ఆంధ్రప్రదేశ్ కేంద్రీయ విశ్వవిద్యాలయం आंध्रप्रदेश केंद्रीय विश्वविद्यालय

CENTRAL UNIVERSITY OF ANDHRA PRADESH

Ananthapuramu

SCHOOL OF ARTS, HUMANITIES AND SOCIAL SCIENCES
DEPARTMENT OF ECONOMICS

Undergraduate Programme Structure for Four Years
as per the UGC Credit Framework (NEP 2020)

Vidya Dadati Vinayam
(Education gives humility)

B.Sc. (Hons) Economics

"Economics is the science which studies human behavior as a relationship between ends and scarce means which have alternative uses."

- Lionel Robbins (1935)

Programme Structure

(With effect from AY 2024 - 25)

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B.Sc. (Hons) Economics

1. Introduction to the Programme

With the motto "Vidya Dadati Vinayam," the Central University of Andhra Pradesh is endeavoring to prepare its students to be upright and productive citizens by offering a Bachelor of Science (Hons) in Economics as one of its programmes. The primary objective of the programme is shaping the student through a Learning Outcome-based Curriculum Framework (LOCF). The B.Sc. (Hons) Economics programme aims to provide a cutting-edge proficiency in mainstream economics. The main objective of the programme is to foster critical, analytical, skill-based, and creative thinking abilities for decision making and problem-solving. Its aims are not only to explore the full spectrum of economics but also to improve comprehension of social and political issues. The programme also states the attributes that it aims to inculcate during graduation. These attributes encompass values related to wellbeing, emotional stability, critical thinking, social justice, and skills for employability. In short, the programme equips students with sustainable lifelong learning.

In light of the National Education Policy 2020 (NEP), the B.Sc. (Hons) Economics programme is revised as multidisciplinary in nature with an option of multiple entry and exit. The programme integrates different fields like mathematics, statistics, econometrics, finance, business, applied research, model building, environmental studies, and other relevant disciplines with an inbuilt global as well as regional perspective. The programme has given more weight to research projects, case studies, field visits, internships, and seminars that enhance deeper understanding of the real-world applications. Additionally, the curriculum endorses equipping the students with technical knowledge with software packages like advanced techniques in Microsoft Excel, SPSS, R, and Python that help students execute data-based things for precision and scientificity and help them grab the current job market in different fields.

The programme is consistent with global standards in the Economics discipline. It offers training that is comparable with that of the world‘s best universities. The Central University of Andhra Pradesh hopes that the B.Sc. (Hons) Economics programme under NEP2020 with the LOCF approach can help the students attain their future desired endeavors.

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B.Sc. (Hons) Economics

2. Programme Vision

The programme's vision is to become an internationally renowned model for its cutting-edge academic curriculum with a Learning Outcome-based Curriculum Framework (LOCF). It entails in fostering an environment that supports creativity, inclusivity, and research-based learning. The programme aims to create a vibrant learning environment that inspires the students to equip with the essential expertise, skills, and ethical standards required to succeed in a rapidly evolving global environment and eventually contribute to intellectual abilities of the institution, country, and global community.

3. Programme Objectives

The programme is designed to achieve the following specific objectives:

- Provide a comprehensive overview of economic theories, ranging from classical to modern, emphasizing their application and practicality.
- Encourage students to acquire command on economic theory to make predictions and to analyze alternative economic policy options.
- Inculcate the student to be knowledgeable about global and local economic problems and challenges, as well as encourage them to equip with the ability to do empirical analysis and the provision of substitute models and problem-solving potentiality.
- Encourage students to develop their communication in both orally and in writing to confidently present the evidence, arguments, and debates on economic theories, concepts, and ideas in the classroom, seminars and any other platform.
- Train them and build their careers as a leader where they are likely to make a long-lasting contribution to academia, industry, government, and beyond.
- Train them to equip with advanced quantitative and qualitative analysis techniques, develop their research skills, provide methodological training, and create a curiosityon exploration to conduct research.
- Integrate industry and organization in academia and bridge the gap between them through training sessions to foster holistic student development in order to grab the opportunities that align with the needs of the job market.

4. Programme Learning Outcomes

Upon completion of this programme, a student will have the knowledge, skills, and dispositions necessary for success in the economics and business fields and any other relevant fields. The primary learning outcomes that a student can accomplish are:

- Exhibit sophisticated knowledge and comprehension of core concepts, theories, and principles in areas like micro and macroeconomics, development and international economics, Indian economy, public finance, finance and monitory economics, research methodology, and data
- Analyse and formulate policies by applying economic theories and concepts to contemporary social issues.
- Develop the ability to critically evaluate economic theories and models and apply them to solve real-world economic
- Develop expertise in specific areas of economics and data analytics through elective courses, research projects, and practical experience.
- Applying qualitative and quantitative data analysis techniques to resolve challenging economic
- Use advanced computer statistic packages to analyse, estimate models, and interpret economic information at an advanced level.
- Conducting field/case studies by collecting, organizing data, and drawing the conclusions.

5. Pedagogy of the Program

The curriculum consists of teaching, discussions, seminars, and field visits that allow a closer interaction between the students and the teacher as each student gets individual attention. By integrating economic concepts to real-world scenarios, utilizing case studies and business examples, engaging in hands-on activities, and encouraging critical thinking and analysis, students can better grasp the concepts and apply them in practicality. Laboratory components and field-based research projects develop independent thinking and prepare them to carry out research on their own. Learning outcomes are periodically achieved through class tests, home assignments, and quizzes. Students engage in regular interactions with experts from industry, academia, and policy circles and gain valuable insights on economic discourse and practical application. Interactive sessions, internships, and local community participation activities can sensitize them to societal issues and help them in the policymaking decision process.

B.Sc. (Hons) Economics

6. Programme Structure

- The B.Sc. (Hons) Economics programme is based on the UGC Credit Framework (NEP 2020). The programme is designed for four years with the Multiple Entry and Exit System (MESS) and divided into eight semesters with 181 credits.

- **Major and Minor Courses:** The programme consists of two parts: major and minor.
  - **Major:** A major is the student's main specialization. For example, a student who joins the BA (Hons) Economics programme does an Economics Major.
  - **Minor:** A minor is a secondary discipline that the student pursues in addition to their major. It is the student's secondary specialization. A minor enables the student to explore other areas of study and build alternative areas of interest. The student can do a minor in any area designated as a minor. In other words, the student has the option to choose the prescribed number of courses from any other discipline (undergraduate programme) as their minor. For example, a student majoring in economics may choose to minor in management.

Please visit the university website for the various minors offered.

Types of Courses

The B.Sc. (Hons) Economics programme is aligned with the Choice Based Credit System (CBCS) adopted by the Central University of Andhra Pradesh. The following types of courses are offered under CBCS:

- **Core Course (CC):** A core course is a compulsory course. The student does Twenty-Three such courses over the eight semesters of the BSc (Hons) Economics programme.
- **Ability Enhancement Course (AEC)**: The student does four AECs – one in Semester I [Modern Indian Language (other than English) – I (online /offline)]; one in Semester II [Understanding Disabilities]; one in Semester III [Modern Indian Language (other than English) – II (MOOCs/offline)]; and one in Semester IV (Building Mathematical Ability and Financial Literacy).

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- **Interdisciplinary Elective (IDE)**: The student does three introductory-level courses relating to a discipline of their choice in Semesters I, II, and III. These courses are intended to broaden the intellectual experience and form part of liberal arts and science education. These courses are done online (MOOCs*).
- **Skill Enhancement Course (SEC)**: The student does three SECs – one in Semester I [Modern English Grammar and Pronunciation]; one in Semester II [Academic Writing]; and one in Semester III [IT Skills and Artificial Intelligence].
- **Value-Added Course (VAC):** The student does three VACs – one in Semester I [IKS (Indian Knowledge System): MOOCs]; one in Semester II [Ecology and Environment]; and one in Semester IV [Climate Change].
- **Massive Open Online Courses (*MOOCs)**: MOOCs are online learning courses accessed through the internet. The student is encouraged to pursue online courses through the Swayam platform wherever recommended.

(Study Webs of Active Learning for Young Aspiring Minds)
https://swayam.gov.in/

- **Summer Internship (SIP):** A student has to undergo a summer internship during the summer vacation after the completion of IV semesters and submit a report in V semester.
- **Community Service Project (CSP):** A student has to interact with local communities and submit a report based on his/her experiences in the VII semester.
- **Dissertation-I (DS-I):** A student has to prepare Dissertation-I with support from faculties in VI semester.
- **Dissertation-II (DS-II):** A student has to prepare Dissertation-II with support from faculties in VIII semester.

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B.Sc. (Hons) Economics - Semester and Course wise Credits

Semester	MAJOR	MINOR	IDE	AEC	SEC	VAC	SIP	CSP	Dissertation	Lab#	Total Credits
I	BEC101 (4) BEC102 (4) BEC103 (4)	BEC111 (4)	BEC112 (3) MOOC	BEC113 (2) MOOC	BEC114 (3)	BEC115 (2) MOOC				BEC103 (1)	**26**
II	BEC201 (4) BEC202 (4) BEC203 (4)	BEC211 (4)	BEC212 (3) MOOC	BEC213 (2) MOOC	BEC214 (3)	BEC215 (2) MOOC				BEC203 (1)	**26**
III	BEC301 (4) BEC302 (4) BEC303 (4)	BEC311 (4)	BEC312 (3) MOOC	BEC313 (2) MOOC	BEC314 (4)					BEC314 (2)	**25**
IV	BEC401 (4) BEC402 (4) BEC403(4)	BEC411 (4)		BEC412 (4)		BEC 413 (2)				BEC402 (2)	**22**
V	BEC501 (4) BEC502 (4) BEC503 (4) BEC504 (4)	BEC511 (4)					BEC512 (2)			BEC503 (2)	**22**
VI	BEC601 (4) BEC602 (4) BEC603 (4)	BEC611 (4)							BEC612 (4)	BEC602 (2)	**20**
VII	BEC701 (4) BEC702 (4)	BEC711 (4) BEC712 (4) MOOC						BEC713 (4)			**20**
VIII	BEC801 (4) BEC802 (4)								BEC811 (12)		**20**
Total	**92**	**32**	**9**	**10**	**10**	**6**	**2**	**4**	**16**	**10**	**181**
Percentage	**51.00**	**18.00**	**5.00**	**6.00**	**6.00**	**3.00**	**1.00**	**2.00**	**9.00**	**6.00**	**100**

 # Lab: To avoid a double count, lab credits are not added to the total number of credits.

IDE: Inter-disciplinary Electives **AEC:** Ability Enhancement Courses **SEC:** Skill Enhancement Courses
VAC: Value-Added Courses **SIP:** Summer Internship Project **CSP:** Community Service Project

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B.Sc. (Hons) Economics - Programme Structure as per UGC Credit Framework

