3	1	0	25	-	25	50	-
MGM2xx or DSC2xx	GEC in Management (MGM202) or GEC in Data Science (DSC202)	Generic Elective Course (GEC)	4								
BAE208	Analysis of Recent Economic Developments	Ability Enhancement Course (AEC)	2	2	0	0	25	-	25	50	-
BAE210	Logical Reasoning	Value Addition Course (VAC)	2	2	0	0	25	-	25	50	-
Total			**20**								

*In case of practical, 2 contact hours=1 credit

Fifth Semester

Course Code	Course Title	Subject Area	Credits	Contact Hours/Week			Relative Weights				
				L	T	P*	CWS	PRS	MTE	ETE	PRE
BAE301	Introductory Econometrics	Discipline Specific Core Course (DCC)	4	3	1	0	25	-	25	50	-
BAE303	Development Economics I	Discipline Specific Core Course (DCC)	4	3	1	0	25	-	25	50	-
BAE305	Indian Economy I	Discipline Specific Core Course (DCC)	4	3	1	0	25	-	25	50	-
BAE307	Econometric Analysis Package	Discipline Specific Core Course (DCC)	2	1	0	2	15	25	20	40	-
MGM3xx or DSC3xx	GEC in Management (MGM301) Or GEC in Data Science (DSC301)	Generic Elective Course (GEC)	4								
BAE309	Summer Internship Project Report (SIP)	Summer Internship	2	0	0	4	-	40	-	-	60
Total			**20**								

*In case of practical, 2 contact hours=1 credit

Sixth Semester

Course Code	Course Title	Subject Area	Credits	Contact Hours/Week			Relative Weights				
				L	T	P*	CWS	PRS	MTE	ETE	PRE
BAE302	Development Economics II	Discipline Specific Core Course (DCC)	4	3	1	0	25	-	25	50	-
BAE304	Indian Economy II	Discipline Specific Core Course (DCC)	4	3	1	0	25	-	25	50	-
BAE306	Political Economy	Discipline Specific Core Course (DCC)	4	3	1	0	25	-	25	50	-
BAE308	International Economics	Discipline Specific Core Course (DCC)	4	3	1	0	25	-	25	50	-
MGM3xx or DSC3xx	GEC in Management (MGM302) or GEC in Data Science (DSC302)	Generic Elective Course (GEC)	4								
Total			**20**								

*In case of practical, 2 contact hours=1 credit

BA Economics (Honours) Degree

Seventh Semester

Course Code	Course Title	Subject Area	Credits	Contact Hours/Week			Relative Weights				
				L	T	P*	CWS	PRS	MTE	ETE	PRE
BAE401	Applied Econometrics	Discipline Specific Core Course (DCC)	4	3	1	0	25	-	25	50	-
BAE403	Public Economics	Discipline Specific Core Course (DCC)	4	3	1	0	25	-	25	50	-
BAE4xx	Discipline Specific Elective I	Discipline Specific Elective Course (DEC)**	4	3	1	0	25	-	25	50	-
BAE4xx	Discipline Specific Elective II	Discipline Specific Elective Course (DEC)**	4	3	1	0	25	-	25	50	-
MGM4xx or DSC4xx	GEC in Management (MGM401) or GEC in Data Science (DSC401)	Generic Elective Course (GEC)	4								
Total			**20**								

*In case of practical, 2 contact hours=1 credit
**List of DEC courses is shown in Table 3

Eighth Semester

Course Code	Course Title	Subject Area	Credits	Contact Hours/Week			Relative Weights				
				L	T	P*	CWS	PRS	MTE	ETE	PRE
BAE402	Financial Economics	Discipline Specific Core Course (DCC)	4	3	1	0	25	-	25	50	-
BAE404	Environmental Economics	Discipline Specific Core Course (DCC)	4	3	1	0	25	-	25	50	-
BAE4xx	Discipline Specific Elective III	Discipline Specific Elective Course (DEC)**	4	3	1	0	25	-	25	50	-
BAE4xx	Discipline Specific Elective IV	Discipline Specific Elective Course (DEC)**	4	3	1	0	25	-	25	50	-
MGM4xx or DSC4xx	GEC in Management (MGM402) or GEC in Data Science (DSC402)	Generic Elective Course (GEC)	4								
Total			**20**								

*In case of practical, 2 contact hours=1 credit

**List of DEC courses is shown in Table 3

BA Economics (Honours with Research) Degree - *Research Track*

Seventh Semester

Course Code	Course Title	Subject Area	Credits	Contact Hours/Week			Relative Weights				
				L	T	P*	CWS	PRS	MTE	ETE	PRE
BAE401	Applied Econometrics	Discipline Specific Core Course (DCC)	4	3	1	0	25	-	25	50	-
BAE415	Quantitative Research Techniques	Discipline Specific Core Course (DCC)	4	3	1	0	25	-	25	50	-
BAE417	Qualitative Research Techniques	Discipline Specific Core Course (DCC)	4	3	1	0	25	-	25	50	-
BAE419	Dissertation-I	Dissertation	4	4	0	0	-	40	-	-	60
MGM4xx or DSC4xx	GEC in Management (MGM401) or GEC in Data Science (DSC401)	Generic Elective Course (GEC)	4								
Total			**20**								

*In case of practical, 2 contact hours=1 credit

Eighth Semester

Course Code	Course Title	Subject Area	Credits	Contact Hours/Week			Relative Weights				
				L	T	P*	CWS	PRS	MTE	ETE	PRE
BAE402	Financial Economics	Discipline Specific Core Course (DCC)	4	3	1	0	25	-	25	50	-
MGM4xx or DSC4xx	GEC in Management (MGM402) or GEC in Data Science (DSC402)	Generic Elective Course (GEC)	4								
BAE420	Dissertation-II	Dissertation	12	12	0	0	-	40	-	-	60
Total			**20**								

*In case of practical, 2 contact hours=1 credit

Table 1: List of Generic Elective Course in Management: (Minor-1)

Semester	Course Code	Course Title	Credits	Contact Hours/Week			Relative Weights				
				L	T	P	CWS	PRS	MTE	ETE	PRE
I	MGM101	Principles of Management	4	3	1	0	25	-	25	50	-
II	MGM102	Introduction to Business	4	3	1	0	25	-	25	50	-
III	MGM201	Organizational Behaviour	4	3	1	0	25	-	25	50	-
IV	MGM202	Financial Accounting	4	3	1	0	25	-	25	50	-
V	MGM301	Marketing Management	4	3	1	0	25	-	25	50	-
VI	MGM302	Management Information System	4	3	1	0	25	-	25	50	-
VII	MGM401	Financial Management	4	3	1	0	25	-	25	50	-
VIII	MGM402	Human Resource Management	4	3	1	0	25	-	25	50	-

*In case of practical, 2 contact hours=1 credit

Table 2: List of Generic Elective Course in Data Science: (Minor-2)

Semester	Course Code	Course Title	Credits	Contact Hours/Week			Relative Weights				
				L	T	P*	CWS	PRS	MTE	ETE	PRE
I	DSC101	Introduction to Business Analytics	4	4	0	0	25	-	25	50	-
II	DSC102	Introduction to Programming using Python	4	3	0	2	15	25	20	40	-
III	DSC201	Database Management Systems	4	3	0	2	15	25	20	40	-
IV	DSC202	Predictive Modelling	4	3	0	2	15	25	20	40	-
V	DSC301	Data Warehousing & Data Mining	4	4	0	0	25	-	25	50	-
VI	DSC302	Machine Learning	4	4	0	0	25	-	25	50	-
VII	DSC401	Introduction to Big Data Systems	4	4	0	0	25	-	25	50	-
VIII	DSC402	Decision Analysis and Techniques	4	4	0	0	25	-	25	50	-

*In case of practical, 2 contact hours=1 credit

Table 3: List of Discipline Specific Elective Course (DEC)

Course Code	Course Title	Credits	Contact Hours/Week			Relative Weights				
			L	T	P*	CWS	PRS	MTE	ETE	PRE
SEMESTER VII										
BAE405	Game Theory	4	3	1	0	25	-	25	50	-
BAE407	Money and Financial Markets	4	3	1	0	25	-	25	50	-
BAE409	Economics of Education	4	3	1	0	25	-	25	50	-
BAE411	Application of Linear Programming in Economics	4	3	1	0	25	-	25	50	-
BAE413	Economic History of India (1857-1947)	4	3	1	0	25	-	25	50	-
SEMESTER VIII										
BAE406	Health Economics	4	3	1	0	25	-	25	50	-
BAE408	Agricultural Economics	4	3	1	0	25	-	25	50	-
BAE410	Economics of Migration	4	3	1	0	25	-	25	50	-
BAE412	Time Series Analysis	4	3	1	0	25	-	25	50	-
BAE414	Behavioural Economics	4	3	1	0	25	-	25	50	-

*In case of practical, 2 contact hours=1 credit

Syllabi : SEMESTER-I

BAE101: Introductory Microeconomics (L:3, T:1, P:0)

Course Objectives:

This course aims to give students a comprehensive understanding of resource allocation, market behavior, and market forms. By the end of the course, students will be able to analyze production and cost concepts, evaluate market demand and equilibrium, and understand the characteristics and implications of different market forms, such as perfect competition and monopolistic competition. The course will equip students with the knowledge and skills to assess resource allocation decisions and analyze market dynamics in order to make informed economic evaluations.

Course Outcomes (COs):

Upon completion of the course, the student would be able to:

CO1: Analyze resource allocation in an economy.

CO2: Evaluate market behavior.

CO3: Identify different market forms.

CO4: Analyze the impact of market structures on resource allocation

Syllabus:

Unit I: Resource Allocation: Production and Cost

Central Problems of an Economy – PP Frontier and Choice; Real Cost, Implicit Cost and Opportunity Cost. Production function: stages of production. Duality. Short run costs functions. Laws of return to scale; Long run costs and Optimum Size.

Unit II: Behaviour of Markets

Demand function: determinants of demand; Elasticity: Types of elasticity and measures of elasticity. Market Demand. Marginal Cost and Supply function. Market Supply; Market Equilibrium: Consumer and Producer's Surplus. Shifts in demand in supply curves.

Unit III: Market Forms

Market Forms: Classification, Perfect competition: Equilibrium in the short and long run.
Taxation and Equilibrium of a Firm. Break-even and Shut Down Point, Quasi Rent.
Monopolistic Competition-Short run and long-run equilibrium, excess capacity, selling cost.

References/Textbooks

- Karl E. Case and Ray C. Fair, Principles of Economics, Pearson Education Inc., 8th Edition, 2007.
- N. Gregory Mankiw, Economics: Principles and Applications, India edition by South Western, a part of Cengage Learning, Cengage Learning India Private Limited, 4th edition, 2007.
- Joseph E. Stiglitz and Carl E. Walsh, Economics, W.W. Norton & Company, Inc., New York, International Student Edition, 4th Edition, 2007.

BAE103: Introductory Macroeconomics (L:3, T:1, P:0)

Course Objectives:

This is an introductory course in course Macroeconomics. Macroeconomics deals with the aggregate economy. This course discusses the basic concepts of macroeconomics, National Income measurement and Balance of Payment. It deals with Money Market and Product Market Equilibrium. Classical and Keynesian Perspectives. Inflation and Deflation. Monetary and Fiscal policy.

Course Outcomes (COs):

Upon completion of the course, the student would be able to:

CO1: Identify the basics of national income accounting, inflation accounting and balance of payment accounting.

CO2: Describe the theoretical framework for money market equilibrium and product market equilibrium.

CO3: Identify the role of fiscal policy and monetary policy in the economy.

CO4: Analyze Classical and Keynesian perspective on the macro-economy

Syllabus:

Unit 1: Basics of Macroeconomics and National Income Accounting: Definition of Macroeconomics, Central Problem of an Economy, Circular Flows: Injections/Withdrawals, National Income Accounting, Real vs Nominal GDP, Business cycle, Price indices and measurement of inflation, Fiscal policy and Monetary Policy, Balance of Payments Account, Classical vs Keynesian debate.

Unit 2: Money and Inflation: Concept of Money: Functional and Descriptive, Money Demand, Money Supply: Credit Creation and High Powered Money, Inflation: Quantity Theory of Money, Economic Effects and Social Costs of Inflation, Cost Push and Demand Pull Inflation, Keynesian Liquidity Preference Theory, Determination of Rate of Interest.

Unit 3: Product/Goods Market: Classical and Keynesian Perspectives, Keynesian model of income determination, Multipliers, Inflationary and Deflationary Gap, Paradox of Thrift.

References/Textbooks

- R. Dornbusch, S. Fischer and R. Startz, Macroeconomics, McGraw Hill, 11th edition, 2011
- N. Gregory Mankiw. Macroeconomics, Worth Publishers, 8th edition, 2013
- O. Blanchard. Macroeconomics, Pearson Education Inc., 7th Global edition, 2017
- A. B. Abel and B. S. Bernanke, Macroeconomics, Pearson Education, Inc., 8th edition, 2014
- Mishkin (7th Edition, 2004), The economics of money, banking and financial markets, Pearson education
- R. T. Froyen, Macroeconomics, Pearson Education Asia, 2nd edition, 2005
- Case & Fair (10th Edition, 2012), Principles of Economics, Pearson Education

BAE105: Computer and Programming Fundamentals (L:1, T:0, P:2)

Course Objective:

The objective of the Computer and Programming Fundamentals course is to provide students with a comprehensive introduction to the fundamental concepts and principles of computer systems and programming. Through theoretical and practical instruction, the course aims to equip students with the knowledge and skills necessary to understand the components of a computer system, utilize common software applications, develop basic programming logic, and solve simple problems through algorithmic thinking

Course Outcomes (COs):

Upon completion of the course, the student would be able to:

CO1: Identify the basic components and architecture of a computer system, including the CPU, memory, storage devices, and input/output devices.

CO2: Demonstrate an understanding of data representation in a computer system.

CO3: Develop problem-solving skills by applying algorithmic thinking and logical reasoning to design algorithms.

CO4: Explain the fundamental concepts of computer programming, such as variables, data types, control structures, and functions.

Syllabus:

Unit 1: Computer Fundamentals: Block diagram of computer, functions of various units; Input and output devices, CPU, primary and secondary memories, memory hierarchy; classification of computers; types of software, Operating system concepts, functions of OS, types of operating systems; important terms like directory, file, volume, label, drive name; compiler, interpreter and assembler; Introduction to computer networks, Data representation: number systems: decimal, octal, binary and hexadecimal and their interconversions; representation of integers, binary arithmetic, floating point arithmetic, signed and unsigned numbers.

Unit 2: Programming Fundamentals and Data Manipulation: Introduction to spreadsheets for data manipulation using MS Excel and Programming Fundamentals Algorithm definition, problem solving, algorithm development, flowcharting, pseudocode, stepwise refinement, algorithms for searching (linear and binary) and sorting (exchange and insertion), concepts of datatypes: integer, character, real, Boolean; arrays and strings; constants and variables; arithmetic expressions; assignment statement; logical expression; relational operators, conditional statements; iterations and loops (for, while, do while); functions, passing arguments, return statements; recursion. Introduction to spreadsheets for data manipulation using MS Excel.

*Unit 2 corresponds to practical component that would be based on MS Excel and writing pseudocode/flowcharts.

References/Textbooks

- V. Rajaraman, “Fundamentals of Computers”, Sixth ed. PHI.
- Norton Peter, “Introduction to computers", 4th Ed., Tata MacGraw Hill.
- P. K. Sinha & Priti Sinha, “Computer Fundamentals”, BPB Publications, 1992.
- Alex Leon & Mathews Leon, “Fundamentals of Information Technology”, Leon Techworld, 1999.
- Thareja, R. (2014). Fundamentals of Computers. Oxford University Press.

BA107: English Communication (L:2 T:0 P:0)

Course Objective:

The course aims to develop students' effective communication skills, enhance their speaking and writing abilities, and improve their reading comprehension and interpretation skills.

Course Outcomes (COs):

Upon completion of the course, the student would be able to:

CO1: Develop skills for effective communication

CO2: Develop speaking and writing skills

CO3: Express confidently in groups and public forum.

Syllabus:

Unit 1: Introduction: Theory of Communication, Types, and Modes of Communication, Language of Communication: Verbal and Non-verbal (Spoken and Written), Personal, Social and Business, Barriers and Strategies, Intra Personal, Inter-Personal, and Group Communication.

Unit 2: Speaking Skills: Monologue, Dialogue, Group Discussion, Effective Communication/ Mis- Communication, Interview, Public Speech.

Unit 3: Reading and Understanding: Close Reading, Comprehension, Summary Paraphrasing, Analysis and Interpretation, Translation (from Indian language to English and vice-versa), Literary/Knowledge Texts.

Unit 4: Writing Skills: Documenting, Report Writing, Making notes, Letter Writing

References/Textbooks

- G. Mishra, B.I. Biswas, Language through Literature, Primus Books, Delhi, 2015.
- Fluency in English Part II, Oxford University Press, 2006. Business English, Pearson, 2008

BAE109: Basic Mathematics & Statistics (L:2, T:0, P:0)

Course Objectives:

The objective of this course is to provide the students fundamental knowledge of basic mathematics and statistics, and prepare them for more advanced courses in these disciplines in the later semesters. The course covers a basic introduction of set theory, functions, limits and continuity. In the statistics part, descriptive statistics and elementary probability theory are discussed.

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1: Identify and describe the fundamental concepts of basic mathematics and statistics

CO2: Solve problems and analyse data using mathematical and statistical techniques

CO3: Apply statistical techniques to organise, sort, and categorise data

CO4: Design and justify mathematical and statistical models for real-world applications

Syllabus:

Unit 1: Preliminaries

Logic and proof techniques; sets and set operations; relations; functions and their properties; number systems. Functions: Graphs; elementary types of functions: Linear, quadratic, cubic. Continuous functions: characterizations, properties with respect to various operations and applications. Introduction to Limits, Continuity and Series; Introduction to Differentiation: first order and second order derivatives. Partial and total derivative. Basics of Integration.

Unit 2: Linear Algebra

Vector spaces: algebraic and geometric properties, scalar products, norms, orthogonality; linear transformations: properties, matrix representations and elementary operations.

Unit 3: Descriptive Statistics

Measures of Central Tendency, Dispersion, Skewness and Kurtosis

Unit 4: Elementary Probability Theory

Concepts of sample space and events, probability of an event; addition and multiplication theorems; conditional probability and independence of events; Bayes rule.

References/Textbooks

- K. Sydsaeter and P. Hammond, Mathematics for Economic Analysis, Pearson Educational Asia: Delhi, 2002.
- P.H. Karmel and M. Polasek (1978), Applied Statistics for Economists, 4th edition, Pitman.
- Allen Webster (1997), Applied Statistics for Business and Economics: An Essential Version, 3rd edition, McGraw-Hill.