Sl. No.	Course Code	Title of the Course	Credit Points	Credit Distribution		
				L*	P/S*	T/L*
Semester I						
1	BEC101	CC: Introductory Microeconomics	4	3	1	
2	BEC102	CC: Mathematical Methods for Economics	4	3	1	
3	BEC103	CC: Statistical Methods for Economics	4	3		1
4	BEC111	Minor: Basics of Microeconomics	4	3	1	
5	BEC112	IDE: MOOCs	3	3		
6	BEC113	AEC: Modern Indian Language (other than English) – I (online /offline)	2	2		
7	BEC114	SEC: Modern English Grammar and Pronunciation	3	2	1	
8	BEC115	VAC: Indian Knowledge System (MOOCs)	2	2		
Total			**26**	**21**	**4**	**1**
Semester II						
1	BEC201	CC: Introductory Macroeconomics	4	3	1	
2	BEC202	CC: Mathematical Applications in Economics	4	3	1	
3	BEC203	CC: Applied Statistics	4	3		1
4	BEC211	Minor: Basics of Macroeconomics	4	3	1	
5	BEC212	IDE: MOOCs	3	3		
6	BEC213	AEC: Understanding Disabilities (Online/Offline)	2	2		
7	BEC214	SEC: Academic Writing	3	2		1
8	BEC215	VAC: Ecology and Environment	2	2		
Total			**26**	**21**	**3**	**2**
Semester III						
1	BEC301	CC: Microeconomic Theory	4	3	1	
2	BEC302	CC: Introductory Econometrics	4	3	1	
3	**Elective-I: Any one of the following**		4	3	1	
	BEC303	CC: Public Finance				
		CC: Andhra Pradesh State Finance				
		CC: Public Private Partnership				
4	BEC311	Minor: Principles of Public Finance	4	3	1	
5	BEC312	IDE: MOOCs	3	3		
6	BEC313	AEC: Modern Indian Language (other than English) – II (Online/Offline)	2	2		
7	BEC314	SEC: IT Skills and Artificial Intelligence	2	2		
		Lab: IT Skills and AI	2			2
Total			**25**	**19**	**4**	**2**
Semester IV						
1	BEC401	CC: Macroeconomic Theory	4	3	1	
2	BEC402	CC: R for Economic Data Analysis	2	2		
		Lab: R for Economic Data Analysis	2			2
3	**Elective-II: Any one of the following**		4	3	1	
	BEC403	CC: Applied Econometrics				
		CC: Financial Econometrics				
		CC: Time Series Econometrics				
4	BEC411	Minor: Economics of Social Sectors	4	3	1	
5	BEC412	AEC: Building Mathematical Ability and Financial Literacy	4	3	1	
6	BEC413	VAC: Climate Change (MOOCs)	2	2		
Total			**22**	**16**	**4**	**2**

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B.Sc. (Hons) Economics - Programme Structure as per UGC Credit Framework

Sl. No.	Course Code	Title of the Course	Credit Points	Credit Distribution		
				L*	P/S*	T/L*
Semester V						
1	BEC501	CC: Indian Economic Thought	4	3	1	
2	BEC502	CC: Development Economics	4	3	1	
3	BEC503	CC: Python for Economic Data Analysis	2	2		
		Lab: Python for Economic Data Analysis	2			2
4	**Elective-II: Any one of the following**		4	3	1	
	BEC504	CC: Industrial Economics				
		CC: Game Theory				
		CC: Infrastructure Economics				
5	BEC511	Minor: Indian Economic Development	4	3	1	
6	BEC512	SIP: Summer Internship	2			2
Total			**22**	**14**	**4**	**4**
Semester VI						
1	BEC601	CC: Indian Economy	4	3	1	
2	BEC602	CC: Research Methodology & Data Analysis using SPSS	2	2		
		Lab: SPSS and LaTeX	2			2
3	**Elective-III: Any one of the following**		4	3	1	
	BEC603	CC: Financial Economics				
		CC: Money and Banking				
		CC: Financial Derivatives				
4	BEC611	Minor: Agricultural Finance & Marketing	4	3	1	
5	BEC612	Dissertation I	4			4
Total			**20**	**11**	**3**	**6**
Semester VII						
1	BEC701	CC: Agriculture Economics	4	3	1	
2	BEC702	CC: International Economics	4	3	1	
3	BEC711	Minor: Entrepreneurial Skill Development	4	3	1	
4	BEC712	Minor: Gender Economics (Online/Offline)	4	3	1	
5	BEC713	CSP: Community Service Project	4			4
Total			**20**	**12**	**4**	**4**
Semester VIII						
1	BEC801	CC: Financial Markets	4	3	1	
2	BEC802	CC: Strategic Leadership and Management	4	3	1	
3	BEC811	Dissertation II	12			12
Total			**20**	**6**	**2**	**12**

Note * L: Lecture *P/S: Presentation/Seminar *T/L: Tutorial/Lab
Note: MOOCs are chosen by the student based on the availability of the courses offered on SWAYAM platform.

CC : Core Course (Major)
Minor: Elective Course from other Discipline
IDE: Interdisciplinary Discipline Elective
MOOC: Massive Open Online Course
AEC: Ability Enhancement Course
SEC: Skill Enhancement Course
VAC: Value Added Course

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B.Sc. (Hons) Economics : Credit Distribution

Semester	Total Credits	Cumulative Credit at the end of the Semester
I	26	26
II	26	52
III	25	77
IV	22	99
V	22	121
VI	20	141
VII	20	161
VIII	20	181

Note: Minimum credits requirement to award degree of B.Sc. (Hons.) Economics as per UGC guidelines.

S. No.	Broad Category of Course	Minimum Credit Requirement	
		3 Year UG	**4 Year UG**
1	Major (Core)	60	80
2	Minor Stream	24	32
3	Multidisciplinary	09	9
4	Ability Enhancement Courses (AEC)	08	08
5	Skill Enhancement Courses (SEC)	09	09
6	Value Added Courses common for all UG	06-08	06-08
7	Summer Internship	02-04	02-04
8	Research Project / Dissertation	--	12
	Total	**120**	**160**

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B.Sc. (Hons) Economics

Important Information to Students

1. Programme: B.Sc. (Hons) Economics
2. Eligibility: +2 Science/Arts/Commerce with Mathematics at +2 level (Business mathematics are not applicable)
3. The minimum duration for completion of the programme is 8 semesters (4 academic years), and the maximum duration shall be 16 semesters (8 academic years) or as per amendments made by the regulatory bodies from time to time.
4. A student should attend at least 75% of the classes, seminars, and practicals in each course of study.
5. All theory courses in the programme carry a Continuous Internal Assessment (CIA) component to a maximum of 40 marks and Semester End Examination (SEE) for a maximum of 60 marks. The minimum pass mark for a course is 40%.
6. All lab components carry a Continuous Internal Assessment (CIA) component to a maximum of 60 marks and Semester End Examination (SEE) for a maximum of 40 marks. The minimum pass mark for a course is 40%.
7. A student should pass separately in both CIA and the SEE, i.e., a student should secure 16 (40%) out of 40 marks for theory and 24 (40%) out of 60 marks in the lab components in CIA. A student should secure 24 (40%) out of 60 marks for theory and 16 (40%) out of 40 marks for lab components in the SEE.
8. There are 3 CIA tests for each course per semester, from which the best 2 performances are considered for the purpose of calculating the marks in CIA. The academic unit maintains a record of the continuous assessment.
9. Each CIA contains 15 marks, out of the best 2 tests scores are considered for 30 marks. Out of the remaining 10 marks, 5 marks are awarded for assignments, class presentations and class participation and the remaining 5 marks are awarded for punctuality, and attendance of the student.

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Important Information to Students

Marks for the Attendance will be considered as follows:

S. No	Attendance (%)	Marks
1	95% or more	5
2	90-94%	4
3	85-89%	3
4	80-84%	2
5	75-79%	1

10. A student failing to secure the minimum pass marks in the CIA is not allowed to take the semester end examination of that course. S/he has to redo the course by attending special classes for that course and get the pass percentage in the internal tests to become eligible to take the end semester examination.
11. Semester-end examination shall consist of objective type questions, descriptive type questions, short answer questions and case studies or any other recommended by the Board of Studies (BoS).
12. Students failing a course due to lack of attendance should redo the course.
13. Re-evaluation is applicable only for SEE papers and shall not be entertained for other components such as lab/practical /thesis/ dissertation/ internship etc.
14. An on-campus elective course is offered only if 15 or 50% of the students registered, whichever is higher.

SEMESTER WISE DETAILED SYLLABUS

SEMESTER-I

Course Code : **BEC101** Course Type : **Core** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Introductory Microeconomics**

Course Objectives:
The objectives of this course are to:

- Study consumer choice theory and how individuals make decisions to maximize utility.
- To emphasis on the fundamental economic trade-offs and allocation problems due to scarcity of resources.
- Grasp the basic principles of microeconomics, including supply and demand, cost, and revenue.

Course Learning Outcomes:

- Develop a solid foundation in microeconomic theory,
- Analyze how firms and consumers make decisions in uncertain environments.
- Apply economic reasoning to a variety of issues, and be prepared to engage in advanced economic analysis.

Course Outline:

Unit-I: [12 Hours]

Introduction to Economic Trade-Offs: The Scope and method of Microeconomics, Defining Economics, Microeconomics vs. Macroeconomics, Positive vs. Normative Economics, Understanding the basic principles of Economics. Production Possibility Frontier, Opportunity Cost and scarcity, interdependence and gains from trade.

Unit-II: [18 Hours]

Demand and Supply Analysis: Demand Function, Derivation and Determinants of individual and market demand Schedules, Price and Income Elasticity, Duality and Slutsky Matrix. Supply Schedule, Factors Influencing Supply - Changes in Supply - Supply Elasticity - Determinants of Supply Elasticity - Market Determination of Price and Quantity - Equilibrium Supply and Demand, Elasticity of Demand and Supply.

Unit-III: [15 Hours]

Theory of Consumer Behaviour and Choice: Cardinal utility theory; Law of diminishing marginal utility, derivation of Marshallian demand curve. Ordinal utility theory: Indifference curves and their properties, budget line, consumers' equilibrium. Income - price consumption curve and Engel's curve, Normal Vs. Inferior Goods.

Unit-IV: [15 Hours]

Theory of Production and Cost: Production functions - concepts of total revenue, law of variable proportion, fixed co-efficient production, returns to scale, Iso-quant and its properties, Iso-cost line; Marginal Rate of Technical Substitution - Equilibrium of the producer. Cost of Production - Various concepts of cost, derivationof short-run vs. long-run cost curves, learning Curves, shape of long-run average cost, economies and diseconomies of scale-learning curve.

Suggested Readings:

Mankiw, N.G. *Principles of Economics*, Cengage Learning. 7th Edition, 2015.
Case, Fair and Oster, *Principles of Economics*. Prentice Hall, 11th Edition, 2014.

References:

Lipsey, R.G. and Chrystal, K.A., *Economics*. Oxford University Press, 13th edition.
Joseph E. Stiglitz and Carl E. Walsh, *Economics*. W.W. Norton & Company, Inc., New York, International Student Edition, 4th Edition, 2007.
Gravelle and Rees, *Microeconomics*. Pearson, 2004/ Latest Edition.
Henderson and Quandt, *Microeconomic Theory*, McGraw Hill, (Latest Edition)
Hal R. Varian, *Intermediate Microeconomics: A Modern Approach*, 2014/ LatestEdition.
Anindya Sen, Microeconomics, Theory and Applications, Oxford University Press, Second Edition, 2007.

Course Code : **BEC102** Course Type : **Core** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Mathematical Methods for Economics**

Course Objectives:

The objectives of this course are to:

- Introduce students to a range of mathematical techniques, including calculus, linear algebra, and differential equations.
- Enhance students' proficiency in quantitative analysis, essential for empirical research and policy analysis in economics.
- Be well-equipped to understand, analyze, and contribute to the field of economics through the application of mathematical methods and techniques.

Course Learning Outcomes:

On successful completion of this course the student should be able to:

- Lay a strong foundation for students who wish to pursue advanced studies in economics or related fields.
- Develop skills to interpret and analyze economic data quantitatively, using mathematical and statistical methods.

Course Outline:

Unit-I: [10 Hours]

The Nature of Mathematical Economics: Ingredients of mathematical models. Derivations: Equation of a straight line and its forms: Two point, intercept, point slope and slop intercept, Types of functions, Relationships and functions, Indices & their rules, Functions of more than two independent variables, Logarithms & the rules of logarithms.

Unit-II: [20 Hours]

Linear Models and Matrix Algebra: Theory of matrix multiplication, Laws of matrix operations, Types of matrices: Square, identity, null, idempotent, diagonal, transpose and their properties. Conditions for non singularity of a matrix. Minors and cofactors. Determinant & its properties. Solution of linear equations through Gaussian method, Cramer's rule and Inverse of a matrix method. Properties of inverse of a matrix. Use of matrix approach in market & national income models.

Unit-III: [15 Hours]

Limit, Continuity and Derivatives: Limit, Continuity and Derivatives of a function: Rules of differentiation, Differentiation of a function of one variable, Combinations of rules, Higher order derivatives, Concept of maxima & minima, elasticity and point of inflection

Unit-IV: [15 Hours]

Partial & Total Differentiation: Partial differentiation & its rules, Higher order & cross partial derivatives, Total differential & total derivatives, Implicit functions rule of differentiation, Optimizing cubic functions & their economic application, Comparative static analysis: a linear Partial equilibrium market model, a linear National Income model, Partial elasticities.

Suggested Readings:

Chiang, A.C. and Kevin Wainwright, *Fundamental Methods of Mathematical Economics*, McGraw Hill, 4th Edition, 2004.

References:

Sydsaeter, Knut, Peter Hammond, Arne Strom, and Andre's Carvajal, *Essential Mathematics for Economic Analysis*, Pearson, 5th edition, 2016.

Klein, Erwin, *Mathematical Methods in Theoretical Economics*. Academic Press Simon, Carl P and Lawrence Blume, *Mathematics for Economists*. Viva Books, 2010.

Course Code : **BEC103** Course Type : **Core** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Statistical Methods for Economics**

Course Objectives:

The objectives of this course are to:

- Provide an introduction into elementary concepts of statistics to understand and quantify economic problems.
- Introduce the statistical techniques that can be applied in economics and other social sciences research.
- Help student to equip with presentation of data and understand the probabilistic distribution of data.

Course Learning Outcomes:

By the end of the course, student can be able to:

- Understand different data types, data base issues, and statistical methods for data analysis.
- Understand the basic concepts of probability and to find probabilities of various events.
- Develop the ability to understand the econometrics courses in the forthcoming semesters.

Course Outline:

Unit-I: [12 Hours]

Introduction to Statistics: Definition - Scope of statistics in economics – Data; categories, types, scale of measurements; Construction of frequency distribution - Graphical representation of data - Tabulation/Tabular presentation of data. Introduction to four key moments in statistics - Measures of moments; Univariate, Bivariate and Multivariate data and its analysis and interpretation.

Unit-II: [15 Hours]

Probability and Counting Rules: Sample spaces and probability; Three basic interpretations of probability - Addition rules - Multiplication rules - Conditional probability - Counting rules; Bayes' Theorem.

Unit-III: [18 Hours]

Probability Distributions: Probability Distributions – Discrete Probability Distribution - Binomial, Poisson, Hypergeometric distribution – Continuous Probability Distribution - Normal, Uniform, Exponential distribution, Lognormal distributions; Probability Mass Function; Mathematical Expectations.

Unit-IV: [15 Hours]

Index Numbers: Index numbers - Definition, characteristics, uses and classification - Index numbers construction - Aggregative method-simple aggregative method and weighted aggregative method - Relative method - Simple average of relative method and weighted average of relative method - Value index numbers – Chain index numbers.

Suggested Readings:

Bluman, Allan G., *Elementary Statistics: A Step By Step Approach, Tenth Edition,* McGraw Hill Education, New York, 2018

David R Anderson, at el, *Statistics for Business and Economics*, Cengage Learning India, 13th Edition, 2019. Ken Black, *Business statistics: For Contemporary Decision Making*. John Wiley & Sons, Inc. 6th Edition, 2004.Gupta, S. C., Fundamentals of Statistics, Sultan Chand and Sons, New Delhi, 2020.

References:

Hooda R. P., *Statistics for Business and Economics*. 2nd Edition, Macmillan India Ltd., 2010.

David S. Moore, *The Basic Practice of Statistics*. W.H. Freeman & Company, 2009/Latest.

Mood Alexander, *Introduction to the Theory of Statistics*. McGraw Hill, 2017.

Goerge W Snedecor., *Statistical Methods*. Iowa State University Press, 1989.

Daniel and Terrel, *Business Statistics for Management and Economics*. Hoaghton Mifflin Co., Boston, 7th Edition, 1995.

Gerald Keller, *Statistics for Management and Economics.*11th Edition, Cengage publication, 2017.

Teresa Bradley*, Essential Statistics for Economics, Business and Management*. John Willey Publisher, 2007.

M. H. Degroot and M. J. Schervish, *Probability and Statistics*. Pearson, 4th Edition, 2012.Ross, S, *A First Course in Probability.* 8th Edition, 2009.

Course Code : **BEC111** Course Type : **Minor** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Basics of Microeconomics**

Course Objectives:

The objectives of this course are to:

- Study consumer choice theory and how individuals make decisions to maximize utility.
- To emphasis on the fundamental economic trade-offs and allocation problems due to scarcity of resources.
- Grasp the basic principles of microeconomics, including supply and demand, cost, and revenue.

Course Learning Outcomes:

By the end of this course, students can be able to:

- Develop a solid foundation in microeconomic theory,
- Analyze how firms and consumers make decisions in uncertain environments.
- Apply economic reasoning to a variety of issues, and be prepared to engage in advanced economic analysis.

Course Outline:

Unit-I: [12 Hours]

Introduction to Economic Trade-Offs: The Scope and method of Microeconomics, Definitions of Economics, Microeconomics vs. Macroeconomics, Positive vs. Normative Economics, Understanding the basic principles of Economics.

Unit-II: [18 Hours]

Demand and Supply Analysis: Demand Function, Determinants of individual and market demand, Law of demand - Price and Income Elasticity, Supply- Law of supply- Factors Influencing Supply - Changes in Supply - Equilibrium Supply and Demand.

Unit-III: [15 Hours]

Theory of Consumer Behaviour and Choice: Cardinal utility theory; Law of diminishing marginal utility, Law of Equi marginal utility theory, consumer equilibrium. Income - price consumption curve and Engel's curve, Normal Vs. Inferior Goods.

Unit-IV: [15 Hours]

Theory of Production and Cost: Production functions -law of variable proportion- Returns to scale, Iso-quant and its properties, Iso-cost line; Marginal Rate of Technical Substitution - Equilibrium of the producer - Various concepts of cost, derivationof short-run curves - concepts of total revenue.

Suggested Readings:

Mankiw, N.G. *Principles of Economics*, Cengage Learning. 7th Edition, 2015.

Case, Fair and Oster, *Principles of Economics*. Prentice Hall, 11th Edition, 2014.

References:

Lipsey, R.G. and Chrystal, K.A., *Economics*. Oxford University Press, 13th edition.

Joseph E. Stiglitz and Carl E. Walsh, *Economics*. W.W. Norton & Company, Inc., New York, International Student Edition, 4th Edition, 2007.

Gravelle and Rees, *Microeconomics*. Pearson, 2004/ Latest Edition.

Henderson and Quandt, *Microeconomic Theory*, McGraw Hill, (Latest Edition)

Hal R. Varian, *Intermediate Microeconomics: A Modern Approach*, 2014/ Latest Edition.

Anindya Sen, Microeconomics, Theory and Applications, Oxford University Press, Second Edition, 2007.

Course Code : **BEC1I4** Course Type : **SEC** No. of Credits : **3.00** No. of Hours : **45**	Course Title **Modern English Grammar and Pronunciation**

Course Objectives:
The objectives of this course are to:

- To equip the student with the skills to use words appropriately
- To help the student develop insights into the structure of the English language
- To familiarize the student with the pronunciation of English

Course Learning Outcomes:
By the end of the course, the student

- Will have learned to use contextually appropriate words.
- Will have acquired basic knowledge of modern English grammar and usage.
- Will have become familiar with English speech sounds and the basic aspects of word accent and intonation.

Course Design:

Unit-I: [11 Hours]

Some Major Concepts and Categories; Verbs and Auxiliaries; The Semantics of the Verb Phrase.

Unit- II [11 Hours]

Word Formation; Derivation; Conversion; Compounding; Blending; Analogy; Abbreviation (Clipping, Acronyms, Initialisms); Phrasal Verbs; Collocation; Using the Dictionary: The Five S Approach; Nouns and Determiners; The Simple Sentence.

Unit- III [11 Hours]

The Speech Mechanism; English Vowels; English Consonants.

Unit- IV [12 Hours]

Word Accent; Phonological Environment: Weak Forms, Assimilation, Elision; Intonation

Suggested Readings

Alan Cruttenden: Gimson‘s Pronunciation of English
John Wells: Longman Pronunciation Dictionary
M.J. Müller, N. Rutter, and B. Bryan Gick: Phonology for Communication Disorders
L. Colantoni, J. Steele, and P.R. Escudero Neyra: Second Language Speech: Theory and Practice

References

Cambridge International Dictionary of Phrasal Verbs. Cambridge: CUP, 1997.
Greenbaum, Sidney, and Randolph Quirk. A Student‘s Grammar of the English Language. Harlow: Longman, 1990. (Chapters 2,3,4,5, and 10)
Jones, Daniel. English Pronouncing Dictionary (Latest Edition)
Leech, Geoffrey, and Jan Svartvik. A Communicative Grammar of English. 3rd Ed., Harlow: Pearson, 2002.
Sethi, J., and P.V. Dhamija. A Course in Phonetics and Spoken English. 2nd Ed., India: Prentice-Hall, 1999.
Swan, Michael. Practical English Usage. 3rd Ed., Oxford: OUP, 2005.
Yule, George. The Study of Language. 4th Ed., Cambridge: Cambridge University Press, 2010. (Chapter 5)

SEMESTER-II

Course Code : **BEC201** Course Type : **Core** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Introductory Macroeconomics**

Course Objectives:
The objectives of this course are to:

- Grasp the fundamental concepts of macroeconomics, including national income, output, money, inflation and balance of payment.
- Understand the roles of various macroeconomic models, such as the Classical, and Keynesian models, to understand macroeconomic behavior.