BAE111: Environmental Studies (L:2 T:0 P:0)

Course Objective

The basic objective of this paper is to highlight the fundamentals of environmental studies, complexity of ecosystems, major environmental problems including their causes and consequences and environmental ethics. This course endeavors to provide a background to current and controversial environmental issues and possible solutions to environmental problems.

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1: Identify the fundamentals of environment studies, complexities of ecosystem and biodiversity

CO2: Recognize the environmental issues and challenges and control measures to it.

CO3: Develop an holistic understanding of environmental ethics, sustainability issues and significance of ecological balance.

Syllabus:

Unit 1: **Environmental Studies: Ecosystems, Bio-diversity and its Conservation:** The Environmental Studies; Definition, scope, importance and its multidisciplinary nature. Biotic and abiotic components of environment, need for environmental awareness. Ecosystems: Concept, structure and function; producers, consumers and decomposers, energy flow, ecological succession, food chains, food webs and ecological pyramids. Bio-diversity and its Conservation; genetic, species and ecosystem diversity; Value of biodiversity: Consumptive use, productive use, social, ethical, aesthetic and option values. Biodiversity at global, national and local levels. India as a mega-diversity nation, Hot-spots of biodiversity, Threats to biodiversity: Habitat loss, poaching of wildlife, man wildlife conflicts, rare endangered and threatened species (RET) endemic species of India, method of biodiversity conservation: In-situ and ex-situ conservation.

Unit 2-Natural Resources: problems and prospects: Natural Resources: Concept, definition and need for their management**,** Renewable and Non-renewable resources. Forest resources: Use and over-exploitation, deforestation, case studies, timber extraction, mining, dams and their effects on forests and tribal people. Water resources: Use and over- utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems, Water conservation, rain water harvesting, watershed management. Mineral resources: Uses are exploitation, environmental effects of extracting and using mineral resources, case studies. Food resources: World food problems, changes caused by agriculture and over-grazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, Urban problems related to energy, case studies. Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

Unit 3-Environmental Pollution Control and Environmental Ethics: Environmental Pollution, Definition, types, causes, effects and control measures. Nuclear hazards. Solid waste and its management, urban and industrial waste management, disaster management. Human Population and the Environment: Urbanization issues and possible solutions. Environmental

Movements: Chipko movement, Narmada movement. Sustainable development, Climate change, global warming, acid rain, ozone layer depletion. Consumerism and waste products, Wasteland reclamation. Introduction to environmental Ethics: Man and Nature, Principles of conservation.

Text Books/References:

- E. Barucha, Textbook of Environmental Studies for Undergraduate Courses, Universities Press (India) Pvt. Ltd, 2005.
- S. Chawla, A Textbook of Environmental Studies, McGraw Hill Education Private Limited, 2012.
- Schmidtz & Willott – Environmental Ethics: What Really Matters, What Really Works, Oxford University Press, 2018

MGM101: Principles of Management (L:3, T:1, P:0)

Course Objective

Principles of Management is a comprehensive introductory course on the management process from a manager's perspective, with particular emphasis on the skills, competencies, techniques, and knowledge needed to successfully manage an organization. It covers the following topics, among others: the concepts of strategic and tactical organizational planning; organizational design and structure to achieve company objectives; goal setting; leadership skills; employee motivational approaches; interpersonal communication; the staffing and supervising processes and the concepts of controlling and control systems

Course Outcomes (COs):

Upon completion of the course, the student would be able to:

CO1: Describe how the managerial tasks of planning, organizing, leading and controlling can be executed in a variety of circumstances

CO2: Evaluate context for taking managerial actions of planning, organizing, leading and controlling

CO3: Integrate management principles into management practices

Syllabus:

Unit 1- Introduction: Concept, Nature, Process and Significance of Management; Managerial levels, skills, Functions and Roles; Management vs. Administration; Coordination as Essence of Management; Development of Management Thought: Classical, Neo-Classical, Behavioral, Systems and Contingency Approaches.

Unit 2-Planning: Nature, Scope and Objectives of Planning; Types of plans; Planning Process; Business Forecasting; MBO: Concept, Types, Process and Techniques of Decision-Making; Bounded Rationality. **Organizing:** Concept, Nature, Process and Significance; Principles of an Organization; Span of Control; Departmentation; Types of an Organization; Authority, Responsibility; Delegation and Decentralization; Formal and Informal Organization.

Unit 3-Staffing: Concept, Nature and Importance of Staffing. **Motivating and Leading:** Nature and Importance of Motivation; Types of Motivation; Theories of Motivation: Maslow, Herzberg, X, Y and Z; Leadership: Meaning and Importance; Traits of a leader; Leadership Styles – Likert's Systems of Management, Tannenbaum & Schmidt Model and Managerial Grid.

Unit 4- Controlling: Nature and Scope of Control; Types of Control; Control Process; Control Techniques – Traditional and Modern; Effective Control System. **Communication**: Basic Forms of Communication, Process of Communication, Principles of Effective Business Communication, 7Cs; Media of Communication: Types of Communication: Barriers of Communication.

References/Text Books:

- S.P. Robbins, "Fundamentals of Management: Essentials Concepts and Applications", Pearson Education, 2014.
- D. Gilbert, J.A.F. Stoner and R.E. Freeman, "Management", Pearson Education, 2014. H. Koontz, "Essentials of Management", McGraw Hill Education, 2012.
- C. B. Gupta, "Management Concepts and Practices", Sultan Chand and Sons, New Delhi, 2012.
- A. W. Ghillyer, "Management- A Real World Approach", McGraw Hill Education, 2010
- K. Mukherjee, "Principles of Management", McGraw Hill Education, 2012

DSC101: Introduction to Business Analytics (L:4, T:0, P:0)

Course Objectives:

The objective of the course is to provide know-how to evaluate various alternatives by gaining insight from past performance in the essence of business analytics. Business analytics focuses on how business performance can be improved by changing the course of actions and using various tools to perform informed decision making.

Course Outcomes (COs):

Upon completion of the course, the student would be able to:

CO1: Identify how managers use business analytics to formulate and solve business problems and to support managerial decision making.

CO2: Analyze complex problems using advanced analytics tools

CO3: Identify the processes needed to develop, report, and analyze business data.

CO4: Describe how to use and apply Excel and Excel add-ins to solve business problems.

Syllabus:

Unit 1: Introduction to Business Analytics

Concept of Analytics, Types of Analytics, Application fields - Marketing Analytics, Finance Analytics, HR Analytics, Operation Analytics, organization and source of data, importance of data quality, dealing with missing or incomplete data, Role of Data Scientist in Business & Society

Unit 2: Data Visualization

Introduction, Data summarization methods; Tables, Graphs, Charts, Histograms, Frequency distributions, Relative Frequency and their applications in business. Descriptive Statistics: Overview of data, Types of data, modifying data in MS-Excel, Applications of Measures of Central Tendency and Dispersion in business through MS-Excel, Outlier Analysis. Advanced Data Dashboard through Power BI tool

Unit 3: Spreadsheet Models and Linear Optimization Models

Spreadsheet Models: Building good spreadsheet models, What if analysis, Excel functions for modeling, V LOOKUP, H LOOKUP, Auditing spreadsheet models. Linear Optimization Models: Maximization & Minimization Problems: Formulation, Use of Excel to solve business problems: e.g. marketing mix, capital budgeting, portfolio optimization

Unit 4: Decision Making under uncertainty

Probability distributions: Continuous and discrete distributions, Concept of Simulation, advantages and disadvantages of Simulation, Random number generation, Monte Carlo Simulation and its applications, Simulating the value of PI through excel

Textbooks

- Camm, J.D., Cochran, J.J., Fry, M.J., Ohlmann, J.W., Anderson, D.R. (2015), Essentials of Business Analytics, Cengage Learning, Second Edition.
- Prasad, R. N., Acharya, S. (2011), Fundamentals of Business Analytics, Wiley.
- Schniederjans, M.J., Schniederjans, D.G., Starkey, C.M. (2014), Business Analytics: Principles, Concepts and Applications, Pearson.

Reference Books:

- Liebowitz, J. (2013), Business Analytics: An Introduction, Auerbach Publications
- Hardoon, D.R., and Shmueli, G. (2016), Getting Started with Business Analytics, CRC Press, Taylor & Francis
- Rao, P.H. (2014), Business Analytics: An Application Focus, Prentice Hall India.

MS199: Community Engagement (Mentoring School Students) [Credit-2]

Course Details:

Course name: Community Engagement (Mentoring School Students)

Contact hours: 1 hour per week

Examination duration: Outcome based continuous evaluation for a duration of 1 year

Credits: (i) Mandatory credit course: 02 Credits

(ii) Compulsory Audit course: Nil, students are required to pass in this course.

Semester: Mandatory credit course: 1st and 2nd Semester (Continuous)

Subject Area: This course will enable students (Mentors) to mentee the class 9th to 12th students of schools of Delhi in carrier counselling, problem solving, innovative work and critical thinking.

Pre-Requisite: Nil

Objectives of the Course:

(i) To guide and support school students in academics

(ii) To apply classroom knowledge of courses to field realities and thereby improve quality of learning.

(iii) To counsel students for career exploration.

(iv) To learn about importance of holistic development.

Syllabus:

(i) Every student (Mentor) will be allotted up to 4 to 6 mentees (students from Delhi schools).

(ii) The mentor is expected to continuously contribute for the counselling of the mentee in selecting their career exploration, help him/her in achieving the goals, academic guidance and support, help in problem solving, inculcate critical thinking and help in developing skill, lifelong learning projects, innovation etc.

SEMESTER-II

BAE102: Intermediate Microeconomics I (L:3, T:1, P:0)

Course Objective:

The course is designed to provide a sound training in microeconomic theory to formally analyze the behaviour of individual agents. Since students are already familiar with the quantitative techniques in the previous semesters, mathematical tools are used to facilitate understanding of the basic concepts. This course looks at the behaviour of the consumer

Course Outcomes (COs):

Upon completion of the course, the student would be able to:

CO1: Identify the techniques of modern microeconomics.

CO2: Describe quantitative techniques to analyze the behavior of the consumer

CO3: Analyze and apply microeconomic models to current economic issues.

CO4: Develop problem-solving skills

Syllabus:

Unit I: Introduction to Consumer Theory

Unit 1 Consumer Theory: Price Consumption Curve, Income Consumption Curve; Derivation of Demand Curve through indifference curves. Strong and weak preference; Revealed preference: Derivation of Indifference curve through revealed preference.

Unit II: Application of Consumer theory

Income and Substitution Effect, Inferior and Giffen Goods, Intertemporal Choice, Compensated Demand Curve, One-person Welfare

Unit III: Decision-Making under Uncertainty

Expected Utility, Risk Aversion, Insurance, and Risk Spreading

References/Textbooks

- H. R. Varian, Intermediate Microeconomics: A Modern Approach, W.W. Norton and Company/Affiliated East-West Press (India), 8th edition, 2010.
- C. Snyder and W. Nicholson, Fundamentals of Microeconomics, Cengage Learning (India), 2010.
- B. D. Bernheim and M. D. Whinston, Microeconomics, Tata McGraw-Hill (India), 2009.
- Roberto Serrano, Allan M. Feldman - A Short Course in Intermediate Microeconomics with Calculus-Cambridge University Press (2012)
- Martin J. Osborne, Ariel Rubinstein - Models in Microeconomic Theory-Open Book Publishers (2020)

BAE104: Intermediate Macroeconomics I (L:3, T:1, P:0)

Course Objective:

This course introduces the students to formal modelling of a macro-economy in terms of analytical tools. It discusses various alternative theories of output and employment determination in a closed and open economy in the short run as well as medium/long run, and the role of policy in this context.

Course Outcomes (COs):

Upon completion of the course, the student would be able to:

CO1: Identify various alternative theories of output and employment determination in a closed economy and open economy both in the short run as well as medium/long run.

CO2: Describe the formal modelling using aggregate demand and aggregate supply function to explain the relationship between price, output and unemployment in the economy

CO3: Analyse fiscal and monetary policy decisions to counter business cycle swings by using macro-economic models.

CO4: Discuss the role of policy and the dilemma faced by policymakers while choosing between growth and inflation

Syllabus:

Unit 1: Short run model of Income and Interest rate Determination: Derivation of IS Curve; Derivation of LM Curve; Interaction of IS and LM Curves; Fiscal Policy and Crowding Out Effect.

Unit 2: The labour Market, The Aggregate Demand and Aggregate Supply Curve: Derivation of Aggregate Demand Curve; The Labour Market; Derivation of Aggregate Supply Curves: Wage Bargaining-Unemployment Relation, Sticky-Wage Model; Interaction of Aggregate demand and Aggregate supply Curves.

Unit 3: Inflation, Unemployment and the Expectations: Phillips curve: Inflation and Unemployment Relation; Interaction between Money growth, Unemployment, Inflation and Output growth; Expectations: Adaptive and Rational Expectations; Lucas's Policy Ineffectiveness Proposition.

References/Textbooks

- Rudiger Dornbusch and Stanley Fischer(1994), *Macroeconomics*, 6th edition, McGraw Hill
- O. Blanchard (2006), *Macroeconomics*, 4th edition, Pearson Education (Asia).
- C.L.F.Attfield, D. Demery and N.W. Duck (1991), *Rational Expectations in Macroeconomics*, 2nd edition, Blackwell.
- Steven Sheffrin (1996), *Rational Expectations*, 2nd edition, Cambridge University Press.

BAE106: Mathematical Methods for Economics I (L:3, T:1, P:0)

Course Objectives:

The objective of this course is to teach the concepts of basic mathematics that enables the study of economic theory at the undergraduate level, specifically the courses on microeconomic theory, macroeconomic theory, statistics and econometrics set out in this syllabus. In this course, particular economic models are the means for illustrating the method of applying mathematical techniques to economic theory in general.

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1: Solve and analyse economic problems using mathematical methods

CO2: Analyze and categorize mathematical properties and relationships

CO3: Construct models to analyse economic scenarios, such as cost minimization, profit maximization, and optimization problems, and provide justifications for the chosen models based on mathematical principles and their relevance to economic theory

Syllabus:

Unit 1: Derivatives

More on Differentiation; Elasticity; First order and second order derivatives. their characterizations and applications. Partial and Total Derivatives and single-variable optimization using differentiation. Sequences and series: convergence, algebraic properties and applications. Economic Applications of Derivatives: Concave and convex functions. Maxima and Minima. Cost minimization and profit maximization.

Unit 2: Linear Algebra

Systems of linear equations: properties of their solution sets; determinants: characterization, properties and applications, rank of matrix and linear dependence

Unit 3: Integration

Area under curves; Indefinite Integrals; Definite Integrals; Methods of Integration; Integration by Parts and integration by substitution.

References/Textbooks

- K. Sydsaeter and P. Hammond, Mathematics for Economic Analysis, Pearson Educational Asia: Delhi, 2002.
- Simon, Carl P. and Blume, Lawrence (1994), Mathematics for Economists, First Edition, 1994, W.W. Norton and Company.
- A.C. Chiang and Kevin Wainwright (2005), Fundamental Methods of Mathematical Economics, Mcgraw-Hill.
- Chiang, A.C. (1984), Fundamental Methods of Mathematical Economics, 3rd Edition, Mc-Graw Hill.

BAE108: Sociology of Development (L:2, T:0, P:0)

Course Objectives:

The objective of this course is to provide students with a comprehensive understanding of the theories, concepts, and issues related to development and its impact on societies. The course aims to equip students with the knowledge and analytical skills necessary to critically examine the complexities of development processes, including the factors that contribute to progress and growth, the role of different theories in shaping development discourse, and the challenges and alternatives to traditional development models. Additionally, the course seeks to explore the multidimensional aspects of development, such as gender, culture, environment, and social disparities, and analyse their interactions and implications for sustainable and inclusive development.

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1: Identify and describe key theories and concepts in the sociology of development

CO2: Analyze and predict the implications of development theories on societies

CO3: Categorise and compare different development models and alternatives

CO4: Justify perspectives on the development model in specific contexts

CO5: Design and propose solutions to address social disparities and challenges in development

Syllabus:

Unit 1: Theoretical Foundations

Concepts of Progress, Growth, Modernization and Development; Critical Appraisal of Theories of Adam Smith, Karl Marx, Talcott Parsons. Development of Underdevelopment, Dependency and World Capitalist System-A.G.Frank, Paul Baran, Samir Amin, Immanuel Wallerstein

Unit 2: New Frontiers in Development Theories

Gender and Development, Culture and Development, Environment and Development, Human Development Index, Gender Development Index, Gandhi and Schumacher on Alternative development models, Sustainable Development

Unit 3: Indian Scenario

Understanding India's Development Debate on the Development Model in India: Nehru, Gandhi, Ambedkar, New Economic Policy

Unit 4: Disparities in Development

Class, Caste, Gender, Tribe, Region and Religion, Social Exclusion in the era of Globalization, Social Exclusion: Minorities and the other Marginalized Development of the Marginalized: Perspectives and Challenges

References/Textbooks

- D. K. Singha Roy, Social Development and the Empowerment of Marginalized Groups, Sage Publications, 2001.
- A.R. Desai, Essays on Modernisation of Underdeveloped Societies Vol I and II, Thacker and Company Ltd.
- D. Jean and A. Sen, "India Development and Participation," Oxford University Press, 2002.
- P.W. Preston, Development Theory An Introduction, Blackwell Publishers, Oxford, 1996.