Course Learning Outcomes:
On completion of this course the student can able to:

- Analyze their role in implementing economic policy and maintaining economic stability.
- Examine the impact of macroeconomic policies on Indian economy, social and human development
- Prepared to engage in informed discussions on national and global economic issues.

Course Outline:

Unit-I: [15 Hours]

Introduction to Macroeconomics and National Income Accounting: Basic issues studied in macroeconomics; measurement of gross domestic product; income, expenditure, and the circular flow of economy; real versus nominal GDP; price indices; national income accounting.

Unit-II: [15 Hours]

Money and Inflation: Functions of money; quantity theory of money; determination of money supply and demand; credit creation; tools of monetary policy. Inflation and its social costs; consequences of inflation; factors affecting demand-pull and cost-push inflation; costs of inflation; remedies to control inflation.

Unit-III: [15 Hours]

Open Economy and Balance of Payments: Determination of equilibrium income; Foreign Trade Multiplier; Fixed and Flexible Exchange Rates; Effect of devaluation; Balance of Payment accounts; Balance of Trade; Recent trends.

Unit-IV: [15 Hours]

The Closed Economy in the Short Run: Classical and Keynesian systems; simple Keynesian model of income determination; IS-LM model; fiscal and monetary multipliers.

Suggested Readings:

N. Gregory Mankiw, Macroeconomics, 9th edition. Cengage learning, 2021.

References:

Richard T. Froyen, Macroeconomics. Pearson Education, 2013.

Dornbusch, Fischer and Startz, Macroeconomics, McGraw Hill, 2018.

Errol D_Souza, Macroeconomics, Pearson Education, 2009.

Paul R. Krugman, Maurice Obstfeld and Marc Melitz, International Economics, Pearson Education, 2018.

Course Code : **BEC202** Course Type : **Core** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Mathematical Applications in Economics**

Course Objectives:

The objectives of this course are to:

- Introduce students to a range of mathematical techniques, including calculus, integration, linear programming and input-output analysis.
- Enhance students' proficiency in quantitative analysis, essential for empirical research and policy analysis in economics.
- Teach optimization techniques, such as constrained optimization and dynamic optimization, and their relevance in economic decision-making.

Course Learning Outcomes:

On completion of this course the student can able to:

- Understand, analyze, and contribute to the field of economics through the application of mathematical methods and techniques.
- Develop skills to interpret and analyze economic data quantitatively, using mathematical and statistical methods.
- Use mathematical models to analyze the impact of economic policies and understand their broader implications.

Course Outline:

Unit-I: [20 Hours]

Constrained and Unconstrained Optimization: Free and constrained optimization, Extrema of a function of two variables: graphical analysis, Lagrange method. Utility maximization & Cost minimization, Homogenous Production function, Cobb Douglas Production function, Jaccobian determinants, CES Production Function, Translof Function.

Unit-II: [15 Hours]

Integration, Difference Equations: Concept; Rules and techniques of integration of functions of one variable; Indefinite and definite integrals; Integration with respect to several variables; Applications to consumer‘s surplus and producer‘s surplus.

Unit-III: [10 Hours]

Input-Output Analysis: Input-output model, its structure and its derivation. The use of input output model in Economics.

Unit-IV: [15 Hours]

Linear Programming: Ingredients of linear Programming, Graphical approach, Concept of primal & dual, Duality theorems, Solving of Primal via dual.

Suggested Readings:

Chiang, C., Fundamental Methods of Mathematical Economics, McGraw Hills, (Latest Edition).

Reading:

Varian, Hal R, *Intermediate Microeconomics with Calculus: A Modern Approach*. W.W. Norton & Co., 2014.

Chiang and Wein Wright, *Fundamental Methods of Mathematical Economics.* McGraw Hill Education, 2017.

G. Strang, *Introduction to Linear Algebra*, Wellesley-Cambridge Press. Wellesley. MA, 4th Edition, 2009.

Hoy, Michael, et al. *Mathematics for Economics*. The MIT Press ,2011. JSTOR, www.jstor.org/stable/j.ctt5hhc2f. Accessed 5 July 2021.

Course Code : **BEC203** Course Type : **Core** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Applied Statistics**

Course objectives

The main objectives of this course are to:

- Understand the specific statistical concepts for use in economic applications, such as sampling, inferential, hypothesis, and interrelationships between variables.
- Lay a foundation for the econometrics courses included in this programme.

Course Learning Outcomes:

By the end of the course, students can be able to:

- Comprehend a greater depth of several statistical concepts, such as estimate population parameters, inferential statistics, hypothesis construction and testing, correlation and regression analysis, and time series analysis.
- Recognize the problems with sampling and significance and discuss them critically.

Course Outline:

Unit-I: [15 Hours]

Methods of Sampling and Estimation: Populations and sample - Parameter and statistic - Principles of Sampling - Probability sampling and non- Probability sampling methods - Simple random sampling with and without replacement – Use of random number tables - Use and utility of various sampling methods. Point Estimators, Interval estimation- Z, T, Chi Square, F Tests - Drawing inferences from a sample; standard error.

Unit-II: [15 Hours]

Hypothesis Testing: Principle of Hypothesis Testing; Type I and II errors; Level of Significant; Simple, composite and joint hypotheses, Null and Alternative hypothesis - Testing means, proportions, variance – small and large samples; Power of a test - Test for Goodness of Fit, Chi-Square and F Distributions.

Unit-III: [18 Hours]

Correlation and Regression: Introduction to correlation and different types of analysis in correlation; Introduction to regression and regression versus correlation; Simple linear regression - Method of ordinary least square, derivation of slope and intercept; testing for significance - Multiple regression - Distributed lag models.

Unit-IV: [12 Hours]

Time Series Analysis: Introduction to time series analysis; Components of Time Series; Determination and Elimination of Trend; Linear and Non–Linear (Second Degree Parabola and Exponential Curves); Measurement of Seasonality, Cyclical and Random Components; Models of Time Series and Forecasting Methods.

Suggested Readings:

Bluman, Allan G., *Elementary Statistics: A Step By Step Approach, Tenth Edition,* McGraw Hill Education, New York, 2018.
David R Anderson, at el, *Statistics for Business and Economics*, Cengage Learning India, 13th Edition, 2019. Ken Black, *Business statistics: For Contemporary Decision Making*. John Wiley & Sons, Inc. 6th Edition, 2004.Gupta, S. C., Fundamentals of Statistics, Sultan Chand and Sons, New Delhi, 2020.

References:

Jay L. Devore, *Probability and Statistics for Engineers*, Cengage Learning, 2010.Mood Alexander, *Introduction to the Theory of Statistics*, McGraw Hill, 2017.
Goerge W Snedecor, *Statistical Methods*.,Iowa State University Press, 1989/Latest. Hooda R.P., ‒*Statistics for Business and Economics*‖, 2nd ed, Macmillan India Ltd., 2010.
David S. Moore., *The Basic Practice of Statistics*. W.H. Freeman & Company, 2013. https://silo.pub/the-basic-practice-of-statistics-j-6712514.html

Course Code : **BEC211** Course Type : **Minor** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Basics of Macroeconomics**

Course Objectives:

- Grasp the fundamental concepts of macroeconomics, including national income, output, money, inflation and balance of payment.
- Understand the roles of various macroeconomic models, such as the Classical, and Keynesian models, to understand macroeconomic behavior.

Course Learning Outcomes:

On completion of this course the student can able to:

- Analyze their role in implementing economic policy and maintaining economic stability.
- Examine the impact of macroeconomic policies on Indian economy, social and human development
- Prepared to engage in informed discussions on national and global economic issues.

Course Outline:

Unit-I: [15 Hours]

Introduction to Macroeconomic Models and National Income Accounting: Basic concepts of macroeconomics; Circular flow of income in the four sector, Concepts of National Income- GNP, NNP, NI at Factor Cost and Market Prices, PI, DPI PS and personal outlay, Methods of Measuring National Income, Difficulties in Calculations of NI, National Income and welfare. Real vs Nominal GDP.

Unit-II: [15 Hours]

Money and Inflation: History of money- Money Supply and its Determinants and measurements; Money Multiplier, credit creation; methods of credit control; monetary policy. Inflation and its social costs; consequences of inflation; factors affecting demand-pull and cost-push inflation; costs of inflation; remedies to control inflation.

Unit-III: [15 Hours]

Trade Cycles: Meanings, Types, Phases of Trade Cycles. Internal trade – International trade – Balance of Trade - Balance of Payment accounts; Components and Recent trends.

Unit-IV: [15 Hours]

Fiscal policy and macroeconomic stabilization: Nature and scope of fiscal policy – Concept and definition of fiscal stabilization - Instrument of fiscal policy: Government debt – Fiscal stimulus and stabilization – Fiscal deficit and stabilization.

Suggested Readings:

Dornbusch, Fischer and Startz, Macroeconomics, McGraw Hill, 11th Edition, 2010.

N. Gregory Mankiw. Macroeconomics, Worth Publishers, 7th Edition, 2010

Readings:

Olivier Blanchard, Macroeconomics, Pearson Education, Inc., 5th Edition, 2009.

Richard T. Froyen, Macroeconomics, Pearson Education Asia, 2nd Edition, 2005.

Andrew B. Abel and Ben S. Bernanke, Macroeconomics, Pearson Education, Inc., 7th Edition, 2011.

Errol D_Souza, Macroeconomics, Pearson Education, 2009.

Paul R.Krugman, Maurice Obstfeld and Marc Melitz, International Economics, Pearson Education Asia, 9th Edition 2012.

Course Code : **BEC213** Course Type : **AEC** No. of Credits : **2.00** No. of Hours : **30**	Course Title **Understanding Disabilities**

Course Objectives:

- To introduce the concept of disability, causes and measures to handle disabilities.
- To disseminate the spirit of Acts and policies in dealing with disabilities.

Course Learning Outcomes:

- Appreciate and accept the uniqueness of persons with disabilities and recognize their significance insociety.
- Demonstrate the ability to empathize with fellow students and others with disability through knowledgeabout the related Acts.

Course Outline:

Unit-I: [15 Hours]

Introduction

- Disabilities: Definitions and Classifications
- Types and Causes of Disabilities: Physical, Sensory (visual, hearing), Cognitive and Intellectual, Developmental (autism, Down syndrome) and Mental Health.
- Impact of Disabilities: Individual experiences, Family dynamics and Care giving, Social isolation andStigma, Employment and Economic disparities.

Unit-II: [15 Hours]

Accessibility and Inclusion

- Accessibility in the Built Environment and Assistive Technologies
- Disability Rights and the UN Convention on the Rights of Persons with Disabilities (CRPD)
- The Rights of Persons with Disabilities (RPwD) Act, 2016.
- National Education Policy 2020 (NEP 2020)

Suggested Readings

Dell Orto, A. E., & Power, P. W. The psychological & social impact of illness and disability. Springer., 2007

Hilton, A., & Ringlaben, R. Best and Promising Practices in Developmental Disabilities. Austin, TX: PRO-ED, 1998.

National Education Policy, Government of India, Ministry of Education. 2020.

Panda, K. C. Education of exceptional children. Vikas Publishing House, New Delhi, 1999.

Schwean, V. L., & Saklofske, D. H. (Eds.), Handbook of psychosocial characteristics of exceptional children. Springer Science & Business Media, 1999.

The Rights of Persons with Disabilities (RPwD) Act, 2016.

References

Ghai, A. Disability in South Asia: knowledge and experience. Sage, 2018.

Hegarty, S., & Alur, M. (Eds.), Education & children with special needs: From segregation to inclusion. Sage,2002.

Madhavan, T., Kalyan, M., Naidu, S., Peshawaria, R., & Narayan, J. Mental retardation: a manual for Psychologists. Secunderabad: National Institute for the Mentally Handicapped, 1989.

World Health Organization. Disability. https://www.who.int/health-topics/disability

Course Code : **BEC214** Course Type : **SEC** No. of Credits : **3.00** No. of Hours : **45**	Course Title **Academic Writing**

Course Objectives:

- To help the student build their argument in their academic writing
- To enable the student to acquire the ability to use both descriptive and critical rhetorical functions intheir academic writing
- To enhance the ability of the student to legitimately borrow ideas from other scholars with appropriate discipline-specific citation practices and articulate their own voice while reviewing others' works

Course Learning Outcomes:

By the end of the course the student

- Will have acquired the ability to use both descriptive and critical rhetorical functions in their academic writing.
- Will have enhanced their ability to integrate material from a range of sources.
- Will be able to develop their argument in their academic writing.

Course Design:

Unit-I: [15 Hours]

Rhetorical Functions in Academic Writing: Introduction; Defining terms and ideas; Describing; Comparingand contrasting; Classifying; Explaining causes and effects.

Moving from Description to Analysis: Description vs Analysis; Analysis vs Synthesis; Process of analyzing information**;** Strategies of organizing information**;** Developing Arguments.

Unit-II: [15 Hours]

Developing Paragraphs in Academic Writing: Elements of an academic paragraph: MEAL; Main idea (Lead in); Evidence; Analysis; Lead out; Functions of topic stage; Functions of body stage; Functions of conclusion.

Unit-III: [15 Hours]

Information Structure: Theme – Rheme/Given – New/Topic – Comment; Elements that constitute themes; Information packaging patterns; Linear theme; Zigzag theme; Multiple themes.

Source Use: Evaluating different sources; Source use strategies; Paraphrasing; Summarising; Direct quoting; Functions of citation; Use of reporting verbs; Finding one's voice.

Suggested Readings:

Gillett, A., Angela, H., and Mary Martala. *Inside Track: Successful Academic Writing.* Essex: Pearson Education Limited, 2009.

Murray and Geraldine Hughes. *Writing up your University Assignments and Research Projects: A Practical Handbook.* New York: Open University Press, 2008.

References:

Swales, J. M., and C. B. Feak. *Academic Writing for Graduate Students: A Course for Non-native Speakersof English.* Ann Arbor: University of Michigan Press, 1994.

Yakhontova, T. *English Academic Writing for Students and Researchers*. Lviv: PAIS, 2003.Wallwork. *English for Academic Research: Writing Exercises*. New York: Springer, 2013.

Course Code : **BEC215** Course Type : **VAC** No. of Credits : **2.00** No. of Hours : **30**	Course Title **Environment and Ecology**

Course Objectives:

- To introduce the multidisciplinary nature of environment and its constituents.
- To sensitize on environment related issues and its conservation

Course Learning Outcomes:

- Gain insights into various environmental initiatives and related legislations.
- Disseminate about the significance of environment management and conservation.

Course Outline:

Unit-I: [15 Hours]

Ecology and Ecosystem: Environment; Biosphere; Ecology; Ecosystem; Biodiversity: Hot Spots, Causes and Effects of Loss of Biodiversity. Biodiversity Conservation and Species-Based Conservation Programmes (Project Tiger, Project Elephant, Project Snow Leopard and others).

Unit-II: [15 Hours]

Pollution, Degradation and Conservation: Meaning and Types of Pollution (Land, Air and Water Pollution); Land Degradation, Desertification and Sustainable Land Management (SLM); Environmental Governance: Institutional bodies, Legislations and Conventions (National and International).

Suggested Readings:

Bhargava.; Olson, Keith; Rajaram, V.; Tiede, Lynn (2019). Ecology and environment. Chapman and Hall/CRC.
Anubha Kaushik (2010). Basics of environment and ecology. New Age International Ltd.

References:

Vesilind, P. A., Peirce, J. J., & Weiner, R. F. (2013). Environmental pollution and control. Elsevier.
Alberts, R. C., Retief, F. P., Cilliers, D. P., Roos, C., & Hauptfleisch, M. (2021). Environmental impact assessment (EIA) effectiveness in protected areas. Impact Assessment and Project Appraisal, 39(4), 290– 303.

SEMESTER-III

Course Code : **BEC301** Course Type : **Core** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Microeconomic Theory**

Course Objectives:
The objectives of this course are to:

- Study consumer choice theory and how individuals make decisions to maximize utility.
- Grasp the basic principles of microeconomics, including supply and demand, cost, revenue, market equilibrium, and price determination.
- Explore how resources are allocated in an economy and the resulting welfare implications.

Course Learning Outcomes:
By the end of this course, students can be able to

- Have a solid foundation in microeconomic theory,
- Analyze how firms and consumers make decisions in uncertain environments.
- Apply economic reasoning to a variety of issues, and be prepared to engage in advanced economic analysis.

Course Outline:

Unit-I: [15 Hours]

Consumer Theory: Consumer preference and choice; utility; budget constraint, demand; Slutsky equation; Substitution effect and Income effect of a price change, Perfect substitutes and complements, Bandwagon, Snob,& Veblen effect, revealed preference- Consumer‘s Behaviour under Conditions of Uncertainty and Risk - Theory of Marginal Preference - Lancaster‘s Theory, Consumer surplus.

Unit-II: [15 Hours]

(A) Theory of Production and Costs Analysis: Production with one vs. two variables., Cobb-Douglas and CES production function, Profit maximization and cost minimization, Short-run and Long- run cost function and cost curves - Economics of scale and economics of scope - Learning curves.

Unit-III: [20 Hours]

(A) Price and Output Determination under Different Markets: Market Structure - Perfect competition, Price determination in market, short-run supply curve and short-run and long – run equilibrium of the firm and the industry, Wage determination in a perfect competitive labour Market. **(B)** Demand, total and marginal revenue, short-run and long-run equilibrium of price and output discrimination and other aspects in Monopoly, Imperfect competition and Oligopoly. Kinked demand curve, collusion, cartel in Oligopoly.

Unit-IV: [10 Hours]

General Equilibrium, Efficiency and Welfare Analysis: Equilibrium –Efficiency in production and Efficiency in Exchange and Pareto Optimality, Walrasian equilibrium, Edgeworth Box, Market failure and Externalities, Coase Theorem and Pigovian taxes, Markets with asymmetric information.

Suggested Readings:

Hal R. Varian, *Intermediate Microeconomics with calculus*, First Edition

A. Koutsoyiannis, *Modern Micro Economics*. Pagrave Publishers, Indian Edition,2003.

Anindya Sen, *Microeconomics Theory and Applications*, Oxford University Press, New Delhi. Second Edition

References:

C. Snyder and W. Nicholson, *Fundamentals of Microeconomics*, Cengage Learning (India), 2010.

B. Douglas Bernheim and Michael D. Whinston, *Microeconomics*. Tata McGraw-Hill (India), 2009.David M. Kreps, *A Course in Microeconomic Theory*, 1990

David M. Kreps, *Microeconomic Foundations I Choice and Competitive Markets* 2013

Hal R. Varian, *Intermediate Microeconomics*: A Modern Approach, W.W. Nortonand Company (India), 8th Edition, 2010.

Hal R. Varian, *Microeconomic Analysis*, 3rd Edition.

Pindyck, Robert and Rubinfeld, Daniel. _*Microeconomics* ‘. 9th Edition, Pearson,2018.

Walter Nicholson and Christopher Snyder, *Microeconomic Theory Basic Principles and Extensions*, 12th Edition.

Course Code : **BEC302** Course Type : **Core** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Introductory Econometrics**

Course Objective:
The main objectives of this course are to:

- Gain a foundational understanding of econometric theories and methods.
- Master the techniques of simple and multiple linear regression analysis.

Course Learning Outcomes:
After end of the course, students can be able to:

- Do hypothesis testing and generate inference of the study.
- Use econometrics tool to analyse data and generate Develop understanding of estimation and diagnostic testing of simple and multiple regression models.
- Learn about consequences, detection and remedies when assumptions are violated.

Course Outline:

Unit-I: [10 Hours]

Nature and Scope of Econometrics: Definition, Scope, and Methodology of econometrics; Nature and sources of data for econometric analysis; Specification of an econometric model.

Unit-II: [20 Hours]

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.

Unit-III: [20 Hours]

Multiple Linear Regression Model: Estimation of parameters; properties of OLS estimators; goodness of fit-R^2 and adjusted R^2; partial regression coefficients; testing hypotheses - individual and joint significance of regression.

Unit-IV: [10 Hours]

Violations of Classical Assumptions: Consequences, Detection and Remedies: Multicollinearity; Heteroscedasticity; Autocorrelation.

Suggested Readings:
Damodar Gujarathi, *Basic Econometrics*.5th Edition, Tata McGraw-Hills.
L Woolridge, *Introductory Econometrics*: *A Modern Approach*. 5th Edition, Cengage Learning.

References:
J Johnston, *Econometric Methods*. 4th Edition, McGraw-Hill Education.
W. H Greene, *Econometric Analysis*. 8th Edition, Pearson Education, 2018.
Jay L. Devore, *Probability and Statistics for Engineers*. 9th Edition, Cengage Learning. Jay L. Devore, *Probability and Statistics for Engineers,* Cengage Learning, 2010/Latest. John E. Freund, *Mathematical Statistics*, Prentice Hall, 1992.
D. N. Gujarati and D.C. Porter, *Essentials of Econometrics,* McGraw Hill, 4th Edition, International Edition, 2009.
Christopher Dougherty, *Introduction to Econometrics*, OUP, 3rd Edition, Indian Edition, 2007.
Jan Kmenta, *Elements of Econometrics*, Indian Reprint, Khosla Publishing House, 2nd Edition, 2008.

Course Code : **BEC303** Course Type : **Elective** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Public Finance**

Course Objectives:

The main objectives of this course are to:

- Learn the theoretical and practical aspects of government intervention in the economy.
- Gain knowledge of different sources of public revenue, including taxation, borrowing, and other government income.
- Explore the various types of government expenditures and their purposes.

Course Learning Outcomes:

At the end of the course the students can be able to:

- Analyze and evaluate public finance policies,
- Contribute to policy discussions and decision-making in the field of public finance.

Course Outline:

Unit-I: [15 Hours]

Meaning and Scope of Public Finance: Introduction, objectives and scopes of Public Finance, Private Finance vs. Public Finance, Public Goods vs. Private Goods, Externalities and Market Failure, the Scope of Government Activity, and the Concept of a Mixed Economy.