BAE110: Financial Literacy (L: 2, T: 0, P: 0)

Course Objectives:

This course is designed to equip individuals with the essential knowledge and skills necessary to make informed financial decisions. The primary goal of the course is to enhance individuals' understanding of financial concepts, such as budgeting, saving, investing, and managing debt. By the end of the course, participants should be able to effectively identify and evaluate financial risks and opportunities. Furthermore, the course aims to empower individuals to develop sound financial habits and behaviours, enabling them to achieve their financial goals and establish a solid foundation for long-term financial well-being

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1: Identify and categorise key banking concepts, such as different types of banks, banking services offered, and various types of accounts

CO2: Demonstrate analytical skills to analyse foreign exchange concepts and the importance of foreign exchange in the economy

CO3: Design and apply financial planning strategies

CO4: Identify scams and frauds prevalent in the financial sector

Syllabus

Unit 1: Banking

Definition, Role of Bank in growth of saving and Investment, Types of banks , Services offered by banks, Deposits and Loans, Types of A/c, Opening a bank A/c, How to Transact with banks, KYC norms, (A/c opening form, Address Proof), How to read bank statement, Banking products and services, Calculating Interests – Saving, FD, Simple and Compound Interest, Power of compounding Loans, Types of loans, taking a home loan, Definition of EMI, Calculation of EMI, Post office-Account and transactions

Unit 2: Foreign Exchange and Investment

Basics of foreign Exchange, Importance and Use of Foreign Exchange, Regulator Role of RBI, mutual funds. Principles of Investment–Safety, Liquidity and Return, Investment plans, Hybrid plans-Ulip, SIP and VIP of mutual funds, index funds

Unit 3: Financial Planning

Meaning, Household financial health checkup, Important life stages, Medical and other Emergencies; Insurance, Meaning, Need and Wants, Loss protection, Life, non-life and health, Benefits of Insurance, Term plans, Social obligations Budgeting, Buying a house, Plan a vacation, Retirement planning, Price of procrastination, Market and financial instruments, Primary market, Secondary market, Financial Statement analysis

Unit 4: Scams and Frauds

Insider trading, Money laundering; Consumer protection and redressal mechanism, Rights of Consumers, Applicable to financial services, Filing a complaint, Complain to entity concerned, Regulators, Arbitration, Consumer courts, Govt. Websites-(PG Portals), Investor Associations, Taxes - Meaning, Need of Taxes, Types of taxes, How taxes impact income, Income, wealth and gift tax, Service tax, STT, Stamp Duty, Tax planning v/s tax evasion, Tax rates, Tax free bonds, Tax saving investment

References/Textbooks

- S. Braunstein and C. Welch, Financial literacy: An overview of practice, research, and policy, Fed. Res. Bull, 2002
- A. S. Cole and Gauri Kartini Shastry, Smart money: The effect of education, cognitive ability, and financial literacy on financial market participation, Harvard Business School, 2009
- Gitman, Joehnk and Billingsley, Personal financial planning, Cengage Learning, 2016
- M. Jeff, Personal finance student edition, Prentice Hall, 2010

MGM102: Introduction to Business (L:3, T:1, P:0)

Course Objectives:

The course aims to introduce the students to the business field. It seeks to develop an understanding of the business processes, management and its functional areas .

Course Outcomes (COs):

Upon completion of the course, the student would be able to:

CO1: Discuss the different forms of business organization.

CO2: Assess how the managerial tasks of planning, organizing, leading and controlling can be executed in a variety of circumstances

CO3: Discuss basic financial concepts like debit, credit, time value of money, ROI etc

CO4: Describe basic marketing concepts like 4Ps, social marketing, negative marketing etc

Syllabus:

Unit 1: Business and its Environment: Role of Business in the Economy Global business environment. Forms of business organization. Limited and Unlimited Liability: LLP. Entrepreneurship - stages, characteristics, policy and schemes; Business Ethics and Corporate Responsibility.

Unit 2: Principles of Management: Definition and Functions of Management: Planning, Organizing, Staffing, Directing and Controlling. Management Process. Early Thinkers in Management – Taylor and Fayol. People Management. Motivation. Content Theories: Maslow and Herzberg; Process Theories. Organizational Structures – Types.

Unit 3: Accounting and Financial Management: Basic concepts in accounting, debt and credit, balance sheet, income statements, cash flows, financial statement, acid ratios, time value of money and return on investment. Three functions of Financial Management. Financial institutions, banks and NBFIs; Functions of the stock exchange.

Unit 4: Marketing and Sales: Role of marketing in a business. De-marketing, negative marketing, social marketing and societal marketing. Marketing plan. Marketing process, segmentation targeting and positioning. The Marketing Mix Strategy: 4 Ps. Consumer behavior stages. Concept of customer value and satisfaction. Product and new development process. Elements of a brand. Digital marketing and social media marketing.

Textbook/References

- Laura Dias and Amit Shah, Introduction to Business, 2012, McGraw Hill Education: New Delhi. **ISBN-10:** 125902864X, **ISBN-13:** 978-1121085084
- Ebert, R. J. & Griffin, R. W. (2015). Business Essentials (10th ed.) Upper Saddle River, NJ: Pearson Education, Inc. ISBN-13: 978-0-13-345442-0
- Nickels, W. G., McHugh, J., & McHugh, S. (2015). Understanding Business 11th ed. Irwin, McGraw-Hill New York, ISBN 9780259310034.
- Bovee, Courtland L & Thill, John V. Business in Action, 5th edition, 2011 (FGCU Custom Ed) ISBN: 13-978-0-13-213965-6
- Madura, Jeff, Introduction to Business, 3rd Edition, 2003, South-Western, USA. ISBN-10: 0324186266; ISBN-13: 978-0324186260

DSC102: Introduction to Programming using Python (L:3, T:0, P:2)

Course Objective:

The course objective is to familiarize students with the concepts in Python programming. The course introduces Python's data structures, functions and important libraries so as to equip students to create programs for data manipulation.

Course Outcomes (COs):

Upon completion of the course, the student would be able to:

CO1: Develop an understanding of the fundamentals of programming, including variables, data types, conditional statements, loops, functions, and objects.

CO2: Identify the basics of the Python programming language, including syntax, data structures, and control flow.

CO3: Develop efficient and well-organised programs in Python to solve computational problems.

CO4: Apply external libraries in Python to extend the functionality of programs.

Syllabus:

Unit 1: Introduction to Python programming: Interactive mode and script mode, structure of a program, script execution, debugging-errors, comments and error messages. Identifiers, keywords, constants, variables, data types and assignments. Arithmetic operators and expressions, relational operators, conditions and logical operators, operator precedence. Input and output statements, control structures: if-else, loops, break and continue statements. Introduction to in-built functions: invoking functions. Handling missing data values: isnull, notnull.

Unit 2: Python data structures (strings, lists, tuples and dictionary): Strings: initialize strings, subscript operator, access elements, string operations, built-in string functions and methods, slicing a string, escape sequences. Lists: concepts of mutable lists, list operations: create, initialize, access, traverse, append/insert new elements, search, sort, replace, removing elements; inbuilt list functions and methods, list comprehensions. Tuples: concepts of immutable tuples, tuple operations: create, initialize, access elements; tuple assignment, slicing, and indexing. Dictionary: concept of key-value pair, literals, operations: create, initialize, access, traverse, append, add and remove keys, dictionary functions and methods.

Unit 3: Writing user defined functions: Introduction to user-defined functions: parameters, scope of variables, passing parameters, void functions, functions returning values, invoking functions, lambda function, passing list, tuple dictionary as function parameters.

Unit 4: Working with Python libraries: Introduction to python libraries: NumPy, Pandas, Matplotlib, importing libraries. Data visualization using Matplotlib library, plotting graphs: line plot, bar chart, scatter plot. NumPy and Pandas datatypes, basic operations: create, access, slice, add and remove, reshape, indexing.

References/Textbooks

- Mckinney, W. (2017). Python for Data Analysis. Second edition, O'reilly (SPD)
- VanderPlas, J. (2016). Python Data Science Handbook: Essential Tools for Working with Data. Second edition, O'reilly (SPD).
- Guttag, J. V. (2013). Introduction to computation and programming using Python. MIT Press.
- Liang, Y. D. (2013). Introduction to Programming using Python. Pearson.

SEMESTER-III

BAE201: Intermediate Microeconomics II (L:3, T:1, P:0)

Course Objective:

The course is designed to provide a sound understanding of producer theory and non-competitive market forms. Students are also made familiar with a basic understanding of game theory. This course is therefore designed to create a solid foundation for the students in the issues of market imperfection.

Course Outcomes (COs):

Upon completion of the course, the student would be able to:

CO1: Understand the techniques of modern microeconomics.

CO2: Use of quantitative techniques to analyze the behavior of the producer and markets

CO3: Analyse and apply microeconomic models to current economic issues.

CO4: Improve their problem-solving skills

Syllabus:

Unit I: Introduction to Producer Theory

Producer's Equilibrium; Isoquants and Iso-cost lines; Product lines, Ridge lines, and Expansion Path, Changes in technology, returns to factor and returns to scale, Profit maximization and supply decision by the price-taking firm.

Unit II: Non-Competitive Market

Monopoly; price and output determination under monopoly, pricing with market power; price discrimination, anti-trust policy, two-part tariff. peak-load pricing, two-tier pricing. Bertrand and Cournot Duopoly models, Stackelberg strategies, reaction curves, Kinked Demand Curve, Oligopoly: Price leadership, Cournot Equilibrium, Collusion.

Unit III: Introduction to Game Theory: Cooperative and non-cooperative games, Prisoner's dilemma, normal and extensive games, simultaneous and sequential games, and mixed strategies.

References/Textbooks

- H. R. Varian, Intermediate Microeconomics: A Modern Approach, W.W. Norton and Company/Affiliated East-West Press (India), 8th edition, 2010.
- C. Snyder and W. Nicholson, Fundamentals of Microeconomics, Cengage Learning (India), 2010.
- Roberto Serrano, Allan M. Feldman - A Short Course in Intermediate Microeconomics with Calculus-Cambridge University Press (2012)
- Martin J. Osborne, Ariel Rubinstein - Models in Microeconomic Theory-Open Book publishers 2020

BAE203: Intermediate Macroeconomics II (L:3, T:1, P:0)

.

Course Objective:

This course introduces the students to various theoretical issues related to an open economy such as the theory of exchange rate determination and the equilibrium in a small open economy. It also introduces the students to various issues faced by government and central bank while conducting their respective policies.

Course Outcomes (COs):

Upon completion of the course, the student would be able to:

CO1: Describe how a small open economy operates and identify the different theories of exchange rate determination.

CO2: Describe different exchange rate regimes and how monetary and fiscal policies perform under different exchange rate regimes with perfect capital mobility.

CO3: Identify the factors leading to financial crisis and possible regulatory responses available with the policy makers.

CO4: Differentiate and compare between various school of macroeconomic thoughts to have a comprehensive picture regarding how an economy works.

Syllabus:

Unit 1: Exchange Rate Determination, Balance of Payment and Open Economy Models

Balance of Payments; Exchange Rate Regimes; Short Run Open Economy Models: Equilibrium in a small open economy, the Mundell Fleming model; Exchange rate determination: Purchasing power parity, Asset market approach, and Monetary approach to balance of payment; Dornbusch's Overshooting Model; International Financial Markets.

Unit 2: Fiscal and Monetary Policy

Active or passive policy; Monetary policy objectives and targets; Rules versus Discretion: time consistency; Government budget constraint; Government debt and Ricardian equivalence; Finance systems & Regulation of financial sectors; Financial crises & Regulatory response.

Unit 3: Schools of Macroeconomic Thoughts and Causes of Business Cycle

Overview of Classical System; Overview of Keynesian System; New-Classical Theory of Business Cycle; New-Keynesian Theory of Business Cycle.

References/Textbooks

- **Rudiger Dornbusch and Stanley Fischer**, *Macroeconomics*, 6th, McGraw Hill.
- **O. Blanchard (2006)**, *Macroeconomics*, 4th edition, Pearson Education (Asia).
- **D. Salvatore (2008)**, *International Economics*, 8th edition, Wiley (Asia).
- **Robert J. Gordon**, *Macroeconomics*, 12th ed., Prentice-Hall India Limited.

- **Frederic Mishkin**, *Macroeconomics: Policy & Practice,* Pearson, 2012
- **N. G. Mankiw**. Macroeconomics, Worth Publishers, 7th edition, 2010.
- **Richard T. Froyen**, Macroeconomics: Theories and Policies, 9th or 10th Edition, Pearson

BAE205: Mathematical Methods for Economics II (L:3, T:1, P:0)

Course Objectives:

This course is the second part of a compulsory two-course sequence. The objective of this course is to teach the basic concepts of basic mathematics that enables the study of economic theory at the undergraduate level, specifically the courses on microeconomic theory, macroeconomic theory, statistics and econometrics set out in this Syllabus. In this course, particular economic models are not the ends, but the means for illustrating the method of applying mathematical techniques to economic theory in general.

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1: Solve optimization problems involving functions of several real variables

CO2: Categorize functions based on their geometric properties, such as convexity, and analyse the implications of these properties in economic applications

CO3: Compare different solution methods for differential equations, such as separable equations and integrating factors, and evaluate their applicability in economic contexts

CO4: Construct mathematical models to solve optimisation problems, analyse economic systems described by differential equations, and justify the choice of models based on mathematical principles and their relevance to economic theory

Syllabus:

Unit 1: Functions of Several Real Variables

Geometric representations: graphs and level curves; differentiable functions: characterizations, properties with respect to various operations and applications; second order derivatives: properties and applications; the implicit function theorem, and application to comparative statics problems; homogeneous and homothetic functions: characterizations and applications. Multivariable optimization: Convex sets; geometric properties of functions: convex functions, their characterizations, properties and applications.

Unit 2: Further Geometric Properties of Functions

Unconstrained optimization: geometric characterizations, characterizations using calculus and applications; Constrained optimization with equality constraints: Geometric characterizations, Lagrange characterization using calculus and applications; properties of value function: envelope theorem and applications.

Unit 3: Differential Equations

Introduction to Differential Equations; Difference Equations; First-order differential equations; integral curve; Solving Differential Equations; separable equations; Integrating Factor; direction diagram and slope field; qualitative theory and stability

References/Textbooks

- K. Sydsaeter and P. Hammond, Mathematics for Economic Analysis, Pearson Educational Asia: Delhi, 2002.
- Simon, Carl P. and Blume, Lawrence (1994), Mathematics for Economists, First Edition, 1994, W.W. Norton and Company.
- A.C. Chiang and Kevin Wainwright (2005), Fundamental Methods of Mathematical Economics, Mcgraw-Hill.
- Chiang, A.C. (1984), Fundamental Methods of Mathematical Economics, 3rd Edition, Mc-Graw Hill.

MGM201: Organizational Behaviour (L:3, T:1, P:0)

Course Objectives:

The course aims to provide an understanding of basic concepts, theories and techniques in the field of human behaviour at the individual, group and organizational levels in the changing global scenario. The course must be taught using case study method.

Course Outcomes (COs):

Upon completion of the course, the student would be able to:

CO1: Describe why employees behave the way they behave at work place.

CO2: Identify individual characteristics that influence employee behavior at workplace.

CO3: Analyze how group dynamics influence employee behavior in organizations & how organization itself influences employees behaviour at work.

Syllabus:

Unit 1: Introduction: Conceptual Foundation of Organisational Behaviour; Nature and Characteristics; Determinants; Contributing Disciplines; Challenges and Opportunities for Organisational Behaviour, Models and Approaches of Organizational Behaviour, OB and Emotional Intelligence. Organisational structures: Line, Department, Matrix, Linking-pin model

Unit 2: Individual & Interpersonal Behaviour: Biographical Characteristics; Ability; Values; Attitudes- Formation, Theories, Organisation Related Attitude, Relationship between Attitude and Behavior; Personality – Determinants and Traits; Emotions; Learning-Theories and Reinforcement Schedules, Perception –Process and Errors. Conflict: Intrapersonal,

Interpersonal Intragroup and Intergroup including Johari Window; Transactional Analysis – Ego States, Types of Transactions, Life Positions, Applications of T.A.

Unit 3: Group Behaviour and Team Development: Concept of Group and Group Dynamics; Types of Groups; Formal and Informal Groups; Stages of Group Development, Theories of Gro up Formation; Group Norms, Group Cohesiveness; Group Think and Group Shift. Group Decision Making; Inter Group Behaviour; Concept of Team Vs. Group; Types of Teams; Building and Managing Effective Teams.

References/Textbooks

- S. P. Robbins and S. Sanghi, "Organizational Behaviour", Pearson Education, 2013.
- Luthans, Fred, "Organizational Behavior", McGraw Hill Education, 2012.
- S. Mirza, "Organizational Behavior", McGraw Hill Education, 2012.
- Kinicki, Angelo and Kreitner, "Organisational Behaviour", McGraw Hill Edu, 2012.

DSC201: Database Management System (L:3 T:0, P:2)

Course Objective

The course objectives for a Database Management Systems (DBMS) course are to provide students with a solid foundation in the theory and practice of database management systems. The course aims to introduce students to the basic concepts of database management systems, including data models, data normalization, and relational algebra. Students will be taught how to design and implement databases using Structured Query Language (SQL).

Course Outcomes (COs)

Upon completion of the course, the student would be able to:

CO1: Understand the fundamentals of database systems, including data models, data normalization, and relational algebra.

CO2: Understand the design and implementation of database systems using Structured Query Language (SQL).

CO3: Understand the principles of database system architecture.

CO4: Understand the role of database management systems in modern organizations and their impact on data-driven decision making.

CO5: Develop the ability to design and implement database applications using a modern database management system.

Syllabus:

Unit 1: Introduction: Database system concepts and its architecture, Data models schema and instances, Data independence and database language and interface, Data definition languages, DML. Database Structure.

Unit 2: Data modelling using Entity Relationship Model: E.R. model concept, notation for ER diagrams mapping constraints, Keys, Concept of super key, candidate key, primary key generalizations, Aggregation, reducing ER diagrams to tables, extended ER model.

Unit 3: Relational Data Model and Language: Relational data model concepts, integrity constraints, Keys domain constraints, referential integrity, assertions, triggers, foreign key relational algebra and relational calculus, SQL data definition queries and updates in SQL.3. Data Base Design: Functional dependencies, normal forms, 1NF, 2NF, 3NF and BCNF, multi-valued dependencies and fourth normal form

Unit 4: Transaction processing concepts: Transaction processing system, schedule and recoverability, Testing of serializability, Serializability of schedules, conflict & view serializable schedule, recovery from transaction failures, and Concurrency Control

References/Textbooks

- Elmasri, Navathe,"Fundamentals of Database systems", Addision Wesley
- Korth, Silbertz, Sudarshan,"Data base concepts", McGraw-Hill.
- Ramakrishna, Gehkre, "Database Management System", McGraw-Hill
- Sumathi S. &Esakkirajan S. (2007) Fundamentals of Relational Database Management Systems, Springer

BAE207: Soft Skills and Personality Development (L:2, T:0, P:0)

Course Objectives:

The aim of the course is to teach the students concepts of spoken and written communication.

Course Outcomes (COs):

Upon completion of the course, the student would be able to:

CO1: Understand and display effective use non-verbal communication

CO2: Able to appear for interviews, group discussions and other presentation

CO3: Apply different interventions of self-assessment for self-introspection.

Syllabus:

Unit 1: Conceptual Understanding of Communication; Cognition and Re-Cognition; Types of communication: Oral, Verbal, Non-verbal, Kinesics, Interpersonal, Group and Mass Communication, Communion, Barriers to communication; Values and Belief system.

Unit 2: Spoken Communication; Art of debating, Elocution, Stage Anchoring, Group Discussion; Interviews; Quiz; Use of Jargon, Slangs and Vocabulary for effective Communication; Voice Modulation and Intonation; Clarity; Brevity; Articulation of thought and speech; Assertiveness; Affirmation.

Unit 3: Written Communication, KISS rule; Resume writing; Letter writing; Taking notes; Recording minutes and preparing proceedings of meetings; Role of empathy and compassion.

Unit 4: Self-assessment; Self-awareness; Self-esteem, Self-confidence; Perception and observation skills; Benefits of Meditation and Self-Hypnosis, Goal setting and career planning. Practical: Debate, Declamation; Presentation exercises and written communication exercises.

References/Textbooks

- Barker, Improve Your Communication Skills, Kogan Page India Pvt Ltd., 2011.
- A. Doff and C. Jones, Language in Use (Upper-Intermediate), Cambridge University, 1997.
- J. Seely, The Oxford Guide to Writing and Speaking, Oxford University Press, 2005.
- S. Khera, You Can Win, Macmillan Books, 2000.
- S. Covey, 7 Habits of Highly Effective People, Simon and Schuster, 1990.
- J. Collin, Perfect Presentation, Video Arts Marshal, 1999
- J. Rogers, Effective Interviews, Video arts Marshal, 1998
- R. Heller, " Effective Leadership: Essential Manager Series," DK Publishing, 2002.
- Case, K., Fair, R. (2007). Principles of economics, 8th ed. Pearson Education

BAE209: Science and Practice of Happiness (L:2, T:0, P:0)

Course Objectives:

The course aims to provide an understanding of different facets of happiness. It also offers several interventions through which students can learn to remain happy.

Course Outcomes (COs):

Upon completion of the course, the student would be able to:

CO1: Understand, comprehend and mould their emotions

CO2: Recognize sources of displeasure and happiness

CO3: Exhibit desirable behaviours like empathy, compassion, love, and trust

Syllabus:

Unit 1: Understanding Emotions: The importance of different emotions, Why stay happy, Emotion contagion, different theories of emotions, Introducing the different perspectives of happiness

Unit 2: Science of happiness: Understanding the neuroscience of happiness, Brain-behaviour relationship in happiness, Science of belief, Measuring happiness: Why do we need to measure happiness:, How can we measure happiness, Importance of measuring happiness , Role of

technology, Understanding employee happiness, Designing happy workplaces, Role of humour in workplace, Communicating happiness: Designing effective messages, Body language and nonverbal cues of happiness, Role of gestures in spreading/understanding happiness.

Unit 3: Practice of happiness : Introduction to different practices that help calm the mind and foster happiness, Mindfulness practices, Self-awareness, Self-motivation, Sharing examples, cases, practices that have been implemented and which have yielded result in spreading happiness, Happy leaders: The emotional impact of a team leader on its members. Sensitivity training, Creativity and happiness: Creativity Vs routine, Understanding the role of flow, Importance of intuition

Unit 4: Creativity and happiness: Creativity Vs routine, Understanding the role of flow, Importance of intuition, Relationship and wellbeing: The importance of relationship, Nurturing relationship, Importance of networking, Career, life and happiness: Understanding the importance of career and it's limits, Work life balance, Achieving personal and professional success, Consumer Happiness: How to keep your consumers happy, Practices adopted my marketers do keep consumers happy, Sensory engagement and happiness: Engaging the senses to keep oneself and others happy, Building resilience: Resilience in times of uncertainty and stress, Nurturing skills, values, perception and mindset for resilience

References/Textbooks

- The bell of mindfulness - Thich Nhat Hanh
- The art of happiness: A handbook for living - Dalai Lama
- What makes you not a Buddhist - Dzongsar Khense Rinpoche
- Happiness: Transforming the landscape: Centre for Bhutan Studies, Bhutan (can be downloaded online)
- A compass towards just and harmonious society - Centre for Bhutan Studies (can be downloaded online)
- New Development Paradigm - Bhutan government submission to the UNGA (can be downloaded online)
- Laugh your way to happiness - Lesley Lyle

SEMESTER-IV

BAE202: Advanced Microeconomics (L:3, T:1, P:0)

Course Objective:

This course aims to comprehensively understand general equilibrium, efficiency, welfare, social welfare functions, market failures, and social and economic goods. Students will analyze market outcomes, evaluate social welfare functions, study market failures such as externalities and asymmetric information, and explore social and economic goods concepts. Through theoretical exploration and practical application, students will develop the skills to assess resource allocation, understand welfare considerations, and analyze the efficiency and equity of market outcomes.

Course Outcomes (COs):

Upon completion of the course, the student would be able to:

CO1: Describe and analyze general equilibrium and efficiency.

CO2: Evaluate social welfare functions and fairness.

CO3: Analyze market failures and their impact.

CO4: Explain social and economic goods and their challenges.

Syllabus:

Unit I: General Equilibrium, Efficiency and Welfare

Edgeworth box, pareto efficiency, general Equilibrium and efficiency under pure exchange, production and product mix; Welfare theorems, overall efficiency.

Unit II: Social Welfare Functions

Aggregation of Preferences; Voting, Individual and Social Welfare Functions, Fair Allocations, Envy and Equity

Unit III: Market Failure

Externalities-consumption and production; Asymmetric Information: market for lemons. adverse selection, moral hazard and signaling, Social and Economic Good: Public Goods, merit good, non-merit good, free goods; free rider's problem, The Vickrey-Clarke-Groves mechanism

References/Textbooks

- H. R. Varian, Intermediate Microeconomics: A Modern Approach, W.W. Norton and Company/Affiliated East-West Press (India), 8th edition, 2010.
- C. Snyder and W. Nicholson, Fundamentals of Microeconomics, Cengage Learning (India), 2010.

- Roberto Serrano, Allan M. Feldman - A Short Course in Intermediate Microeconomics with Calculus-Cambridge University Press (2012)
- Martin J. Osborne, Ariel Rubinstein - Models in Microeconomic Theory-Open Book Publishers (2020)

BAE204: Advanced Macroeconomics (L:3, T:1, P:0)

Course Objective:

The objective of the course is to introduce the students to the long run dynamics of issues like growth and technical progress through various growth theories/models. It also provides the micro-foundations to the various aggregative concepts such as consumption, investment, money demand etc.

Course Outcomes (COs):

Upon completion of the course, the student would be able to:

CO1: Identify the different factors determining economic growth in a country both in the short run and the long run through different models of economic growth.

CO2: Describe different theories of Consumption.

CO3: Analyse different theories of investment and describe how investment decisions are taken.

CO4: Explain different theories of Money demand.

Syllabus:

Unit I: Economic Growth

Harrod growth model; Solow growth model: Golden rule and Technological progress; Elements of Endogenous growth model: AK model and Introduction to Romer's growth model.

Unit 2: Consumption

Keynesian Consumption Function; Fisher's Theory of Optimal Intertemporal Choice; Lifecycle and Permanent Income Hypotheses; Rational Expectations and Random-Walk of Consumption Expenditure; Ricardian Equivalence Theory.

Unit 3: Investment and Demand for Money

Determinants of Business Fixed Investment; Residential Investment; Inventory investment; Baumol's interest sensitivity of money demand function; Tobin's and Friedman's approach to money demand.

References/Textbooks

- **Rudiger Dornbusch & Stanley Fischer**, *Macroeconomics*, 6th edn. McGraw Hill.
- **N. Gregory Mankiw**, *Macroeconomics,* Worth Publishers, 7th edition, 2010.
- **Charles I. Jones**, *Introduction to Economic Growth***,** W.W. Norton & Company, 2nd edition, 2002.
- **Amartya Sen (ed)**, Growth Economics, Penguin.
- **Robert J. Gordon**, *Macroeconomics*, 12th ed., Prentice-Hall India Limited.
- **Frederic Mishkin**, *Macroeconomics: Policy & Practice,* Pearson, 2012
- **Branson, W. (2013).** *Macroeconomics: Theory and policy*, 3rd ed, East West Press.

BAE206: Statistical Methods for Economics (L:3, T:1, P:0)

Course Objectives:

The course will teach the students basic concepts and terminology that are fundamental to statistical analysis and inference. It will develop the notion of probability, followed by probability distributions of discrete and continuous random variables and of joint distributions. This is followed by a discussion on sampling techniques used to collect survey data. The course introduces the notion of sampling distributions that act as a bridge between probability theory and statistical inference. The syllabus also describes some topics in statistical inference that include point and interval estimation.

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1: Identify and describe random variables, probability distributions, and their properties

CO2: Analyse commonly used discrete and continuous distributions such as uniform, binomial, normal, Poisson, and exponential random variables

CO3: Develop problem-solving skills by applying sampling techniques and estimation methods

CO4: Analyse and compare different statistical inference procedures

CO5: Develop the ability to design and generate statistical analyses for economic research

Syllabus:

Unit 1: Random Variables and Probability Distributions

Defining random variables; probability distributions; expected values of random variables and of functions of random variables; properties of commonly used discrete and continuous distributions (uniform, binomial, normal, poisson and exponential random variables). Random sampling and jointly distributed random variables; density and distribution functions for jointly distributed random variables; computing expected values; covariance and correlation coefficients.

Unit 2: Sampling, Point and Interval Estimation

Principal steps in a sample survey; methods of sampling; the role of sampling theory; properties of random samples. Estimation of population parameters using methods of moments and maximum likelihood procedures; properties of estimators; confidence intervals for population parameters.

Unit 3: Statistical Inference

Normal distribution; chi-square, t- and F-distributions; testing of hypotheses; defining statistical hypotheses; distributions of test statistics; testing hypotheses related to population parameters; Type-I and Type-II errors; power of a test; tests for comparing parameters from two samples.

References/Textbooks

- J. L. Devore, Probability and Statistics for Engineers, Cengage Learning, 2010.
- J. E. Freund, Mathematical Statistics, Prentice Hall, 1992.
- R. J. Larsen and M. L. Marx, An Introduction to Mathematical Statistics and its Applications, Prentice Hall, 2011.
- William G. Cochran, Sampling Techniques, John Wiley, 2007.

MGM202: Financial Accounting (L:3, T:1, P:0)

Course Objectives:

The objective of this subject is to give understanding of the basic accounting principles and techniques of preparing the accounts for users of accounting information.

Course Outcomes (COs):

Upon completion of the course, the student would be able to:

CO1: Analyse, interpret and communicate the information contained in basic financial statements.

CO2: Apply accounting concepts, principles and conventions in understanding financial statements

CO3: Evaluate ethical issues related to accounting in contemporary & contemporary issues in accounting that are relevant in the present scenario.

Syllabus:

Unit 1: Meaning and Scope of Accounting: Objectives and nature of Accounting, Definition and Functions of Accounting, Book Keeping and Accounting, Interrelationship of Accounting with other Disciplines, Branches of Accounting, Limitation of Accounting, **Accounting Principles and Standards**: Accounting Principles, Accounting Concepts and Conventions, Meaning and relevance of GAAP, Introduction to Accounting Standards Issued by ICAI.

Unit 2: Journalizing Transactions: Journal Entries, compound Journal entries, Opening Entry. Ledger Posting and Trial Balance: Preparation of Ledger, Posting, Cash book, Sales and Purchase book and Trial Balance. **Company Final Accounts**: Preparation of Final Accounts with adjustments, Trading Account, Profit & Loss Account, Balance Sheet.

Unit 3: Depreciation Provisions and Reserves: Concept of Deprecation, Causes of Depreciation,
Basic Features of Depreciation, Meaning of Depreciation Accounting, Objectives of Providing Depreciation, Fixation of Depreciation Amount, Method of Recording Depreciation, Methods of Providing Depreciation, Depreciation Policy, AS-6 (Revised) Provisions and Reserves, Change of method of Depreciation (by both current and retrospective effect). **Contemporary Issues & Challenges in Accounting**: Human Resource Accounting, Green Accounting, Inflation Accounting, Price level Accounting, Social Responsibility Accounting

Unit 4: Shares and Share Capital: Introduction to Joint Stock Company, Shares, Share Capital, Accounting Entries, Under Subscription, Oversubscription, Calls in Advance, Calls in Arrears, Issue of Share at Premium, Issue of Share at Discount, Forfeiture of Shares, Surrender of Shares, Right Shares. **Issue and Listing of Securities**: Stock Exchange of India, Control of SEBI, Regulating business in stock exchange (Elementary Knowledge only).

References/Textbooks

- P. C. Tulsian, “Financial Accountancy", Pearson Education, 2012.
- S. N. Maheshwari and S. K. Maheshwari, “An Introduction to Accountancy”, Vikas Publishing House, 2012.
- Asish K. Bhattacharyya, “Essentials of Financial Accounting”, Prentice Hall of India, 2010.
- Rajasekran, “Financial Accounting”, Pearson Education, 2012.
- S. K. Bhattacharya and J. Dearden, “Accounting for Manager – Text and Cases”, Vikas Publishing House, 2010.

DSC202: Predictive Modelling (L:3, T:0, P:2)

Course Objectives:

Predictive analytics incorporates high end analytical capabilities which span various applications such as data mining, optimization, statistical analysis, and machine learning amongst others. The objective of the course is to make one understand the correct framework of predictive modeling process which involves data preparation, model development, hypothesis testing and model evaluation.

Course Outcomes (COs):

Upon completion of the course, the student would be able to:

CO1: Demonstrate the usage of large volume data by extracting useful information and patterns and provide predictive insights.

CO2: Discuss predictive analytics using IBM SPSS, a powerful scalable software.

CO3: Develop ability to understand and apply specific statistical and predictive analysis methods applicable to real life scenario.

Syllabus:

Unit 1: Introduction

Theory: Types and techniques of Predictive Analytics, Regression models vs Classification Models, Key ingredients of predictive models, Application of Predictive Analytics in Manufacturing, Health, Telecommunication, Supply Chain, Information Technology etc.

Practical: Building Statistical Models, Getting Started: The Data Editor, Importing Data, The SPSS Viewer, Exporting SPSS Output, The Syntax Editor, Saving Files, Retrieving A File, The SPSS Chart Builder: Histograms, Boxplots (Box-Whisker Diagrams), Graphing Means: Bar Charts and Error Bars, Line Charts, Graphing Relationships: The Scatterplot, Editing Graphs.

Unit 2: Data Preparation & Statistical Tests

Theory: Analyzing the metric data: Measures of central tendency, measures of dispersion, data distribution, histogram analysis, outlier analysis, correlation analysis, Introduction to Dimension reduction using Factor Analysis Statistics. Principal Component Analysis.

Practical: Frequency Command, Descriptive Command, Cross Tabulation, Correlation Analysis Using SPSS, Bivariate Correlation, Factor Analysis through SPSS.

Unit 3: Model Development and Model Evaluation

Model Development: Data partition, Attribute reduction, model construction, model validation, hypothesis testing, results interpretation, Cross-validation, Model Evaluation: Performance measures for categorical dependent variable: Precision, Recall, F-score, Performance measures for continuous dependent variables: Mean Relative Error, Mean Absolute Relative Error

Unit 4: Regression and Classification Model Estimation

Theory: Simple Linear Regression: Ordinary Least Squares Estimation, Assumptions of residual analysis, Coefficient of Determination, Multiple Regression: Adding a Term to a Simple Linear Regression Model, Explaining Variability, Residual Analysis for Multiple regression, Coefficient of Multiple Determination, Adjusted R-Square, Autocorrelation, Binary Logistic Models and its Interpretation & applications

Practical: Regression Using SPSS: One Predictor, Regression with Several Predictors, Classification using SPSS: Binary Logistic model with several predictors

Text Books

- Kuhn, M. and Johnson, K. (2013). Applied Predictive Modelling, Springer Verlag.
- Weisberg, S. (2014). Applied Linear Regression, Wiley, Fourth Edition.
- Malhotra, R. (2016). Empirical Research in Software Engineering: Concepts, Analysis & Applications, CRC press.
- Field, A. (2013), Discovering Statistics using IBM SPSS Statistics, Sage Publications, Fourth Edition.
- Chatterjee, S. and Hadi, A. (2012). Regression Analysis by Example, John Wiley, Fifth Edition.

Reference Books

- Chatterjee, S. and Hadi, A. (2012). Regression Analysis by Example, John Wiley, Fifth Edition.
- Frees, E. E, Derrig, E. W, and Meyers, G. (2014). Predictive Modeling Techniques in Actuarial Science, Vol. I: Predictive Modeling Techniques. Cambridge University Press.
- Sarma, K.S. (2013), Predictive Modeling with SAS Enterprise Miner: Practical Solutions for Business Applications, SAS Institute, Second Edition.
- Strickland, J. (2014), Predictive Modeling and Analytics, Lulu.com.
- Meyers, L.S., Gamst, G.C. &Guarino, A.J. (2015), Performing Data Analysis using IBM SPSS, Wiley.
- Cunningham J.B. (2012), Using SPSS: An Interactive Hands-on Approach, SAGE South Asia.

Suggested Readings

- Mayor, E. (2015), Learning Predictive Analytics with R, Packt Publishing.
- Larose, D.T. & Larose, C.D. (2016), Data Mining and Predictive Analytics, Wiley.
- McCormick, K. & Abbott, D. (2013), IBM SPSS Modeler Cookbook, Packt Publishing.
- Kalyanaraman, K., Ramanathan, H.M. &Harikumar, P.N. (2016), Statistical Methods for Research: A Step by Step Approach Using IBM SPSS, Atlantic Publishers.

BAE208: Analysis of Recent Economic Developments (L:2, T:0, P:0)

Course Objectives:

This course aims to provide students with a comprehensive understanding of recent economic developments and their impact on various aspects of the economy. Students will develop analytical skills to critically evaluate economic data, assess policy implications, and understand the broader implications of economic trends. Through a combination of lectures, case studies, and discussions, students will gain insights into contemporary economic issues and develop the ability to analyse and interpret economic data.