Unit-II: [15 Hours]

Principles of Taxation: Tax Revenue vis-à-vis Non-tax Revenue, Classification and division of Tax Burden, Impact and Incidence of Taxes, Effects of Taxation, Characteristics of a Good Tax System, Major Trends in Tax Revenue of the Central and the State Government in India.

Unit-III: [15 Hours]

Public Expenditure and Public Debt: Meaning, Classification and Principle of Public Expenditure, Canon and Effects of Public Expenditure, Trends in Public Expenditure, Causes of Growth of Public Expenditure in India. Meaning of Public Debt, Public Debt vs. Private Debt, Why Public Debt? Sources and types of Public Borrowing, Effects of Public Debts, Methods of debt redemption and growth of India's Public Debt.

Unit-IV: [15 Hours]

The Public Budget: The Kinds of Budgets, Economic and Functional Classification of Budget, Classification of State Budgets, Different Concepts of Budget Deficits and Zero-Base Budgeting and Recent state and central budgets.

Suggested Readings:

R.A. Musgrave and P.B. Musgrave, *Public Finance in Theory & Practice,* McGrawHill Publications, 5th Edition, 2018.

H. Rosen, T. Gayer: *Public Finance*, 9th ed., McGraw-Hill/Irwin, 2009.

H. L. Bhatia: *Public Finance*, Vikas Publishing House, 29th edition, 2018.

References:

M. Maria John Kennedy: *Public Finance,* PHL Learning Private Limited, 2012.

J. Hindriks, G. Myles: *Intermediate Public Economics*, MIT Press, 2006.

Joseph E. Stiglitz, *Economics of the Public Sector,* W.W. Norton & Company, 3rd Edition, 2000.

John Cullis and Philip Jones, *Public Finance and Public Choice*, Oxford UniversityPress, 1st edition, 1998.

Y.V. Reddy and G.R. Reddy: *Indian Fiscal Federalism*, Oxford University Press,India, 2019.Mahesh Purohit, *Value Added Tax: Experiences of India and Other Countries,* 2007.

M. Govinda Rao, *Changing Contours of Federal Fiscal Arrangements in India, AmareshBagchi (ed.),Readings in Public Finance*, Oxford University Press, 2005.

M. Govinda Rao, 2011, Goods and Services Tax: A Gorilla, Chimpanzee or a Genius like Primates?,*Economicand Political Weekly*, February 12-18.

Course Code : **BEC303** Course Type : **Elective** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Andhra Pradesh State Finance**

Course Objectives:
The main objectives of this course are to:

- Gain a comprehensive understanding of the fiscal structure and financial management of the state of Andhra Pradesh.
- Study the state's revenue sources, expenditure patterns, and fiscal policies.
- Learn about the budgeting process in Andhra Pradesh, including formulation, execution, and monitoring.

Course Learning Outcomes:
After the successful completion of the course, the student will be able to:

- Have a thorough understanding of the fiscal dynamics of Andhra Pradesh,
- Analyze and evaluate state finance policies, and be equipped to contribute to policy discussions and decision-making in the field of state finance.

Course Outline:

Unit-I: [15 Hours]

Introduction to Public Finance: Economic Systems – Need for Government Intervention –Definition and Scope of Public Finance – Public and Private Finance – Positive and Normative approaches to Public Finance – Maximum Social Advantage.

Unit-II: [15 Hours]

Andhra Pradesh Economy: The basic characteristics of Andhra Pradesh economy after bifurcation in 2014 – Impact of bifurcation on the endowment of natural resources and state revenue – new challenges to industry and commerce - the new initiatives to develop infrastructure – Power and Transport - Information Technology and e-governance – Urbanization and smart cities – Skill development and employment –Social welfare programmes.

Unit-III: [15 Hours]

Government budgeting in Andhra Pradesh: Highlights and Analysis of the current year budget – State finance commission and local finance in Andhra Pradesh. Budget constraints Central assistance and issues of conflict after bifurcation of the state management of deficits.

Unit-IV: [15 Hours]

Andhra Pradesh: Five Year Plans of Andhra Pradesh – Aims, Objectives, Targets and Achievements – Sources of State Revenue – Trends in Public Expenditure and Public Debt of Andhra Pradesh.

Suggested Readings:

R. S. Rao et al. Fifty Years of Andhra Pradesh (1956-2006), Centre for Documentation, Research and Communications, Hyderabad, 2007.
Socio – Economics Survey 2007-08 Government of A.P (Planning Department)
Bhargava R.N. The theory and practice of union finance in India, Chaitanya Publications, Allahabad, 1971.Bhatia H.L. Public Finance, Vikas Publishing House Pvt., Ltd. 2007.

Reference:

Chellaiah R.J, Fiscal Policy in underdeveloped Countries with special reference to India, George Allen, London, 1971
Dwivedi P., (Ed) Readings in Indian Public Finance, Chanakya Publications, New Delhi.
Mathew, T, 1981, Tax Policy, some aspects of Theory and Policy, Chanakya Publications, New Delhi.
Raja, J Challaiah, Essays in Fiscal and Financial sectors reforms in India, Oxford University Press, 1996.
S.Mahendra, Dev Inclusive Growth of Andhra Pradesh.
Sudipto Mundle (Ed), 1997, Public finance, Policy issues for India, Oxford University Press.

Course Code : **BEC303** Course Type : **Elective** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Public Private Partnership**

Course Objectives:
The main objectives of this course are to:

- To understand the role of Public Private Partnership and shared-value partnerships to play as a tool for policy makers.
- To gain knowledge for the best practices in public-private partnerships and shared-value partnerships.

Course Learning Outcomes:

- Understand the main sources of funds for public infrastructure and the means to deliver traditional and innovative infrastructure project.
- Understand the various types of PPP in addition to exploring the strategic decisions which motivate the public and private officials to participate in such arrangements.

Course Outline:

Unit-I: [15 Hours]

Introduction to PPP: Introduction to PPP; Rationale, Characteristics and Models in PPP; Key success factors and pitfalls in PPP projects; examples of how to do PPPs', Addresses key aspects in PPP project identification and preparation - due diligences, service delivery; transaction advisory; Importance of communications and its strategy; Successful case studies

Unit-II: [15 Hours]

Financial Analysis: Appropriate project structuring and financial viability analysis and value for money conceptual frameworks; Concepts influencing financial analysis including demand, risk and cost explored; Financial analysis techniques on the impact and influence framing and structuring of a PPP model.

Unit-III: [15 Hours]

Tendering and Contracting: Different approaches to bidding, a typical two-stage bidding sequence, main features of bid process management, and of the model RfQ, RfP documents, stakeholder obligations andcondition precedents as per Concession Agreement, and relevant case examples.

Unit-IV: [15 Hours]

Implementation and Monitoring: Critical elements of contract management including service delivery, contract administration and relationship management and the integration of these elements into a formalized contract management plan, and case examples.

Suggested Readings:

Delmon, Jeffrey. *Public-Private Partnership Projects in Infrastructure,* 2nd Edition. CUP, 2017.

IMF and WB. *Public-Private Partnerships Fiscal Risk Assessment Model User Guide*,. Washington, IMF. 2016.

Nishizawa, Toshiro. *"Changes in Development Finance in Asia: Trends, Challenges, and Policy Implications."* Asian Economic Policy Review. Volume 6, Issue 2 (December). 2011.

Reference:

Khankarli, Ghassan.The Politics of Public-Public Partnerships: The Case for Toll Roads. PhD Dissertation, University of Texas at Dallas. In Proquest Dissertations and Theses. 2009. http://proquest.umi.com/pqdweb?did=1952853591&sid=5&Fmt=2&clientId=70548&RQT=309

Goldsmith et al. Governing by Network: The new Shape of the Public Sector, The Brookings Institution. 2004.

Rohr, John A. Public service, ethics, and constitutional practice. Lawrence, KS: University Press of Kansas. 1998.

Nishizawa, Toshiro. *"Infrastructure Investment and Finance in Asia."* Public Policy Review, Policy Research Institute, Ministry of Finance, Japan, Vol. 14, No.5 pp. 925-953, 2018.

Schiffler, Manuel. *Water, Politics and Money: A Reality Check on Privatization*. New York: Springer, 2015.

Verougstraete et al. *Mobilizing Private Funding: the Case of the National Highways of India."* PPP Case Study, UN ESCAP. 2014.

Course Code : **BEC311** Course Type : **Minor** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Principles of Public Finance**

Course Objectives:
The main objectives of this course are to:

- Learn the theoretical and practical aspects of government intervention in the economy.
- Gain knowledge of different sources of public revenue, including taxation, borrowing, and other government income.
- Explore the various types of government expenditures and their purposes.

Course Learning Outcomes:
At the end of the course the students can be able to:

- Analyze and evaluate public finance policies,
- Contribute to policy discussions and decision-making in the field of public finance.

Course Outline:

Unit-I: [15 Hours]

Meaning and Scope of Public Finance: Introduction to Public Finance, Objectives and Scopes of Public Finance, Distinction between Private and Public Finance, Public Goods versus Private Goods, Externalities and Market Failure, the Scope of Government Activity and the Concept of a Mixed Economy.

Unit-II: [15 Hours]

Principles of Taxation: Tax Revenue and Non-tax Revenue, Classification of Taxes, Division of Tax Burden, Impact and Incidence of Taxes, Effects of Taxation, Characteristics of a Good Tax System, Major Trends in Tax Revenue of the Central and the State Government in India.

Unit-III: [15 Hours]

Public Expenditure: Meaning, Classification and Principle of Public Expenditure, Canon and Effects of Public Expenditure, Trends in Public Expenditure and Causes of Growth of Public Expenditure in India. The Kinds of Budgets, Economic and Functional Classification of Budget, Classification of State Budgets, Different Concepts of Budget Deficits and Zero-Base Budgeting and Recent state and central budgets.

Unit-IV: [15 Hours]

Public Debt: Meaning of Public Debt, Public Vis-à-vis Private Debt, Why Public Debt? Sources of Public Borrowing, Effects of Public Debts, Methods of debt redemption and growth of India's Public Debt.

Suggested Readings:

R.A. Musgrave and P.B. Musgrave, *Public Finance in Theory & Practice,* McGrawHill Publications, 5th edition, 2018.
H. Rosen, T. Gayer: *Public Finance*, 9th ed., McGraw-Hill/Irwin, 2009.
H. L. Bhatia: *Public Finance*, Vikas Publishing House, 29th edition, 2018.

References:

M. Maria John Kennedy: *Public Finance,* PHL Learning Private Limited, 2012.
J. Hindriks, G. Myles: *Intermediate Public Economics*, MIT Press, 2006.
Joseph E. Stiglitz, *Economics of the Public Sector,* W.W. Norton & Company, 3rd Edition, 2000.
Y.V. Reddy and G.R. Reddy: *Indian Fiscal Federalism*, Oxford University Press,India, 2019.Mahesh Purohit, *Value Added Tax: Experiences of India and Other Countries,* 2007.
M. Govinda Rao, *Changing Contours of Federal Fiscal Arrangements in India,AmareshBagchi (ed.),* OUP, 2005.
Paul Samuelson, Diagrammatic Exposition of a theory of Public Expenditure, *RES,* Vol. 37. 1955.
Rangarajan and D.K. Srivastava, Fiscal Deficit and Government Debt: Implications for Growth and Stabilizati*on", Economic and Political Weekly,* July 2-8. 2005.

Course Code : **BEC314** Course Type : **SEC** No. of Credits : **4.00** No. of Hours : **L 30 T/L 60**	Course Title **IT Skills and Artificial Intelligence**

Course Objectives:
The main objectives of this course are to:

- To understand and explain the fundamental concepts and applications of artificial intelligence.
- To apply problem-solving and critical thinking skills effectively

Course Learning Outcomes:
After completion of the course student will be able to

- Demonstrate proficiency in basic computer skills for everyday use.
- Create and format documents using word processing software.
- Solve practical problems in various domains.

Course Outline:

Unit-I: [20 Hours]

(A) Knowing Computer: Components of Computer System- Input / Output Devices- CPU- Memory Devices; Concepts of Hardware and Software; Applications of Computer; Concept of Computing- Data and Information – Number Conversions **(B) Understanding Word Processing:** Opening and Closing of Documents; Text Creation and Manipulation; Formatting of Text- Spell Check, Language Setting and Thesaurus; Printing of Word Document; Table Handling.

Unit-II: [25 Hours]

Artificial Intelligence: AI Problems; Foundation of AI and History of AI Intelligent Agents; Agents and Environments.

Unit-III: [25 Hours]

Searching Strategies: Uniformed Search Strategies; Heuristic Search Algorithms; Problem Reduction; Game Playing- Problem in Game Playing; Alpha-Beta Pruning-Evaluation Functions.

Unit-IV: [20 Hours]

Expert Systems: Structure & Problem Areas; Success Factors; Types of Expert Systems.

Suggested Readings:

Reema Thereja , ―Fundamentals of Computers‖, Oxford University Press, 2nd Edition 2019
S. Russell and P. Norvig, ―Artificial Intelligence: A Modern Approach, ‖ Prentice Hall, 4th Edition 2022.
M. Tim Jones, ―Artificial Intelligence: A Systems Approach (Computer Science)" Jones and Bartlett Publishers, Inc.; 1st Edition, 2008.

References:

Rajaraman, ―Fundamentals of Computers‖, PHI Learning ,2014
E. Balaguru Swamy, ―Fundamentals of Computers‖, McGraw Hill Education, 2009
Lavika Goel, ―Artificial Intelligence: Concept and Applications",Willy ,2021
Nils J. Nilsson, ―The Quest for Artificial Intelligence‖, Cambridge University Press,2009.

SEMESTER-IV

Course Code : **BEC401** Course Type : **Core** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Macroeconomic Theory**

Course Objectives:

- Grasp the fundamental concepts of macroeconomics, including national income, output, money, inflation and balance of payment.
- Understand the roles of various macroeconomic models, such as the Classical, and Keynesian models, to understand macroeconomic behavior.

Course Learning Outcomes:

On completion of this course the student can able to:

- Analyze their role in implementing economic policy and maintaining economic stability.
- Examine the impact of macroeconomic policies on Indian economy, social and human development
- Prepared to engage in informed discussions on national and global economic issues.

Course Outline:

Unit-I: [15 Hours]

Macroeconomic Thoughts: Classical; Keynesians; New-Classical and New-Keynesians. Derivation of aggregate demand and aggregate and supply curves; Interaction of aggregate demand and supply; Effective Demand. Keynesian Multiplier - Concepts, Relation between Multiplier, MPC and MPS, Comparative Static and Dynamic Process; Working of Multiplier in UDC's.; Acceleration Principle and Concept of Super Multiplier.

Unit-II: [15 Hours]

Open Economy Models: Short-run open economy models; Mundell-Fleming model; exchange rate determination; purchasing power parity; asset market approach; Dornbusch's overshooting model; monetary approach to balance of payments; international financial markets.

Unit-III: [15 Hours]

Consumption Functions: Consumption Function, Technical Attributes of Consumption, Keynesian Psychological Law of Consumption and its Implications. Income - Consumption Relationship: Absolute and Relative Income Hypothesis and Permanent Income Hypothesis.

Unit-IV: [15 Hours]

Fiscal and Monetary Policy: Active or passive; monetary policy objectives and targets; rules versus discretion: time consistency; the government budget constraint; government debt and Ricardian equivalence. Meaning, Types, Phases and Theories of Trade Cycles.

Suggested Readings:

Dornbusch, Fischer and Startz, *Macroeconomics*, McGraw Hill, 11th Edition, 2010.
N. Gregory Mankiw. *Macroeconomics*, Worth Publishers, 7th Edition, 2010.

References:

Felderer-Homburg, *Macroeconomics and New Macroeconomics*, Springer-Verlag,2nd Edition, 1987.
Richard Froyen, *Macroeconomics*, Pearson Education Asia, 2nd Edition, 2005.
Olivier Blanchard, *Macroeconomics*, Pearson Education, Inc., 5th Edition, 2009.
Andrew B. Abel and Ben S.Bernanke, *Macroeconomics*, Pearson Education, Inc.,7th Edition, 2011.
Errol. D_Souza, *Macroeconomics*, Pearson Education, 2009.
Paul R. Krugman, Maurice Obstfeld and Marc Melitz, *International Economics*, Pearson Education Asia, 9th Edition, 2012.

Course Code : **BEC402** Core/ Elective : **Core** No. of Credits : **4.00** No. of Hours : **L 30 T/L 60**	Course Title **R for Economic Data Analysis**

Course objectives

The main objectives of this course are to:

- Comprehend the fundamental concepts of R programming and its relevance in economic analysis.
- Apply R programming skills to manage, clean, and analyze various types of economic data.
- Analyze data using descriptive and inferential statistical methods, and visualize findings effectively using R.
- Evaluate econometric models and time series data to draw meaningful conclusions in economic contexts.
- Develop R scripts to perform data manipulation, statistical analysis, and econometric modeling tasks independently.

Course Learning Outcomes:

At the end of this course, students can be able to:

- Proficiently manage and manipulate data in R, including importing data, utilizing relevant packages, and developing custom functions.
- Apply foundational R programming concepts to address practical challenges in economic analysis.
- Perform advanced data analysis, including statistical inferences and time series forecasting, to derive meaningful insights.

Course Outline:

Unit-I: [15 Hours]

Introduction to R programming: Overview of R programming language - Need and applications - Significance in Economics. **Installing and using R and RStudio:** Installing R and RStudio - Understanding RStudio interface - Understanding basic syntax - Installing and loading packages

Unit-II: [25 Hours]

Variable Types, Objects and Operators: Numeric, Integers, Characters, Dates - Vector, Matrix, Array, Lists, Data Frames; Factors Operators - Assignment, Relational, Arithmetic, and Logical. **Basic Functions:** Math functions, Statistical functions, Number rounding functions, String functions**.**

Unit-III: [25 Hours]

Data interfaces and Basic Data Analysis in R: Data Interfaces; Data cleaning and reshaping; Summary and inferential statistics; Data visualization. **Flow Control**: If, If/else, Nested If/else, Switch - For loop - While loop - Break, next, repeat.

Unit-IV: [25 Hours]

Econometric Modeling in R: Correlation and covariance; Linear Regression, Multiple regression, Logistic Regression. **Time Series and Forecasting:** Decomposing trends, seasonality, cyclical behavior, and forecasting.

Suggested Ridings:

Jared P. Lander*, R for Everyone: Advanced Analytics and Graphics*, Pearson Education; 2nd Edition, 15 April 2018.
Bharti Motwani, Data analytics with R, (1st Edition), Wiley, 2019

References:

Michael J Crawley, The R Book, Wiley, 2nd Edition, 2018
Gareth James et. al., An Introduction to Statistical Learning: with Applications in R, Springer Texts in Statistics, Springer, 7th Edition, 2017.
Grant V Farnsworth, Econometrics in R – e Book
https://cran.r-project.org/doc/contrib/Farnsworth-EconometricsInR.pdf https://www.tutorialspoint.com/r/

Course Code : **BEC403** Core/ Elective : **Elective** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Applied Econometrics**

Course objectives

The main objectives of this course are to:

- Gain a solid foundation in the basic principles and concepts of econometrics.
- Learn to build and estimate econometric models using real-world data.
- Apply econometric methods to answer empirical research questions in various fields such as economics, finance, and social sciences.

Course Learning Outcomes:

- Gain proficiency in conducting hypothesis tests and making statistical inferences using econometric models.
- Confidently apply econometric methods to real-world data, conduct rigorous empirical research, and contribute to policy analysis and decision-making processes using econometric techniques.

Course Outline:

Unit-I: [15 Hours]

Methodology of Econometric Research – Stages; Model Specification and Estimation; The Classical Linear Regression Model (CLRM): Ordinary Least Square Method – Simple & Multiple Regression Models – Properties, Assumptions, Hypothesis Testing; Functional Forms; Estimation Procedure; Illustrations.

Unit-II: [15 Hours]

Violating the Assumption of CLRM: Multicollinearity, Heteroscadasticity, and Autocorrelation – Causes and Consequences; Detection; Illustrations.

Unit-III: [15 Hours]

Dummy Variable Analysis; Limited Dependent Variable Regression Models – Linear Probability Model (LPM), Logit, Probit, and Tobit Models: Approach, Estimation, Interpretation; Illustrations.

Unit-IV: [15 Hours]

Time Series Models: ARIMA Models; Box-Jenkins Methodology; ARCH–GARCH Models – Estimation Procedure; Illustrations.

Suggested Readings:

Asteriou, Dimitrios, and Stephen G. Hall. *Applied Econometrics.* 2nd. New York: Palgrave Macmillan, 2011.
Studenmund, A.H. *Using Econometrics: A Practical Guide.* 7th. England: Pearson Education Limited, 2017.
Wooldridge, Jeffrey M. *Introductory Econometrics: A Modern Approach.* 5th. CENAGE Learning, 2013

References:

Damodar Gujarati, *Econometrics by Example*. Palgrave Macmillan, 2014.
A. Koutsoyiannis, *Theory of Econometrics*. Second Edition, Palgrave Publishers Ltd, (Latest).
Wooldridge, J. M., *Introductory Econometrics: An Introductory Approach*. South-Western, Cengage Learning, 5th Ed, 2013
Studenmund A. H., *Using Econometrics: A practical Guide*. Pearson Education, 7th Ed, 2017.Stock, J. H. and Watson, M. W., *Introduction to Econometrics*. Pearson, 3rd Ed, 2015.
Brooks, C., *Introductory Econometrics for Finance*. Cambridge University press, 4th Ed, 2019 Baum, C. E., *An Introduction to Modern Econometrics Using Stata*. Stata Press, 2006.

Course Code **: BEC403** Core/ Elective **: Elective** No. of Credits **: 4.00** No. of Hours **: 60**	Course Title **Financial Econometrics**

Course Objectives:
The main objectives of this course are to:

- Understand the fundamental concepts and techniques in financial econometrics.
- Apply econometric methods to financial data.
- Develop skills to model and forecast financial time series.
- Analyze financial markets and assess risk using econometric tools.