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1: Identify and describe key economic trends, events, and policies that have shaped the recent economic landscape at the global, regional, and national levels

CO2: Analyse economic data and trends, and predict their potential impact on various aspects of the economy, such as employment, inflation, investment, and consumer behavior

CO3: Compare and differentiate different economic sectors, including their characteristics, performance, policy implications, and interlinkages, using appropriate analytical frameworks

CO4: Design and justify policy recommendations based on the analysis of recent economic developments

Syllabus:

Unit 1: Introduction to Recent Economic Developments

Overview of recent global and regional economic trends; Understanding economic indicators and their significance; Analysing the impact of major events (e.g., financial crises, pandemics) on the economy; Exploring the role of government policies in shaping recent economic developments

Unit 2: Macroeconomic Analysis

Understanding macroeconomic theories and frameworks; Analysing key macroeconomic indicators (GDP, inflation, unemployment, etc.); Examining fiscal and monetary policies and their impact on the economy; Evaluating the role of international trade and globalization in recent economic developments

Unit 3: Sectoral Analysis

Analysing recent developments in specific sectors (e.g., finance, energy, technology); Examining the influence of technological advancements on the economy; Evaluating the impact of sector-specific policies and regulations; Understanding the interlinkages between sectors and their implications for economic growth

Unit 4: Policy Implications and Future Trends

Assessing the policy implications of recent economic developments

Examining the role of central banks in managing economic fluctuations; Analysing the challenges and opportunities of sustainable economic development; Identifying emerging trends and their potential impact on the economy

References/Textbooks

- National and International Foreign Newspapers
- Latest Economic Survey and Union Budget Reports
- Articles published in Scholarly Journals such as *Economic and Political Weekly, Indian Economic Review etc.*
- Latest Reports by International Organisations such as IMF and the World Bank

BAE210: Logical Reasoning (L:2, T:0, P:0)

Course Objectives:

This course aims to develop students' skills in critical thinking and logical analysis. Throughout the course, students will engage with various topics and concepts related to logical reasoning. They will learn to identify and evaluate arguments, assess the validity and soundness of reasoning, and differentiate between deductive and inductive reasoning. Additionally, students will explore the relationship between logic and language, examining how words are defined, the connotation and denotation of terms, and the functions of language in expressing agreement or disagreement. The course will also cover Aristotelian logic, including categorical

propositions, immediate and mediate inferences, the square of opposition, and translating propositions into standard form. Students will gain the ability to apply logical rules and principles to analyse and evaluate arguments, identify informal fallacies, and utilize Venn diagrams for categorical syllogisms.

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1: Demonstrate analytical skills to critically analyse and evaluate reasoning

CO2: Differentiate between deductive and inductive reasoning, identify the structure and components of arguments, and assess their validity and soundness

CO3: Analyse the logical fallacies and identify instances of faulty reasoning

CO4: Apply logical reasoning to various contexts, such as ethical dilemmas, social issues, and scientific arguments

Syllabus:

Unit 1: Basic Logical Concepts

Sentence and Proposition; Argument and Inference; Truth, Validity and Soundness; Argument and Explanation; Deduction and Induction

Unit 2: Logic and Language

What is a word? Definition of a term; Connotation and Denotation of a term and their relationship; Uses of Language: Three Basic functions of Language; Agreement and Disagreement in Belief and Attitude

Unit 3: Aristotelian Logic - I

Categorical Propositions & Immediate Inferences; Square of Opposition; The Problem of Existential Import; Translating Categorical Propositions into Standard form; Immediate Inferences: Conversion, Obversion and Contraposition

Unit 4: Aristotelian Logic - II

Mediate Inference: Categorical Syllogism: Mood, Figure, Validating / Invalidating Categorical Syllogisms through syllogistic rules, Special Theorems &Venn Diagrams, Informal Fallacies

References/Textbooks

- Cohen & Nagel. (1968), An Introduction to Logic and Scientific Method, Delhi: Allied Publishers
- Copi. I.M. (2012), Introduction to Logic, Delhi: Pearson.
- Hurley, Patrick (2007), Introduction to Logic, Wadsworth, Delhi,
- Sen, Madhucchanda (2008), LOGIC, Delhi, Pearson

SEMESTER-V

BAE301: Introductory Econometrics (L:3, T:1, P:0)

Course Objectives:

This course provides a comprehensive introduction to basic econometric concepts and techniques. It covers statistical concepts of hypothesis testing, estimation and diagnostic testing of simple and multiple regression models. The course also covers the consequences of and tests for misspecification of regression models.

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1: Construct econometric models to analyse problems in the fields of business and economics

CO2: Use regression analysis for understanding relationship among variables

CO3: Identify the violations of key classical assumptions in single and multiple regressions and modify the regression models to address them

CO4: Interpret and present the findings of econometrics analysis

Syllabus:

Unit 1: Simple Linear Regression Model

Two variable case estimation of model by method of ordinary least squares; properties of estimators; goodness of fit; tests of hypotheses; scaling and units of measurement; confidence intervals; Gauss-Markov theorem; forecasting.

Unit 2: Multiple Linear Regression Model

Estimation of parameters; properties of OLS estimators; goodness of fit - R2 and adjusted R2; partial regression coefficients; testing hypotheses – individual and joint; functional forms of regression models; qualitative (dummy) independent variables

Unit 3: Violations of Classical Assumptions

Consequences, Detection and Remedies Multicollinearity; heteroscedasticity; Auto-correlation. Specification Analysis: Omission of a relevant variable; inclusion of irrelevant variable; JB statistic and DW Statistic.

References/Textbooks

- D. N. Gujarati and D.C. Porter, Essentials of Econometrics, 4th Edition, McGraw Hill International Edition, 2010.
- Jeffrey M. Wooldridge, Introduction to Econometrics: A Modern Approach, 5th Edition, Cengage Learning, 2014.
- Christopher Dougherty, Introduction to Econometrics, 4th edition, OUP, Indian edition, 2011.

- Maddala, G.S and Kajal Lahiri, Introduction to Econometrics, 4th edition, Wiley publication, 2009.
- Jan Kmenta, Elements of Econometrics, Indian Reprint, Khosla Publishing House, 2008.

BAE303: Development Economics - I (L:3, T:1, P:0)

Course Objective:

The objective of the first part of this course is to discuss alternative conceptions of development and their justification. The student will be able to learn aggregate models of growth and cross-national comparisons of the growth experience that can help evaluate these models. The axiomatic basis for inequality measurement is used to develop measures of inequality and connections between growth and inequality.

Course Outcomes (COs):

Upon completion of the course, the student would be able to:

CO1 Define and identify the fundamental concepts associated with development economics.
CO2 Demonstrate an understanding of growth models, including Solow's model, Harrod-Domar model, and endogenous growth theories.
CO3 Critically analyse the root causes of poverty and inequality
CO4 Synthesize their knowledge of development economics to propose innovative strategies aimed at fostering inclusive growth and reducing poverty and inequality.

Syllabus:

Unit 1: Conceptions of Development

Alternative measures of development, documenting the international variation in these measures, comparing development trajectories across nations and within them.

Unit II: **Growth Models and Empirics**

The Harrod-Domar model, the Solow model and its variants, endogenous growth models and evidence on the determinants of growth.

Unit III: **Poverty and Inequality**

Definitions, Measures and Mechanisms Inequality axioms; a comparison of commonly used inequality measures; connections between inequality and development, Poverty Measures: Poverty measurement; characteristics of the poor; Poverty Mechanism: mechanisms that generate poverty traps and path dependence of growth processes.

References/Textbooks

- D. Ray, Development Economics, Oxford University Press, 2009.
- P. Dasgupta, Economics: A Very Short Introduction, Oxford University Press, 2007.
- Banerjee, R. Benabou and D. Mookerjee, Understanding Poverty, Oxford University Press, 2006.
- K. Basu, The Oxford Companion to Economics in India, OUP, 2007.
- Sen, Development as Freedom, OUP, 2000.

BAE305: Indian Economy I (L:3, T:1, P:0)

Course Objective:

The objective of the course is to review major trends in economic indicators and policy debates in India in the post-Independence period, with particular emphasis on paradigm shifts and turning points.

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1 Understand and comprehend the major trends in economic indicators and policy debates in India in the post-Independence period.
CO2 Analyse the current economic issues prevailing in India specially in education and health sectors.
CO3 Explain the policies, challenges and corrective measures of economic problems like inequality, poverty and unemployment in Indian context.
CO4 Interpret various data set and evidences on economic issues and policies in India in the context of growth and development.

Syllabus:

Unit 1: Economic Development since Independence

Major features of the economy at independence; growth and development under different policy regimes—goals, constraints, institutions and policy framework;

Unit 2: Regional Imbalances

Income; Education and health. Poverty and malnutrition.

Unit 3: Poverty, Inequality and unemployment

Basis poverty and inequality; Types of unemployment; Trends, measures and issues.

References/Textbooks

- J. Dreze and A. Sen. An Uncertain Glory: India and its Contradictions, Princeton University Press, 2013.
- P. Balakrishnan, The Recovery of India: Economic Growth in the Nehru Era, Economic and Political Weekly, 2007.
- R.M. Himanshu, Towards New Poverty Lines for India, Economic and Political Weekly, 2010.
- J. Dreze and A. Deaton, Food and Nutrition in India: Facts and Interpretations, Economic and Political Weekly, 2009.
- R.M. Himanshu, Employment Trends in India: A Re-examination, Economic and Political Weekly, 2011.
- R. Baru, 2010, ―Inequities in Access to Health Services in India: Caste, Class and Region, Economic and Political Weekly, 2010.
- G. G. Kingdon, The Progress of School Education in India, Oxford Review of Economic Policy, 2007.

BAE307: Econometric Analysis Package (L:1, T:0, P:2)

Course Objectives:

This course seeks to provide a basic introduction to an econometric computer package (R/Stata/E-Views – any one) with a view to help the students estimate an econometric model and analyse the results. The course covers analysis of data using summary statistics and graphs, estimation and diagnostic testing of simple and multiple regression models, regression with qualitative variables and the tests and remedies for misspecification of regression models.

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1: Describe the process of generating data sets, transforming data, and performing various data analysis tasks, such as creating graphs and plots, calculating summary statistics, and constructing correlation matrices

CO2: Demonstrate the use of Ordinary Least Squares (OLS) regressions, interpret regression results, and draw conclusions based on the estimated coefficients

CO3: Develop analytical skills to assess the validity of regression models

CO4: Interpret and present the findings of econometrics analysis

Syllabus:

Unit 1: Data Analysis

Generation of data sets and data transformation; data analysis (Graphs and Plots, Summary Statistics, Correlation Matrix etc.)

Unit 2: Regression Analysis

Running an OLS regression; Testing for Linear Restrictions and Parameter Stability. Regression Diagnostics: Collinearity, Autocorrelation, Heteroscedasticity, Normality of residuals

Unit 3: Working with Dummy Variables

Generating dummy variables; regression with dummy variables; use of interaction terms; regression with qualitative and quantitative variables

References/Textbooks

- Damodar Gujarati, Econometrics by Example, 2nd edition, Palgrave Macmillan, 2014
- D. N. Gujarati and D.C. Porter, Essentials of Econometrics, 4th Edition, McGraw Hill International Edition, 2010.
- Introductory Econometrics: A Modern Approach 6th Ed. (Jeffrey Wooldridge)
- Jeffrey M. Wooldridge, Introduction to Econometrics: A Modern Approach, 5th Edition, Cengage Learning, 2014.
- Relevant Instruction Manual for the Software

MGM301: Marketing Management (L:3, T:1, P:0)

Course Objectives:

The objective of this paper is to identify the foundation terms and concepts that are commonly used in marketing. It also identifies the essential elements for effective marketing practice.

Course Outcomes (COs):

Upon completion of the course, the student would be able to:

CO1: Identify the roles and functions of marketing within a diverse range of organizations.

CO2. Describe key marketing concepts, theories and techniques for the analysis of dynamic marketing environment.

CO3. Derive consumer insights from the application of knowledge on consumer behaviour and marketing research.

CO4: Develop the marketing strategy, segmentation, positioning and marketing mix for an organization.

Syllabus:

Unit 1: Introduction

Nature, Scope and Importance of Marketing, Basic concepts**,** Introduction to marketing function; genesis, approaches to marketing, Concept of customer value, customer satisfaction and delight.

Unit 2: Strategic Concerns in Marketing

Marketing Environment: Analyzing needs and trends Macro Environment –Political, Economic, Socio-cultural, Legal, Ecological and Technical Environment – PEST analysis. Micro Environment – Industry & Competition. Marketing Organization & Control, Business Portfolio Management

Unit 3: Consumer Insights

Marketing Research, Consumer Behaviour, B2B Consumer Behaviour

Unit 4: Market Segmentation, Targeting and Positioning.

Definition, Need & Benefits. Bases for market segmentation of consumer goods, industrial goods and services. Segment, Niche & Local Marketing, Effective segmentation criteria, Evaluating & Selecting Target Markets, Concept of Target Market and Concept of positioning – Value Proposition & USP.

Unit 5: Designing the Marketing Mix

Product & Brand: Product Levels, Product Mix, Product Strategy, Product Development, Product Lifecycle and Product Mix , Pricing Decisions: Designing Pricing Strategies and Programmes, Pricing Techniques, Place: Meaning & importance, Types of Channels, Channels Strategies, Designing and Managing Marketing Channel, Retailing, Physical Distribution, Marketing Logistics and Supply Chain Management. Promotion: Promotion Mix, Push vs. Pull Strategy; Promotional Objectives, Advertising- Meaning and Importance, Types, Media Decisions, Promotion Mix, Sales Promotion – Purpose and Types;

References/Textbooks

- Kotler, Armstrong, Agnihotri and Haque, “Principles of Marketing- A South Asian Perspective”, Pearson Education, 2020.
- Ramaswamy and S. Namkumar, “Marketing Management Global Perspective: Indian Context”, McMillan, Delhi, 2018.

DSC301: Data Warehousing and Data Mining (L:4, T:0, P:0)

Course Objective:

A course on Data Warehousing and Data Mining aims to equip students with the necessary knowledge and skills to manage and analyze large datasets in real-world applications. The course covers the fundamentals of data warehousing, including data modelling, design, ETL process, querying and reporting. In addition, the course provides an introduction to data mining.

Course Outcomes (COs)

Upon completion of the course, the students would be able to:

CO1: Understand the fundamental concepts of data warehousing, including architecture, components, and ETL process.

CO2: Learn data modelling techniques, including dimensional modeling and normalized and denormalized data models.

CO3: Design and implement a data warehouse, including choosing a platform, planning the design, and designing the ETL process.

CO4: Gain an introduction to data mining, including techniques, algorithms, and evaluation of data mining models.

Syllabus:

Unit 1: Introduction to Data Warehouse: Decision support systems, History of Decision-Support Systems, Operational Versus Decision-Support Systems , Data Warehousing—The Only Viable Solution, Data Warehouse Defined, Concept for Information Delivery, Architecture of a data warehouse, Data Warehouse: The Building Blocks, Defining Features, Data Warehouses and Data Marts, Overview of ETL (Extract Transform Load) process.

Unit 2: Data Modelling for Data Warehousing: Defining the Business Requirements, Dimensional modelling: star schema and snowflake schema, Hierarchies and levels in data modelling, Facts and measures in data modelling, Comparison of normalized and denormalized data models, Data Warehouse Design, Choosing a data warehouse platform, Planning the data warehouse design

Unit 3: ETL (Extract, Transform, Load) Process: Extracting data from source systems

Data cleansing and data transformation, Loading data into the data warehouse, ETL performance tuning and optimization, Data Warehouse Querying and Reporting, OLAP (Online Analytical Processing) concepts, Multidimensional data analysis

Unit 4: Data Mining: Definition and objectives of data mining, Data mining techniques and algorithms, Data pre-processing, Evaluation of data mining models, Major Data Mining Techniques, Data Mining Applications.

References/Textbooks

- Data Warehousing Fundamentals: A Comprehensive Guide for IT Professionals, by Paulraj Ponniah.
- Data Mining: Concepts and Techniques, Jiawei Han, Micheline Kamber, and Jian Pei.
- Building a Data Warehouse: With Examples in SQL Server, Vincent Rainardi.
- Introduction to Data Mining, Pang-Ning Tan, Michael Steinbach, and Vipin Kumar.
- Mining of Massive Datasets, Jure Leskovec, Anand Rajaraman, and Jeffrey D. Ullman

BAE309: Summer Internship Report (L:0, T:0, P:4)

Course Objectives:

The objective of this course is to provide students with a practical and hands-on learning experience in a professional work environment. The internship aims to bridge the gap between theoretical knowledge gained in the classroom and real-world application by immersing students in a professional setting related to their field of study. Through the internship, students will have the opportunity to apply and further develop their skills, knowledge, and competencies in a practical context. The objectives include gaining industry-specific insights, understanding the dynamics of the workplace, enhancing professional communication and interpersonal skills, and acquiring a broader understanding of the industry's operations and practices. Additionally, the internship report aims to cultivate students' abilities in critical thinking, problem-solving, and analytical skills as they analyse and reflect on their internship experience, drawing connections between theory and practice.

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1: Categorise the various functional areas and analyse how theoretical concepts taught are applied in real life situations, in a specific functional area where internship is undertaken.

CO2: Identify company practices, system, processes, procedures and policies of a company/industry in different functional areas and bring forward the deviations after studying theoretical aspects and best practices.

CO3: Gain experiential familiarity with the functioning of organisations, and gain experience as a member of a team, understand reporting structures in an organization, and how to contribute through one’s efforts

Details

Each student shall undergo practical training of eight weeks during the vacations after fourth semester in an approved business / industrial / service organization. Students are required to provide information about company, HR manager, and supervisor of students, project titles and objections. Upon completion of project, they are also required to submit certificate from supervisor along with their project report. The student will be assigned a faculty mentor and in consultation with mentor they will undergo summer internship. The faculty mentor shall evaluate the performance of the students and award the marks.

SEMESTER-VI

BAE302: Development Economics II (L:3, T:1, P:0)

Course Objective:

The course teaches the basic demographic concepts and their evolution during the process of development. The structure of markets and contracts is linked to the particular problems of enforcement experienced in poor countries. The course also discusses the concept of sustainable growth.

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1: Demonstrate an understanding of demographic concepts and their role in development.
CO2: Examine the evidences on unequal treatment within households, exploring the implications of gender bias for preferences, decision-making, and development outcomes.
CO3: Evaluate the effects of land reform on productivity.
CO4: Understand the functioning of credit markets and factor markets.
CO5: Synthesize knowledge on environmental economics and sustainable development.

Syllabus:

Unit 1 Demography and Development:

Demographic concepts; birth and death rates, age structure, fertility and mortality; demographic transitions during the process of development; gender bias in preferences and outcomes and evidence on unequal treatment within households; connections between income, mortality, fertility choices and human capital accumulation; migration.

Unit 2 Land, Labour and Credit Markets:

The distribution of land ownership; land reform and its effects on productivity; contractual relationships between tenants and landlords; land acquisition; nutrition and labor productivity, Credit Markets: Informational problems and credit contracts; microfinance; inter-linkages between rural factor markets.

Unit 3 Environment and Sustainable Development:

Defining sustainability for renewable resources; a brief history of environmental change; common-pool resources; environmental externalities and state regulation of the environment; economic activity and climate change. Globalization: Globalization in historical perspective; the economics and politics of multilateral agreements; trade, production patterns and world inequality; financial instability in a globalized world.

References/Textbooks

- D. Ray, Development Economics, Oxford University Press, 2009.
- P. Dasgupta, Economics, A Very Short Introduction, Oxford University Press, 2007.
- Banerjee, R. Benabou and D. Mookerjee, Understanding Poverty, Oxford University Press, 2006.
- T. Schelling, Micromotives and Macrobehavior, W. W. Norton, 1978.
- O. Hirschman, Exit, Voice and Loyalty: Responses to Decline in Firms, Organizations and States, Harvard University Press, 1970.

BAE304: Indian Economy II (L:3, T:1, P:0)

Course Objective: This course will enable the student to examine sector-specific polices and their impact in shaping trends in key economic indicators in India. The objective of the course is to highlight major policy debates and evaluates the Indian empirical evidence.

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1: Understand the trends and policies related to various sectors of Indian economy and their impact on key economic indicators.
CO2: Analyse the empirical evidences and data pertaining to sector specific policies and performances.
CO3: Review and analyse the research papers and data based on economic issues in India.

Syllabus

Unit 1: Macroeconomic Policies and Their Impact

Fiscal Policy; trade and investment policy; financial and monetary policies;

Unit 2: Policies and Performance of Agriculture and Industry

Growth; productivity; capital formation; trade; pricing and procurement. Growth; productivity; diversification; small scale industries, competition policy

Unit 3: Trends and Performance of Services

Real Estate; IT enabled services and Banking and Insurance.

References/Textbooks

- S. Acharya, Macroeconomic Performance and Policies 2000-8, In Shankar Acharya and Rakesh Mohan, editors, India's Economy: Performances and Challenges: Development and Participation, Oxford University Press, 2010.

- Kansal, V., (2016). Current Developments in India's Monetary Policy Framework. Journal of Financial Regulation, 2, 283–290, Oxford University Press. doi: 10.1093/jfr/fjw010
- R. Mohan, India's Financial Sector and Monetary Policy Reforms, in Shankar, BIS Review 50/2006
- Economic Survey of the recent year. (Chapters based on agriculture, industry and service sectors)

BAE306: Political Economy (L:3, T:1, P:0)

Course Objective:

Employing perspectives from alternative schools of thought, the objective of this course is to explore the development of the structure and institutions of capitalist economies and their relationship to social and political forces.

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1: Develop a comprehensive understanding of historical materialism as a method of analysing social change.
CO2: Analyse the basic features of capitalism as an evolving economic system.
CO3: Evaluate the relationship between the state and capitalism, considering contestation and mutual interdependence.
CO4: Examine the changing dynamics of capitalist production, organizational form, and the labour process.

Syllabus:

Unit 1: Analysing Social Change in Historical Perspective

The method of historical materialism; the transition from feudalism to capitalism; capitalism as a historical process – alternative perspectives.

Unit 2: Capitalism as an Evolving Economic System

Basic features; accumulation and crisis; the modern corporation; monopoly capitalism—alternative perspectives.

Unit 3: The State in Capitalism

The state and the economy – contestation and mutual interdependence; the state as an arena of conflict; imperialism – the basic foundations.

Unit 4: Changing Dynamics of Capitalist Production, Organizational Form and Labour Process

Fordist and post-fordist production; changing dynamics of organization of production, markets and labour process; the changing nature of job security and labour rights.

References/Textbooks

- J. Gurley, The Materialist Conception of History, Ch.2.1 in R. Edwards, M. Reich and T. Weisskopf (ed.), The Capitalist System, 2nd edition, 1978.
- O. Lange, Political Economy, vol. 1, 1963, Chapters 1 and 2.
- E.K. Hunt, History of Economic Thought, M.E. Sharpe, Shilpi Publications, 2004.
- Irfan Habib, 1995, Capitalism in History, Social Scientist, Vol. 23: 15-31.
- R.L. Heilbroner, Capitalism, in The New Palgrave Dictionary of Modern Economics, Macmillan, 1987**.** Also reprinted as Chapter 2 in Behind the Veil of Economics by R.L. Heilbroner, W.W. Norton, 1988.
- P. Sweezy, The Theory of Capitalist Development, Monthly Review Press, 1942
- S. Hymer, The Multinational Corporation and the Law of Uneven Development, in H. Radice, International Firms and Modern Imperialism, Penguin Books, 1975.
- G. Gereffi, J. Humphrey and T. Sturgeon, ―The Governance of Global Value Chains‖, Review of International Political Economy, Volume 12: 78–104, 2005.

BAE308: International Economics (L:3, T:1, P:0)

Course Objectives:

This course will allow the students to develop a systematic exposition of models that try to explain the composition, direction, and consequences of international trade, and the determinants and effects of trade policy. It will teach analytical account of the causes and consequences of the rapid expansion of international financial flows in recent years. Although the course is based on abstract theoretical models, students will also be exposed to real-world examples and case studies.

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1: Identify and list fundamental theories and concepts in international economics

CO2: Critically analyse controversies surrounding trade policy, evaluate the effects of protectionism, and assess the benefits and costs associated with different trade policy measures

CO3: Differentiate between fixed and flexible exchange rate systems

CO4: Analyse international macroeconomic policies in the context of exchange rates and monetary systems

Syllabus:

Unit 1: Introduction and Theories of International Trade

What is international economics about? An overview of world trade; Gains from Trade; Theories of Absolute and Comparative Advantage; International Trade Theories – Ricardian and Heckscher-Ohlin Models; New Trade Theories

Unit 2: Trade Policy

Instruments of Trade Policy; political economy of trade policy; controversies in trade policy

Unit 3: International Macroeconomic Policy

Fixed versus flexible exchange rates; international monetary systems

References/Textbooks

- P. Krugman, M. Obstfeld, and M. Melitz, International Economics: Theory and Policy, Addison-Wesley (Pearson Education Indian Edition), 9th edition, 2012
- D. Salvatore, International Economics: Trade and Finance, John Wiley International Student Edition, 10th edition, 2011

MGM302: Management Information System (L:3,T:1,P:0)

Course Objectives:

The course objectives of the Management Information Systems (MIS) course are designed to provide students with a foundation in understanding the role and significance of MIS in a business organization. The course aims to familiarize students with purpose, and objectives of MIS, as well as the prerequisites for its effective implementation. Additionally, the course objectives aim to equip students with the knowledge and skills to differentiate between different types of information systems, understand the impact of Information Technology (IT) on organizations, and explore emerging concepts and challenges in the field of MIS.

Course Outcomes (COs):

Upon completion of the course, the student would be able to:

CO1: Understand the definition, purpose, and objectives of Management Information Systems (MIS) in a business organization.

CO2: Analyze the applications of MIS in various business functions and processes.

CO3: Apply system analysis, design, and implementation techniques to develop efficient and effective information systems.

CO4: Gain an overview of Enterprise Resource Planning (ERP) systems, Customer Relationship Management (CRM), Business Intelligence (BI), and their role in business organizations.

CO5: Introduce the challenges and introductory aspects of information security in MIS.

Syllabus:

Unit 1: Introduction: Definition, Purpose, Objectives, and Role of MIS in Business Organization, pre-requisites for effective MIS, MIS Applications in Business. Information in Decision Making: Meaning and importance, Sources and Types of Information, information requirements with particular reference to Management Levels, Relevance of Information in Decision Making, Strategic Business objectives of information system.

Unit 2: System Development: Concept of System, Types of Systems – Open, Closed, Deterministic, Probabilistic, etc., System Approaches - System Development Life Cycle (SDLC), Prototyping, End User Development, Waterfall and Spiral method, System Analysis, Design and Implementation.

Unit 3: Types of information system: Transaction Processing System, Expert System, Decision Support System, Executive Information system and Knowledge Management System. Information Technology: Recent Developments in the Field of Information Technology, Impact of IT on Organisation, Multimedia Approach to Information Processing, Centralised and Distributed Processing.

Unit 4: Emerging Concepts and Issues in Information Systems: ERP - An overview, Characteristics, and Role of ERP in Business Organization, Customer Relationship Management, Business Intelligence, Introduction to Database, Data Warehousing, Data Mining and its Applications, MIS and Information Security Challenges (Introductory aspects only).

References/Textbooks:

- Laudon, "Management Information Systems", Pearson Education, 2014.
- W. S. Javadekar, "Management Information Systems", Tata McGraw Hill
- Publication, 2014.
- O'Brien, A. James, "Management Information System", Tata McGraw Hill, 2014.
- Davis, B. Gordon, "Management Information System", Tata McGraw Hill
- Publication, 2012.
- D. P. Goyal, "Management Information Systems", Macmillan Publication, 2014.
- M Azam, "Management Information System", Tata McGraw Hill, 2012.

DSC302: Machine Learning (L:4, T:0, P:0)

Course Objective

The objective of the course is to learn what machine learning is and how it is related to data analysis and statistics. The course will impart knowledge on how various machine learning algorithms search for data patterns which can be used to make decisions and predictions for practical problem solving.

Course Outcomes (COs)

Upon completion of the course, the students would be able to:

CO1: Learn the basic concepts and techniques of machine learning.

CO2: Use machine learning concepts to solve practical problems.

CO3: Understand the functioning and applications of some popular machine learning algorithms.

CO4: Understand the concepts of supervised, unsupervised and reinforcement learning.

Syllabus:

Unit 1: Introduction to Machine Learning : Learning Issues, Designing a learning system, perspectives & issues in machine learning, concept learning and general to specific ordering. Overview of different tasks: classification, regression, clustering.

Unit 2: Decision Trees and Artificial Neural Networks: Decision Trees: Introduction, Tree representation, Appropriate problems, Hypothesis space search, inductive bias, rule-based learning, class-based and rule-based ordering, sequential covering algorithm Artificial Neural Networks: Introduction, Network representation, appropriate problems, perceptron, back-propagation, Support Vector Machine, Introduction to imbalanced learning, dealing with imbalanced data problem, oversampling, Undersampling, Synthetic Minority Oversampling Technique

Unit 3: Bayesian and Ensemble Learners: Bayesian learners: Introduction, Bayes theorem and concept learning, maximum likelihood and least-squared error hypothesis, maximum likelihood hypothesis for predicting probabilities, minimum description length principle, Ensemble learners: AdaBoost, Bootstrap Aggregation, Random Forest.

Unit 4: Unsupervised and Reinforcement Learning: Introduction to unsupervised learning, clustering & Association, k-nearest neighbour learning, Association rule mining, Multilevel association rules, Apriori algorithm, Q learning, non-deterministic rewards & actions, temporal difference learning.

References/Textbooks

- Mitchell, T. (2013), Machine Learning, McGraw Hill.
- I.H. Witten & E. Frank (2005), Data Mining: Practical Machine Learning Tools & Techniques, Elsevier, Second Edition.
- Murphy, K.P. (2012), Machine Learning: A probabilistic perspective, MIT Press.
- Mohri, M., Rostamizadeh, A. and Talwalkar, A. (2012), Foundations of Machine Learning, MIT Press.
- Harrington, P. (2012), Machine Learning in Action, Dreamtech Press.

SEMESTER-VII

BAE401: Applied Econometrics (L:3, T:1, P:0)

Course Objectives:

The aim of this course is to provide a foundation in applied econometric analysis and develop skills required for empirical research in economics. The students will learn the topics including specification and selection of regression models, dynamic econometric models, advanced methods in regression analysis and panel data models.

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1: Design models using the matrix approach to linear regression, incorporating appropriate assumptions and estimation techniques

CO2: Develop problem-solving skills by predicting, analysing, and solving problems related to regression diagnostics

CO3: Justify the use of panel data models and estimation techniques

CO4: Differentiate, compare, and justify the utility of advanced topics in regression analysis such as instrumental variables and dynamic econometric models

Syllabus:

Unit 1: Matrix Approach to Linear Regression Model

The k- variable regression model; assumptions of the Classical Linear Regression Model in matrix form; OLS estimation; variance-covariance matrix; coefficient of determination

Unit 2: Regression Diagnostics

Detection of and remedial measures for Multicollinearity, Autocorrelation and Heteroscedasticity; model selection and diagnostic testing

Unit 3: Advanced Topics in Regression Analysis

(i) Dynamic Econometric Models: Distributed Lag Models: Nature of lagged phenomena; estimation using Koyck transformation (The Adaptive Expectations and Partial Adjustment Models); estimation of autoregressive models

(ii) Instrumental Variable Estimation: omitted variables in a simple regression model; measurement errors

Unit 4: Panel Data Models and Estimation Techniques

The Pooled OLS Regression Model; the fixed effect least squares dummy variable model; the fixed effect within group estimator; the random effects model

References/Textbooks

- D. N. Gujarati, D.C. Porter and Sangeetha Gunasekar, Basic Econometrics, 5th edition, McGraw Hill, 2012 Indian edition.
- D. N. Gujarati and D.C. Porter, Basic Econometrics, 5th edition, McGraw Hill, 2012 International edition.
- Damodar Gujarati, Econometrics by Example, 2nd edition, Palgrave Macmillan, 2014.
- Jeffrey M. Wooldridge, Introduction to Econometrics: A Modern Approach, 5th Edition, Cengage Learning, 2014.
- D. N. Gujarati and D.C. Porter, Essentials of Econometrics, 4th Edition, McGraw Hill International Edition, 2010.
- Christopher Dougherty, Introduction to Econometrics, 4th edition, OUP, Indian edition, 2011

BAE403: Public Economics (L:3, T:1, P:0)

Course Objective:

The course deals with the nature of government intervention and its implications for allocation, distribution and stabilization. Inherently, this study involves a formal analysis of government taxation and expenditures. The course will allow a student to learn about public goods, market failures and externalities.

Course Outcomes (COs):

Upon completion of the course, the student would be able to:

CO1: Analyze and evaluate fiscal functions

CO2: Understand the concept of public goods and externalities.

CO3: Evaluate the economic effects of taxation.

CO4: Analyze Indian public finance.

Syllabus:

Unit 1: Public Economic Theory
Fiscal functions: an overview; Public Goods: definition, models of efficient allocation, pure and impure public goods, free riding; Externalities: the problem and its solutions, taxes versus regulation, property rights, the Coase theorem

Unit 2: Taxation
Economic effects of taxation; deadweight loss and distortion; efficiency and equity considerations; tax incidence; optimal taxation; tax system: structure and reforms

Unit 3: Indian Public Finance
Budget, deficits, and public debt; fiscal federalism in India

References/Textbooks

- J. Hindriks, G. Myles: Intermediate Public Economics, MIT Press, 2006
- H. Rosen, T. Gayer: Public Finance, 9th ed., McGraw-Hill/Irwin, 2009
- J. E. Stiglitz, Economics of the Public Sector, W.W. Norton & Company, 3rd edition, 2000
- R.A. Musgrave and P.B. Musgrave, Public Finance in Theory & Practice, McGraw Hill Publications, 5th edition, 1989.
- J. Cullis and P. Jones, Public Finance and Public Choice, Oxford University Press, 1st edition, 1998.

BAE405: Game Theory (L:3, T:1, P:0)

Course Objectives:

This course introduces the students to elementary game theory under complete information, the concepts of repeated games and games with incomplete information. The course also studies the applications of game theory in analysing moral hazard, adverse selection and signalling problems.

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1: Describe and apply fundamentals of game theory

CO2: Identify dominant and dominated strategies and the Nash equilibrium.

CO3: Develop analytical and critical thinking skills.

CO4: Solve game theory problems and exercises.

Syllabus:

Unit 1: Normal and Extensive Form Games with Complete Information

The normal form; dominant and dominated strategies; dominance solvability; mixed strategies; Nash equilibrium; symmetric single population games; applications. Extensive form games with perfect information: The game tree; strategies; subgame perfection; backward induction in finite games; commitment; bargaining; other applications

Unit 2: Games with Incomplete Information

Simultaneous move games with incomplete information (Bayesian games): Strategies; Bayesian Nash equilibrium; auctions; other applications. Extensive form games with imperfect information: Strategies; beliefs and sequential equilibrium; applications

Unit 3: Information Economics

Adverse selection; moral hazard; signalling games

References/Textbooks

- M. J. Osborne, An Introduction to Game Theory, Oxford University Press, New Delhi, 2004
- H. Gravelle and R. Rees, Microeconomics, Pearson Education, 2nd edition, 1992

BAE407: Money and Financial Markets (L:3, T:1, P:0)

Course Objectives:

This course exposes students to the theory and functioning of the monetary and financial sectors of the economy. It highlights the organization, structure and role of financial markets and institutions. It also discusses interest rates, monetary management and instruments of monetary control. It teaches the financial and banking sector reforms and monetary policy with special reference to India.

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1: Demonstrate an understanding of the concept and functions of money, measure money supply, and evaluate different theories of money supply determination

CO2: Analyse the functions of financial markets and institutions, evaluate problems of asymmetric information such as adverse selection and moral hazard, and examine the impact of financial innovations

CO3: Examine the functions of central banks, understand their balance sheets, and analyze goals, targets, and indicators of monetary control

CO4: Analyse the goals and strategies of the Reserve Bank of India (RBI), assess the effectiveness of current monetary policy measures, and evaluate the impact on the Indian economy

Syllabus:

Unit 1: Money

Concept and functions, Measurement, Theories of Money Supply Determination

Unit 2: Financial Institutions, Markets, Instruments and Financial Innovations

Role of Financial Markets and Institutions; Problems of asymmetric information – adverse selection and moral hazard, Financial crisis, Money and Capital Markets; Organization and Structure in India; Role of Financial Derivatives and Other Innovations

Unit 3: Functioning of Central Bank and Interest Rate Determination

Functions of central bank, Balance Sheet Goals, Targets, Indicators and instruments of monetary control, monetary management in an open economy, current monetary policy of India, Determination of interest rates, Sources of interest rates differentials, Theories of term structure of interest rates; interest rates in India

References/Textbooks

- F.S. Mishkin and S.G. Eakins: Financial Markets and Institutions, Pearson Education, 6 th Edition, 2011
- F.J. Fabozzi, F. Modigliani, F. J Jones, M.G Ferri: Foundations of Financial Markets and Institutions, Pearson Education, 3rd Edition , 2009
- M.R. Baye and D.W. Jansen: Money, Banking and Financial Markets AITBS, 1996
- L.M . Bhole and J. Mahakud: Financial Institutions and Markets Tata McGraw Hill, 5th Edition, 2011
- M.Y. Khan: Indian Financial System Tata McGraw Hill, 7th Edition 2011
- N. Jadhav: Monetary Policy, Financial Stability and Central Banking in India, Macmillan, 2006
- Latest RBI reports

BAE409: Economics of Education (L:3, T:1, P:0)

Course Objectives

The objective of this course is to provide a fundamental understanding of economic aspects of education sector. It gives and overview of individual choice in the demand for education. The course familiarizes the students with both the economic theories and the methods used by economists for analysis in education sector.

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1: Synthesize knowledge to understand the broader implications of education outcomes on macroeconomic performance.
CO2: Develop a comprehensive understanding of the Economics of Education, its scope, and its significance in human development.
CO3: Analyse the demand and supply dynamics of education and other theories od economics of education.
CO4: Apply economic theories in assessing the performance of education sector.

Syllabus:

Unit 1: Economics of Education and Human Development

Introduction to Economics of education and its scope, Education outcomes and their relationship with macroeconomic performance. Literacy rates, school participation, school quality measures.

Unit 2: Education: Investment in Human Capital

Demand & supply of education, human capital theory, cost of education, rate of return to education: private and social; quality of education;

Unit 3: Education and Economic Growth: Theories and Policies

Signaling and screening hypothesis, New Education Policy; skill-based and vocational education.

References/Text Books

- Daniele Checchi, The Economics of Education Human Capital, Family Background and Inequality, Cambridge University Press, 2006
- International Handbook on the Economics of Education, edited by Geraint Johnes, Jill Johnes, Edward Elgar Publishing Ltd Cheltenham, UK, 2004
- Michael Lovenheim & Sarah Turner. "Economics of Education", Worth Publishers, 2018.

BAE411: Application of Linear Programming in Economics (L:3, T:1, P:0)

Course Objectives:

The objective of this paper is to develop an economics student's familiarity with the basic concepts, tools, and applications of linear programming. These linear programming techniques assist primarily in resolving and understanding complex problems serving as a valuable guide to the decision-makers.

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1: Formulate linear programming problems, and employ various methods for solving them, including graphical and simplex methods

CO2: Analyse the general structure of transportation problems, identify different types of methods for finding initial solutions, and test for optimality

CO3: Demonstrate analytical skills to analyse and interpret linear programming solutions in economic contexts

CO4: Design models to address specific economic scenarios, formulate linear programming problems based on economic constraints and objectives, and construct appropriate objective functions

Syllabus:

Unit 1: Linear Programming

Concept and Assumptions in Decision Making, Linear Programming Problem: Formulation, Methods of Solving: Graphical and Simplex, problems with mixed constraints, Primal-Dual Relationship, Duality Theorem, and its economic interpretations. Sensitivity Analysis

Unit 2: Transportation and Assignment Problems

General Structure of Transportation Problem, Different Types Methods for Finding Initial and Testing for Optimality. Assignment Problem & its Economical Interpretations

Unit 3: Applications of Linear Programming in Economics

Diet Problem, Travelling salesman problem, portfolio optimization, profit maximization and economics problems using simples method and product-mix problem etc.

References/Textbooks

- Render, Barry, R. M. Stair, M. E. Hanna, Badri, "Quantitative Analysis for Management", Pearson Education, 2012.
- N. D. Vohra, N.D., "Quantitative Techniques in Management", McGraw Hill Education, 2011.
- S. P. Gupta, P. K. Gupta, "Quantative Techniques and Operation Research", Sultan Chand, 2013.
- J. K. Sharma, "Operations Research: Problems & Solutions", Macmillan India Ltd, 2010.

BAE413: Economic History of India (1857-1947) (L:3, T:1, P:0)

Course Objective

This course teaches the student to analyze key aspects of Indian economic development during the second half of British colonial rule. In doing so, it investigates the place of the Indian economy in the wider colonial context, and the mechanisms that linked economic development in India to the compulsions of colonial rule. This course provides links directly to the course on India's economic development after independence in 1947.

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1: Demonstrate a comprehensive understanding of the colonial economy in India based on various macro-economic parameters.
CO2: Evaluate the impact of railways on the Indian economy and understand the de-industrialization debate.
CO3: Analyse labour relations in the context of industrialization in colonial India.
CO4: Examine the role of capital flows in the colonial economy and changes over time.

Syllabus:

Unit 1: Colonial India: Background and Introduction

Overview of colonial economy. Macro Trends: National Income; population; occupational structure, Agrarian structure and land relations; agricultural markets and institutions – credit, commerce and technology; trends in performance and productivity; famines.

Unit 2: Railways and Industry

Railways; the de-industrialisation debate; evolution of entrepreneurial and industrial structure; nature of industrialisation in the interwar period; constraints to industrial breakthrough; labor relations

Unit 3: Capital flows and the Colonial economy

Changes and continuities; government and fiscal policy, drain of wealth; international trade.

References/Text Books:

- L. Subramanian, History of India 1707- 1857, Orient Blackswan, 2010.
- S. Guha, Mortality decline in early 20th century India, Indian Economic and Social History Review *(IESHR)*, pp 371-74 and 385-87, 1991.
- T. Roy, The Economic History of India 1857-1947, Oxford University Press, 3rd edition, 2011.
- J. Krishnamurty, Occupational Structure, Dharma Kumar (editor), The Cambridge.
- Economic History of India, Vol. II, (henceforth referred to as CEHI), 2005, Chapter 6.

BAE415: Quantitative Research Techniques (L:3, T:1, P:0)

Course Objective

The objective of this course is to provide students with a comprehensive understanding of advanced quantitative research methods and statistical techniques. Students will learn to design robust quantitative studies, perform sophisticated data analyses, and interpret and present their findings effectively.

Course Outcomes

CO1: Demonstrate an in-depth understanding of advanced quantitative research methodologies, including experimental design, survey design, and longitudinal studies.

CO2: Develop and apply skills in various quantitative data collection and data analysis methods and techniques.

CO3: Design, conduct, and present an independent quantitative research project, showcasing their ability to apply advanced quantitative methods and statistical techniques to real-world research question

CO4: Demonstrate an advanced knowledge of econometric methods for cross section, panel and time series data

Syllabus

Unit 1: Revisiting Basic Econometrics

Two Variable Regression Analysis: some basic ideas, The method of Ordinary Least Squares, Properties of the OLS estimator: GAUSS MARKOV Theorem, Multiple regression analysis: The problem of estimation, Relaxing the assumption of Classical Regression Models (Multi-collinearity, Heteroscedasticity; Autocorrelation), Dummy Variable Regression models.

Unit-2: Time Series Analysis

Stochastic Processes; Correlation and Autocorrelation Functions; Averaging methods; Exponential smoothing methods; Decomposition methods; Unit root Tests; Stationarity: Unit-Root Tests; ARIMA Models, Smoothing Techniques and Box-Jenkins Methodology; Multivariate Models: Simultaneous Equations Models, VAR models; Introduction to VAR Analysis; Causality in Time Series: Granger Causality Test and Toda and Yamamoto Causality Tests; Co-Integration and Error Correction Model; Testing for Cointegration – Engle – Granger Methodology – Johansen Methodology; ARDL Bounds Testing Approach

Unit 3: Panel data

Difference between panel data and cross-sectional/time series data, Structure and format of panel data, Preparing and cleaning panel datasets, Introduction to pooled OLS regression, Assumptions and limitations, Fixed effects models, Within transformation and least squares dummy variable (LSDV) approach, Random effects models, Comparing fixed effects and random effects models, Hausman test, Dynamic panel data models, Methods for estimating dynamic panel data models

Unit 4: Models with discrete and limited dependent variables

Models with discrete dependent variables: Binary – Linear Probability Model, Probit and Logit Models; Multinomial; Ordered; Sequential.

References/Text Books:

- W. Greene, Econometric Analysis, Prentice Hall
- J.M. Wooldridge, Introductory Econometrics: A modern approach, South Western Cengage Learning
- J. Johnston and J. DiNardo, Econometric Methods
- G. S. Madala, Limited Dependent and Qualitative Variables in Econometrics, Cambridge University Press
- W. Enders, Applied Econometric Time Series, 4th ed., Willey, 2015
- Hamilton, J.D., Time Series Analysis. Princeton: Princeton University Press
- Patterson, K, "An Introduction to Applied Econometrics a Time Series Approach"

BAE417: Qualitative Research Techniques (L:3, T:1, P:0)

Course Objective

The primary objective of this course is to equip students with the knowledge and skills necessary to design, conduct, and analyze qualitative research. Students will gain hands-on experience with various qualitative research methods, enhance their ability to critically evaluate qualitative studies, and develop the competence to present their research findings effectively

Course Outcomes

CO1: Demonstrate an understanding of the fundamental principles and theoretical frameworks that underpin qualitative research.

CO2: Develop and apply skills in various qualitative data collection methods (e.g., interviews, focus groups, ethnography) and data analysis techniques (e.g., thematic analysis, content analysis).

CO3: Design, conduct, and present an independent qualitative research project, demonstrating their ability to apply methodological rigor and ethical considerations throughout the research process.

CO4: Differentiate and analyse the strengths and limitations of qualitative versus quantitative research, articulating the unique contributions of qualitative methods to understanding complex social phenomena

Syllabus

Unit 1: Introduction

Introduction to qualitative research, Qualitative Researcher, Quantitative vs. qualitative research, History of qualitative research, The process of qualitative research, Major paradigms & perspectives, Dominant paradigms of qualitative research, Interpretivist thinking, Verstehen, Constructivism, Properties of constructions, Constructivism: Sub paradigms, Criticisms of interpretivism & constructivism, Critical theory, Characteristics of critical theory, Critiques of critical theory

Unit 2: Strategies of inquiry

Introduction to qualitative inquiry, Qualitative research design, Ethnography, Autoethnography, Case studies, Analyzing interpretive practice Grounded Theory and Participatory Action Research

Unit 3: Designing a qualitative study

Ethical issues in qualitative research, six Common Qualitative Research Designs, Expanding the Qualitative Paradigm: Mixed Methods, Action, Critical, and Arts Based Research, Designing Study and Selecting a Sample, Conducting Effective Interviews, Planning and

conducting focus groups. Analyzing focus group data, Designing and conducting case studies, Comparative case study analysis

Unit 4: Data Analysis

Qualitative Data Analysis, Dealing with Validity, Reliability, and Ethics, and Writing Up Qualitative Research, Data Analysis Techniques, Thematic analysis, narrative analysis, and grounded theory. Software tools for qualitative data analysis (e.g., NVivo), Bibliometric analysis, Structured Literature Review, Thematic Analysis

References/Text Books:

- Denzin, N. K., & Lincoln, Y. S. (2000). *Handbook of qualitative research (2nd Ed.)*. Thousand Oaks, CA: Sage Publications Inc.
- Merriam, S. B., & Tisdell, E. J. (2015). *Qualitative Research: A Guide to Design and Implementation*. Jossey-Bass.
- Seidman, I. (2019). *Interviewing as Qualitative Research: A Guide for Researchers in Education and the Social Sciences*. Teachers College Press

BAE419/BAE420: Dissertation-I/Dissertation-II

Course Objective

The basic objective of this course is to facilitate students to understand the nitty-gritty of academic research through working on a research problem-related to their field of specialization under a faculty supervisor.

Course Outcomes

CO1: Identify and formulate a clear and focused research question or hypothesis, demonstrating an in-depth understanding of the chosen topic and its significance within the broader academic field

CO2: Design and implement a comprehensive research methodology, selecting appropriate qualitative or quantitative techniques, and justifying their use to address the research question effectively

CO3: Analyse and Interpret research data rigorously, using suitable analytical tools and methods, and drawing meaningful conclusions that contribute to the existing body of knowledge.

CO4: Construct and present a coherent and well-structured dissertation, articulating the research process, findings, and implications clearly and persuasively, while adhering to academic standards and ethical guidelines

Guidelines regarding Dissertation

The student will be assigned a faculty supervisor taking into account the student's research interests and the faculty's area of specialization. Based on the discussion with the respective supervisors, a topic/title and objectives of the dissertation would be decided. These titles and objectives would be communicated to BAE-program coordinator.

During the seventh semester, in Dissertation-I, students will select a research topic, conduct a comprehensive literature review, and prepare questionnaires or acquire secondary data, depending on the nature of their research and as decided by their respective supervisors.

During the eighth semester, in Dissertation-II, students will delve into the analysis phase and commence the writing of their thesis, culminating in a well-researched and thoughtfully written piece of academic work and will strictly follow instructions of their respective supervisors.

The dissertation progress will be evaluated at the end of Semester 7. The evaluation will carry a weightage of 100 marks, with the supervisor contributing 40 marks and a viva accounting for the remaining 60 marks. Similarly, at the end of Semester 8, the final dissertation will undergo evaluation using the same distribution of marks—40 marks assigned by the supervisor's evaluation and 60 marks allocated to the viva examination. Faculty mentor would periodically evaluate their performance. Since students would spend significant time with faculty supervisors for the dissertation work during their seventh and eighth semester, they are expected to write a research paper and submit in a peer-reviewed journal

MGM401: Financial Management (L:3, T:1, P:0)

Course Objectives:

This course's primary objective is to lay a basis for financial management ideas. The student will be able to comprehend how businesses decide on crucial financing and investment decisions as well as how they set working capital strategies. The course also lays the groundwork for more advanced financial subjects that are covered in other elective finance courses. This financial management course will help prospective managers understand how a company's finances operate and how they will interact with finance by describing the firm and its working environment.

Course Outcomes (COs):

Upon completion of the course, the student would be able to:

CO1: Outline the theoretical and practical role of financial management in business corporations.

CO2: Analyse the finances of individual corporations both in terms of their performance and capital requirements

CO3: Evaluate the role and importance of shareholders within modern corporations

CO4: Recognize and appreciate the importance of risk within the context of financial decision making

CO5: Reproduce financial information from a wide variety of sources and use this information to research and assess corporations

Syllabus:

Unit 1: Overview of Finance Function

Part 1: Introduction to Financial Management: Basics of Financial Management, Time Value of Money (annuity and present value of different types of cash flows), Value and Return

Part 2: Valuation of securities- Bonds and Equity (Concept of valuation, yield concepts, theories of valuation, bond amortisation, equity and preference shares valuation).

Unit 2: Capital Budgeting Decision

Nature & importance of investment decisions, methods of calculating present value (NPV, IRR), non-DCF criteria, computation of discounted payback, complex investment decisions – risk analysis in capital budgeting decisions

Unit 3: Financing decision (Long-Term Finance)

Capital Structure; The concept of Operating, Financial and Combined leverage, Designing the capital structure – Net Income, Net Operating Income Approach, Traditional Approach MM Hypothesis, concepts & estimation of cost of capital.

Unit 4: Retained earnings and dividend decision- Gordon, Walter model, MM Approach, relevance of dividend decision and financial

Suggested readings:

- I.M. Pandey – Financial Management (Vikas), 10th Edition
- Brealey, R.R. Myers. S., Allen,F. & Mohanty, P. (2009), Principles of Corporate Finance (Tata McGraw Hill), 8th Edition

Reference Books:

- E. F. Brigham , Financial Management, Theory and Practice, Cengage publication.
- J.C. Van Horne, Financial Management and Policy, Pearson publication.
- Aswath Damodaran, Corporate Finance Theory and Practice, 2ed (WSE) Paperback , Wiley publication
- Robert C. Higgins , Analysis for Financial Management, (10th Edition) ,McGraw Hill/Irwin Series.
- Ross, Westerfield & Jaffe, Principles of Corporate Finance, McGraw Hill Education.

DSC401: Introduction to Big Data Systems (L:4, T:0, P:0)

Course Objective:

A course on Big Data aims to equip students with the necessary knowledge and skills to work with large-scale datasets. The course covers the basics of Big Data and its significance in today's world, as well as the fundamentals of distributed systems and data storage. Overall, the course objective is to provide students with a comprehensive understanding of Big Data systems and the skills needed to succeed in the rapidly growing field of data science.

Course Outcomes (COs)

At the end of the course the student will be able to:

CO1: Understand Big Data and its Business Implications.

CO2: Understand components of Hadoop and Hadoop Eco-System

CO3: Explain the map reduce framework

CO4: Analyse stream computing including estimation of moments

Syllabus:

Unit 1: Introduction to Big Data: Nuances of big data – Value – Issues – Case for Big data – Big data options Team challenge –Big data sources – Acquisition – Nuts and Bolts of Big data. Features of Big Data - Security,Compliance, auditing and protection - Evolution of Big data – Best Practices for Big dataAnalytics - Big data characteristics - Volume, Veracity, Velocity, Variety.

Unit 2: Data Analysis: Evolution of analytic scalability – Convergence – parallel processing systems – enterprise analytic sand box – analytic data sets – Analytic methods Analysis approaches – Statistical significance – business approaches – Analytic innovation – Traditional approaches – Iterative.

Unit 3: Stream Computing: Introduction to Streams Concepts – Stream data model and architecture - Stream Computing, Sampling data in a stream – Filtering streams – Counting distinct elements in a stream –Estimating moments

Unit 4: Frameworks and Applications: Map Reduce Framework - Hadoop – Hive - – Sharding – NoSQL Databases - S3 - Hadoop Distributed file systems – Hbase – Impala

References/Textbooks

- Ohlhorst, F.J. (2013), Big Data Analytics: Turning Big Data into Big Money, Wiley and SAS Business Series.
- Franks, B. (2012), Taming the Big Data Tidal Wave: Finding Opportunities in Huge
- Data Streams with Advanced Analytics, Wiley and SAS Business Series
- Rajaraman, A. & Ullman, J.D. (2014), Mining of Massive Datasets, Cambridge University Press.
- Rungta, K. (2016), LearnHadoop in 1 Day: Master Big Data with this complete Guide, Amazon Digital

SEMESTER-VIII

BAE402: Financial Economics (L:3, T:1, P:0)

Course Objective:

This course aims to provide students with a concise yet comprehensive understanding of investment theory, portfolio analysis, options and derivatives, and corporate finance. Students will gain proficiency in evaluating investment opportunities, analyzing portfolio performance, and applying financial models such as the capital asset pricing model (CAPM) and risk neutral valuation. They will develop the skills to assess the impact of options and derivatives on risk management and investment strategies. Additionally, students will acquire insights into corporate financing patterns, capital structure decisions, and the cost of capital, enabling them to make informed decisions regarding corporate finance. The course objectives focus on equipping students with the knowledge and skills necessary for effective financial analysis and decision-making in various contexts.

Course Outcomes (COs):

Upon completion of the course, the student would be able to:

CO1: Analyze investment theory and portfolio analysis.

CO2: Evaluate options and derivatives.

CO3: Understand corporate finance.

CO4: Apply financial concepts in practical scenarios.

Syllabus:

Unit 1: Investment Theory and Portfolio Analysis

Deterministic Cash Flow Streams: Basic theory of interest; discounting and present value; internal rate of return; evaluation criteria; fixed-income securities; bond prices and yields; interest rate sensitivity and duration; immunization; the term structure of interest rates; yield curves; spot rates and forward rates. CAPM: The capital market line; the capital asset pricing model; the beta of an asset and of a portfolio; security market line; use of the CAPM model in investment analysis and as a pricing formula

Unit 2: Options and Derivatives

Introduction to derivatives and options; forward and futures contracts; options; other derivatives; forward and future prices; stock index futures; interest rate futures; the use of futures for hedging; duration-based hedging strategies; option markets; call and put options; factors affecting option prices; put-call parity; option trading strategies: spreads; straddles; strips and straps; strangles; the principle of arbitrage; discrete processes and the binomial tree model; risk neutral valuation

Unit 3 : Corporate Finance: Patterns of corporate financing

Common stock; debt; preferences; convertibles; capital structure and the cost of capital; corporate debt and dividend policy; the Modigliani-Miller theorem; the efficient market hypothesis

References/Textbooks

- David G. Luenberger, Investment Science, Indian edition, 2012
- Basu, Sankarshan, Hull, John C.,Options, Futures and Other Derivatives, Pearson Education, Inc, 8th edition, 2013
- Brealey, Richard A., Myers, Stewart, C., Allen, Franklin, Mohanty, Pitabas, Principles of Corporate Finance. Tata McGraw-Hill Education, 10th edition, 2013
- Bodie, Kane & Marcus, Investments, Tata McGraw-Hill Company Limited, 10th edition.

BAE404: Environmental Economics (L:3, T:1, P:0)

Course Objectives:

The objective of the course is to make students comprehend the principles and significance of sustainability, with a focus on how human behaviour, property rights, and economic growth.It makes them understand the principles of economic accounting for the environment and learn how to measure environmentally corrected GDP.

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1: Develop a deep understanding of the basics of sustainability, including the role of property rights, and their impact on economic growth.
CO2: Analyse market failures and externalities, distinguishing between private and social costs.
CO3: Apply environmental risk analysis concepts, including risk assessment and benefit-cost analysis.
CO4: Synthesize knowledge to understand global sustainable development, the Environmental Kuznets Curve, and the relationship between trade and the environment.

Syllabus:

Unit 1: Basics

Sustainability: Behaviour, Property Rights and Economic Growth. Nature of Goods: Free, Public, Environmental and Merit Goods. Pollution: Air, Soil, Sound and Water. Market Failure & Externalities. Private and Social Costs. Polluter Pays Principle. Pigouvian Tax. Renewable and non-renewable resources. Economic accounting and the measurement of environmentally corrected GDP.

Unit 2: Environmental Valuation

Use Value – Direct & Indirect; Non-use Value – Existence and Bequest Value. Ulterior and Altruistic motives. Option and Quasi-Option value. Valuation methods: WTP and WTA; Travel Cost Method. Revealed Preference. Environmental Risk Analysis: Concept of Risk, Risk Assessment and Risk Management. Benefit-Cost Analysis.

Unit 3: Global Sustainable Development

Sustainable Development - Concept and Measurement. Environmental Kuznets Curve. Trade and Environment: Pollution Haven Hypothesis. Global Warming and Climate Change. Carbon Footprint and Trading. Global Environmental Policy Framework: Kyoto Protocol and Paris Convention. UNFCCC.

References/Textbooks/ Readings:

- Charles D. Kolstad (2014) - Intermediate Environmental Economics - OUP Indian Edition.
- Thomas Callan, (2007) - Environmental Economics, Thompson Learning Inc. Indian Edition
- Tietenberg. T, (2003) Environmental and Natural Resource Economics. Pearson Education, New York.
- Bhattacharya, R.N. (2001) Environmental Economics, An Indian Perspective (Edited), 2001 Oxford University Press
- Partha Dasgupta (2007) - Measuring Sustainable Development: Theory and Application, Asian Development Review, vol.24, no.1, pp.1-10.
- Jha, Raghbendra and K.V Bhanu Murthy (2006). 'Environmental Sustainability: A Consumption Approach'. *Routledge, London.*
- R. Jha and K.V. Bhanu Murthy (2000) Sustainability: Behavior, Property Rights and Economic Growth, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=235608

Additional Readings

- Murthy, K.V. Bhanu and Sakshi Gambhir (2017). 'International trade and foreign direct investment: empirical testing of the trade-environment triangle'. *Transnational Corporations Review*, 9(2), 122-134.
- Murthy, K.V. Bhanu and Sakshi Gambhir (2018). 'Analyzing Environmental Kuznets Curve and Pollution Haven Hypothesis in India in the Context of Domestic and Global Policy Change'. *Australasian Accounting, Business and Finance Journal*, 12(2), 134-156.

BAE406: Health Economics (L:3, T:1, P:0)

Course Objectives:

The objective of this course is to provide a fundamental understanding of economic aspects of health sector. It gives and overview demand and supply aspects of health. The course familiarizes the students with both the economic theories and the methods used by economists for analysis in health sector.

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1: Understand the concept of Economics of Health, its scope, and its significance in human development.

CO2: Recognize the relationship between health variables, health outcomes, and macroeconomic performance

CO3: Analyse microeconomic foundations of health economics.

CO4: Apply economic concepts to analyse public health policies and economic evaluation.

Syllabus:

Unit 1: Economics of Health and Human Development

Introduction to Economics of Health and its scope and importance, Health variables and outcomes and their relationship with macroeconomic performance.

Unit 2: Microeconomic Foundations of Health Economics

Demand for health; uncertainty and health insurance market; alternative insurance mechanisms; market failure and rationale for public intervention; equity and inequality. Costing, cost effectiveness and cost-benefit analysis; burden of disease.

Unit 3: Public Health Policies and economic evaluation

Introduction to Public Health, Healthcare provisioning, Socio-economic disparities in Health-global perspective, Indian Health Status: reforms, status, and future challenges, Monetary and non-monetary valuation of health.

References/Text Books:

- Jay Bhattacharya, Timothy Hyde `and Peter Tu, Health Economics, Palgrave Macmillan, 2018
- Coelli, T. J., Rao, D. S. P., O'Donnell, C. J., & Battese, G. E. (2005). An introduction to efficiency and productivity analysis. Springer science & business media.
- Morris, S., Devlin, N., Parkin, D., & Spencer, A. (2012). Economic Analysis in Health Care (2nd ed.). Wiley.
- Zweifel, P., Breyer, F., & Kifmann, M. (2009). Health Economics (2nd ed.). Springer.

BAE408: Agricultural Economics (L:3, T:1, P:0)

Course Objectives:

The aim of the course is to give an understanding of economic perspective of analysing the agricultural problems. It gives an overview of income, employment, marketing and pricing issues centred to Indian Agricultural system.

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1: Analyse the nature and utility of agricultural economics and understand the role and significance of agriculture in the national economy

CO2: Examine the farm capital structure and its changes, analyse issues related to capital formation in Indian agriculture, and assess the mechanization of agriculture

CO3: Evaluate the role of regulated markets and market intervention in agricultural marketing

CO4: Predict and analyse trends and dynamics in agricultural economics

Syllabus:

Unit 1: Introduction

Scope and Subject matter of Agricultural Economics, Nature and Utility of Agricultural Economics, Role and Importance of Agriculture in National Economy: share in National income, Source of livelihood, Employment, Industrial development and trade

Unit 2: Issues in Indian Agriculture

Farm capital structure in Agriculture and its changes, Issues on Capital formation in Indian agriculture, Mechanization of Agriculture, Employment and Unemployment in agriculture

Unit 3: Agricultural Marketing and Pricing

Characteristics of primary agricultural markets in India, Regulated markets and market intervention, Marketing efficiency, Marketed and Marketable surplus, Farm prices, Trends in relative prices of farm products; Behaviour of marketed surplus, Price policy in India

References/Textbooks

- Andrew Barkley and Paul W. Barkley (2013), Principles of Agricultural Economics, Routledge Publication.
- Kannan, E. and Sundaram, S., 2011, Analysis of Trends in India's Agricultural Growth, Working Paper 276, ISEC, Bangalore
- Kumar, A., Singh, K.M. and Sinha, S., 2010, Institutional Credit to Agriculture Sector in India: Status, Performance and Determinants, Agricultural Economics Research Review, Vol. 23, July December 2010, pp. 253-264.
- Acharya and Agarwal, 1987, Agricultural Marketing in India, Oxford & IBH Publishing Company.

- Dev, S.M. and Rao, N.C., 2010, Agricultural Price Policy, Farm Profitability and Food Security, Economic and Political Weekly, Vol. 45, Nos. 26 & 27, 53, pp. 174-182.
- Rao, V.M., 2001, The Making of Agricultural Price Policy: A Review of CACP Reports, Journal of Indian School of Political Economy, Vol. 13, No. 1, Jan-March, pp. 1-28.

BAE410: Economics of migration (L:3, T:1, P:0)

Course objective:

The aim of the course is to introduce the fundamentals of economics of migration by highlighting the interdependence of economic and migration theories. It also gives an overview of economic analysis of issues associated with migration and relationship between migration and economic development.

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1: Explain the concepts, theories and models of migration and the factors responsible for internal and international migration

CO2: Analyse the impact of migration on both host and destination countries.

CO3: Understand the linkages between the migration and economic problems/issues.

CO4: Evaluate the economic impact of migration in terms of costs and remittances.

Syllabus:

Unit 1: Introduction to migration

Definition and scope of migration, determinants-push and pull factors, typologies – international, internal, in and out migration, sequential, circular, rural-urban migration, models and theories of migration, brain drain vs brain gain.

Unit 2: **International Migration**

Economic theory and international migration, causes of international migration, economic impact on host and destination countries, cost and remittances of migration, forced migration, illegal migration, induced migration

Unit 3: Migration and economic development:

The effect of immigration on wages and employment, migration and inequality, migration and labour issues.

References/Textbooks:

- George J. Borjas, *Economic Theory and International Migration*, International Migration Review, Vol. 23, No. 3, Special Silver Anniversary Issue: International Migration an Assessment for the 90's (1989), pp. 457-485
- Khadria, B. (1999), *The Migration of Knowledge Workers: Second-generation Effects of India's Brain Drain,* Sage Publications: New Delhi. Chapter 2- Migration, Brain drain and the Globalization of Human Resources, pp 32-53
- World Migration Report, 2020, International Organization for Migration (IOM), 2019
- Bansak, Cynthia, Nicole B. Simpson, and Madeline Zavodny, *The economics of immigration.* Routledge, 2015. (BSZ)

Additional Suggested Reading List

- *Leveraging Economic Migration for Development.* A briefing for the World Bank Board, World Bank Group, 2019
- https://www.iom.int/key-migration-terms
- Benjamin Helms, David Leblang, and Philip B.K. Potter, *International Migration and Interstate Conflic*t, Prepared for the 2019 International Political Economy Society, November 16, 2019
- David Lagakos, Samuel Marshall, Ahmed Mushfiq Mobarak, Corey Vernot & Michael E. Waugh, *Migration Costs and Observational Returns to Migration in the Developing World*, April 2020, No: 1265
- International Migration 2019 Report, Department of Economic and Social Affair.Population Division, ST/ESA/SER.A/438

BAE412: Time Series Analysis (L: 3, T: 1, P: 0)

Course Objectives:

This course serves as an introduction to the concepts and techniques of time series analysis in the context of economics. The course aims to provide students with the essential technical skills required to effectively apply time series models utilizing specialized software. By the end of the course, students will acquire the proficiency to employ time series econometrics for analysing various macroeconomic and financial data issues, enabling them to tackle real-world problems with confidence.

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1: Identify and understand the key concepts and techniques used in time series analysis

CO2: List and differentiate between various time series models and their assumptions

CO3: Predict future values and trends of time series data using appropriate forecasting techniques

CO4: Describe and analyse time series data using graphical and statistical tools to detect patterns and trends

Syllabus

Unit 1: Introduction to Time Series Data and Analysis

Stochastic Processes; Correlation and Autocorrelation Functions; Stationarity: Unit-Root Test; Box-Jenkins Methodology, ARIMA Models

Unit 2: Conditional Heteroscedastic Models

Characteristics of Volatility; The Arch Model; The Garch Models: M-Garch, E-Garch and T-Garch

Unit 3: Vector Autoregression Model, Co-Integration and Forecasting

Introduction to VAR Analysis; Causality in Time Series: Granger Causality Test and Toda and Yamamoto Causality Tests; Co-Integration and Error Correction Model; Testing for Cointegration – Engle – Granger Methodology – Johansen Methodology; ARDL Bounds Testing Approach

References/Textbooks

- W. Enders, Applied Econometric Time Series, 4th ed., Willey, 2015
- Hamilton, J.D., Time Series Analysis. Princeton: Princeton University Press
- Patterson, K, "An Introduction to Applied Econometrics a Time Series Approach"
- Hayashi, Fumio, Econometrics. Princeton: Princeton University Press, 2000
- Paul S.P. Cowpertwait and Andrew V. Metcalfe, Introductory Time Series with R, Springer-Verlag, New York, 2009
- Greene, W. (2018): Econometric Analysis, 8th Edition, Pearson

BAE414: Behavioural Economics (L:3, T:1, P:0)

Course Objectives:

This course will introduce the students to the fast-evolving field of behavioural economics. The course aims to explain the principles and methods of behavioural economics while contrasting them with standard economic models. It highlights the importance of cognitive ability, social interaction, moral incentives and emotional responses in explaining human behaviour and economic outcomes. The course includes the applications of behavioural economics in public policy, game theory and finance.

Course Outcomes:

Upon completion of the course, the student would be able to:

CO1: Explain the importance of cognitive ability, social interaction, moral incentives and emotional responses in explaining human behaviour and economic outcomes.

CO2: Examine how behavioral economics applies to consumer choices and market dynamics.

CO3: Describe how psychological factors and human biases influence economic decision-making, challenging traditional economic assumptions

CO4: Apply concepts of behavioural economics in public policy, game theory and finance.

Syllabus

Unit 1: Introduction to Behavioural Economics

Nature of Behavioural economics; methodological approach; origins of behavioural economics; neo-classical and behavioural approaches to studying economics; nudge theory and its applications in public policy

Unit 2: Microeconomic Foundations of Behavioural Economics

Decision-making under risk and uncertainty; reference dependence and loss aversion; intertemporal decision making

Unit 3: Behavioural Game Theory

Nature of behavioural game theory; mixed strategies; bargaining; social preferences: altruism, envy, fairness and justice; intentions, reciprocity and trust; limited strategic thinking

Unit 4: Behavioural Finance

Beliefs, biases and heuristics in financial markets; behavioural aspects of individual investing; behavioural corporate finance

References/Textbooks

- Erik Angner, A Course in behavioural Economics, Palgrave Macmillan 2012
- Richard Thaler and Carl Sunstein, Nudge: Improving Decisions about Health, Wealth and Happiness, Penguin UK 2009
- Behavioral Finance, William Forbes, Wiley, 2009
- Nick Wilkinson and Matthias Hales, An Introduction to Behavioural Economics, 2nd Edition, Palgrave Macmillan 2012.

MGM402: Human Resource Management (L:3, T:1, P:0)

Course Objectives:

The objective of this course is to make students familiar with basic concepts of human resource management and people related issues.

Course Outcomes (COs):

Upon completion of the course, the student would be able to:

CO1: Identify the key differences between job analysis, job evaluation, job design.

CO2: Develop a holistic understanding of HRM functions viz. HR planning, selection, placement, training and development, performance management.

CO3: Acquire adequate understanding of functioning of HR department

Syllabus:

Unit 1: Human Resource Management: Concept and Functions, Role, Status and competencies of HR Manager, HR Policies, Evolution of HRM. Emerging Challenges of Human Resource Management; workforce diversity, empowerment, Downsizing; VRS; role of HRM in strategic management; Human Capital; Green HRM

Unit 2: Acquisition of Human Resource: Job analysis, Human Resource Planning-Quantitative and Qualitative dimensions; Recruitment – Concept and sources; (E-recruitment, recruitment process outsourcing etc.); **Selection** – Concept and process; test and interview; placement induction. Job analysis – job description and job specification; job design: behavioral concerns, ergonomic considerations and flexible work schedules; introduction to employee empowerment, managing protean careers, moonlighting phenomenon etc.

Unit 3: Training and Development: Concept and Importance; Identifying Training and Development Needs; Designing Training Programmes; Role Specific and Competency Based Training; Evaluating Training Effectiveness; Training Process Outsourcing; Management Development; Career Development. Performance appraisal: nature and objectives; Modern Techniques of performance appraisal; potential appraisal and employee counseling; job changes – transfers, promotions and separation. Compensation: concept and policies; job evaluation; methods of wage payments and incentive plans; fringe benefits; performance linked compensation, 360 Degree Appraisal Technique.

References/Textbooks

- G. Dessler. "A Framework for *Human Resource Management"*. Pearson,2013.
- D. A. Decenzo, S. P. Robbins, S. L. Verhulst, "*Human Resource Management*", Wiley India Private Limited, 2015.
- Bohlendar and Snell, "Principles of *Human Resource Management",* Cengage Learning, 2013.

DSC402: Decision Analysis and Techniques (L:4, T:0, P:0)

Course Objectives:

The objective of the course is to discuss the important concepts, applications of different decision-making methods like optimization models and MCDM models that are used in different fields and are one of the most common decision-making methods.

Course Outcomes (COs):

Upon completion of the course, the student would be able to:

CO1: Identify the concepts of multiple-criteria decision making and its applications in real-world problems.
CO2: Develop an integral and systematic view of various concepts and techniques like Linear Programming, Assignment & Transportation Problem.
CO3: Apply theoretical & Practical workings of various techniques like; AHP, TOPSIS for ranking and selection.

Syllabus:

Unit 1: **Introduction to Linear programming Problems (LPP)**

Problem formulation, Solution through graphical and simplex method, Sensitivity Analysis, Applications of LPP in improving the quality of managerial decisions

Unit 2: Special type of LPP

Transportation Problem: Formulation and solution through Vogel's Approximation method & MODI method, applications of transportation problems

Assignment Problems: Formulation and solution through Hungarian Method, Applications of assignment problems

Unit 3: Introduction to Multiple-Criteria decision making (MCDM) techniques

Introduction to structured decision making, categories of MCDM problems, Estimation of weights: Normalization Methods, Rating Methods, Analytic hierarchy process (AHP) for ranking and weighting information using eigen vector method and approximation methods, Solution of AHP through Excel & applications of AHP in business

Unit 4: Distance based MCDM method

Ranking and weighting information using 'Technique for order of preference by similarity to ideal solution' (TOPSIS) method, Solution of TOPSIS through Excel & its applications

References/Textbooks

- Po-Lung Yu (2012) Multiple-Criteria Decision Making: Concepts, Techniques, and Extensions: Springer
- Tzeng, G.-H., & Huang, J.-J. (2011). Multiple attribute decision making: methods and applications. Florida: CRC Press
- Cooper, W. W., Seiford, L. M., & Tone, K. (2007). Data envelopment analysis: a comprehensive text with models, applications, references and DEA-solver software. New York: Springer
- Steuer, R. E. (1986). Multiple criteria optimization-theory, computation, and application. Wiley Series in Probability and Mathematical Statistics-Applied, Wiley