Course Learning Outcomes:

- Identify and describe the characteristics of time series data.
- Get firsthand experience on econometric theories applicable to handle time series data.

Course outline:

Unit-I: [15 Hours]

Introduction to Financial Econometrics: Overview of financial markets and instruments; Time Series Data; Components; Measurement of trend, seasonality and cycles; Dickey-Fuller and augmented Dickey-Fuller tests.

Unit-II: [15 Hours]

Univariate Time Series Models-I: linear time series analysis, autocorrelation function and partial auto-correlation function; auto-regressive (AR) models; moving average (MA) models;

Unit-III: [15 Hours]

Univariate Time Series Models-II: Box-Jenkins (BJ) ARMA and ARIMA models, identification, estimation and forecasting with ARIMA models; economic applications.

Unit-IV: [15 Hours]

Multivariate Time Series Analysis: Vector Autoregressive (VAR) models, advantages and problems, estimation and forecasting; Granger causality test.

Suggested Readings:

Campbell, J. Y., Lo, A. W., & MacKinlay, A. C. The Econometrics of Financial Markets. PUP, 1997.Hamilton, James D. *Time Series Analysis.* New Jersey: Princeton University Press, 1994.

Reference

Kirchgässner, Gebhard, Jürgen Wolters, and Uwe Hassler. *Introduction to Modern Time Series Analysis.* Verlag Berlin Heidelberg: Springer, 2013.

Neusser, Klaus. *Time Series Econometrics.* Switzerland: Springer International Publishing, 2016.

Course Code : **BEC403** Course Type : **Elective** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Time Series Econometrics**

Course Objectives:
The main objectives of this course are to:

- Understand the fundamental concepts and terminology of time series econometrics.
- Ensure students have a solid grasp of probability theory, statistical inference, and hypothesis testing.
- Teach students how to build and specify appropriate time series models for different types of data.

Course Learning Outcomes

- Demonstrate a comprehensive understanding of the properties and characteristics of time series data. They can differentiate between various types of time series data and identify their unique features.
- Specify and estimate appropriate time series models such as AR, MA, ARMA, and ARIMA models.

Course outline:

Unit-I: [15 Hours]

Classical time series analysis I: utility of time series analysis, components of time series data, measurement of trend, seasonality and cycles; moving averages and smoothing techniques to time series analysis; classical time Series decomposition models.

Unit-II: [15 Hours]

Classical time series analysis II: additive and multiplicative models; forecasting using smoothing techniques and time series decomposition methods; economic applications.

Unit-III: [15 Hours]

Tools of modern time series analysis: Stochastic and stationary process, tests of stationary; trend vis-à-vis difference stationery process, Dickey-Fuller and augmented Dickey-Fuller tests; spurious regression and co-integration of time series; Engle-Granger test.

Unit-IV: [15 Hours]

Univariate time series analysis and forecasting: linear time series analysis, autocorrelation function and partial auto-correlation function; auto-regressive (AR) models; moving average (MA) models; Box-Jenkins (BJ) ARMA and ARIMA models

Suggested Reading:

Hamilton, James D. *Time Series Analysis.* New Jersey: Princeton University Press, 1994.

Kirchgässner, Gebhard, Jürgen Wolters, and Uwe Hassler. *Introduction to Modern Time Series Analysis.* Verlag Berlin Heidelberg: Springer, 2013.

Neusser, Klaus. *Time Series Econometrics.* Switzerland: Springer International Publishing, 2016.

Reference:

D.N.Gujarati and Sangeetha: Basic Econometrics, Tata McGraw-Hill.

Chris Brooks: Introductory Econometrics for Finance, Cambridge University Press.

T.M.J.A. Cooray: Applied Time Series – Analysis and Forecasting, Narosa Publications.

Course Code : **BEC411** Course Type : **Minor** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Economics of Social Sectors**

Course Objective:

The main objectives of this course are to:

- Develop an understanding of planning, financing and cost of health and education.
- Understand link between health, educational system and economic development.
- Understand health and educational problems in the context of economic concepts and theories.
- Examine market failure and role of government intervention.

Course Learning Outcomes:

At the end of this course, the students will be able to:

- Develop an understanding of economics of education & health care systems.
- Apply theoretical issues of health care models & health care markets, role of government.
- Analyse role of economic systems in provisioning of education and health care.
- Evaluate cost & benefit of provisioning of education using economic efficiency and equity.

Course Outline:

Unit-I: [15 Hours]

Issues of Social Sector: Health Insurance: Goals of Economic Systems: Efficiency and Equity, Cost-benefit Analysis; Production, Cost, and Technology of Health Care; Health Insurance, Organization of Health Insurance Markets, Adverse Selection within Health Insurance: Asymmetric Information and Agency.

Unit-II: [15 Hours]

Economics of Health Care & Role of Government: Healthcare Payment Models, Health Workforce, Hospital Markets and Monopoly Power. Role of Government, Market Failures and Economic Theory of Regulation: Government Intervention in Health Care Markets; Government-Provided Health Insurance, Social Insurance; Healthcare Reforms.

Unit-III: [15 Hours]

Concepts and Cost-Benefit Analysis in Education: Economics of Education; Financing, Education as industry, consumption, individual, social and national investment; Spill-over & inter-generational effects of education. Cost-benefitanalysis. Private marginal and benefit cost ratio; Rates of return on investment in education; Cost Effectiveness Analysis.

Unit-IV: [15 Hours]

Pricing and Financing of Education: Pricing of education; Problem of capitation fees. Sources of finance for education: private, public, fees, donations; Endowments and grants, Grant-in- aid principles and practices; Government‘s role infinancing education at different levels with special reference to higher education.

Suggested Reading:

Mark Blaug, Introduction to Economics of Education, Penguin London

H E Klarman, Economics of Health, Colombia University Press New York, 1965.

Reference:

Education for Development, Oxford University Press.

William, Jack, *Principles of Health Economics for Developing Countries*. WB Institute Development Studies, 1999.

World Development Report, Investing in Health. The World Bank, 1993. Bhattacharya, J., Hyde, T., Tu, P, *Health economics*, Palgrave Macmillan, 2014.

Course Code : **BEC412** Course Type : **AEC** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Building Mathematical Ability and Financial Literacy**

Course Objective:
The main objectives of this course are to:

- To familiarize with fundamental mathematical concepts including set theory, permutations andcombinations.
- To understand the logical reasoning for efficient problem-solving, analysis of propositions and conditional statements.

Learning Outcomes:
Upon completion of the course, students should be able to:

- Analyzing financial instruments like stocks, shares, loans, insurance and income tax liabilities.
- Ability to compute measures of central tendency, dispersion, correlation and regression.

Course Outline:

Unit-I: [15 Hours]

Mathematics: Basic set theory - Permutations and combinations - Mathematical logic: Introduction - proposition and truth values - logical connectives, tautology and contradiction - logical equivalences - converse, inverse and Contrapositive of a conditional statement.

Unit-II: [15 Hours]

Commercial Mathematics: Cost price - selling price - profit and loss - simple interest - compound interest (reducing balance and flat rate of interest) - stocks and shares. Housing loan - insurance - simple equated monthly installments (EMI) calculation - Income tax: simple calculation of individual tax liability.

Unit-III: [15 Hours]

Statistics: Sources of data: primary and secondary - types of data, graphical representation of data - Population, sample, variable - parameter. Statistic, simple random sampling - use of random number tables
- Measures of central tendency: arithmetic mean, median and mode; measures of dispersion: range - variance - standard deviation and coefficient of variation - Bivariate data: scatter plot, Pearson's correlation coefficient, simple line regression.

Unit-IV: [15 Hours]

Financial Literacy: Money Market: Money and its functions –The concepts and definitions of money- Measurements of money supply –Advantages of money. Indian Financial System and Institutions: Banking and non-Banking financial institutions, Scheduled and Non-scheduled Banks- Commercial Banks, recent innovations in Banking, Merging of Indian Banks, CIBIL, role and functions of Reserve Bank of India. Capital Markets: primary market, secondary market, role and functions of SEBI.

Suggested Reading

Medhi, J. (2006). *Statistical Methods: An Introductory Text*. Wiley Eastern Ltd.
Building Mathematical Ability, Foundation Course, University of Delhi, S. Chand Publications.
Lewis, M.K. and p. d. (2000) Monetary Economics. Oxford University press, New York.

References

Rangarajan, C. (1999). *Indian Economy: Essays in Money and Finance*.
Brahmaiah, B., & Subbarao, P. (1998). *Financial Futures and Options*. Himalaya Publishing House.

Course Code **: BEC413** Course Type **: VAC** No. of Credits **: 2.00** No. of Hours **: 30**	Course Title **Climate Change**

Course Objective:
The main objectives of this course are to:

- To understand the causes and impacts of climate change.
- To orient on climate change management and best practices in achieving sustainable development atlocal, regional and global level.

Learning Outcomes:

- Sensitivity towards climate change and its adverse effects.
- Appreciate the efforts of world community towards climate change management.

Course Outline:

Unit-I: [15 Hours]

Introduction

- Climate Change: Causes and Impacts.
- Green House Gases.
- Global Warming.
- Ecological and Carbon Footprint.

Unit-II: [15 Hours]

Climate Change Management And Environment

- Climate Change: Summits, Conferences and Organizations.
- Environment Schemes and Environmental Mission in India.
- Environmental Impact Assessment (EIA).
- Sustainable Development and Best Practices.

Suggested Readings:

Wei-Yin Chen, Toshio Suzuki, Maximilian Lackner (eds.) Handbook of climate change mitigation andadaptation. Springer International Publishing, 2017.

References:

East-West Centre. Global Climate Change: Causes and Indicators. In Climate Change: in the Commonwealth ofthe Northern Mariana Islands (pp. 11–13). East-West Centre, 2021.

Gillespie, A. I. Basics. In Climate Change, Ozone Depletion and Air Pollution (pp. 1-17). Brill Nijhoff., 2006.

SEMESTER-V

Course Code : **BEC501** Course Type : **Core** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Indian Economic Thought**

Course Objectives:
The main objectives of this course are to:

- Understand the historical evolution of economic thought in India from ancient times to the present.
- Study the contributions of key Indian thinkers and their impact on economic theory and practice.
- Study how Indian economic thinkers have addressed issues of justice, equity, and human welfare.

Course Learning Outcome:
After this, the students would be able to:

- Able to acquire knowledge about the various Economic thinkers of India since Pre-British Period.
- Foster analytical skills to understand the development and diversity of Indian economic thought, its historical and contemporary relevance, and its impact on policy-making and economic development in India.

Course Outline:

Unit-I: [15 Hours]

Structure of the Indian Economy during British Period: Indian Economy in the Pre-British Period; The Structure and Organization of Villages and Towns; Industries and Handicrafts; Colonialism; Economic Consequences of British Rule; Progressive Ruralization; The Land System and Agriculture; Industrial Transition; Colonial Exploitation and Impacts on underdevelopment; impact of State Policies on economic development.

Unit-II: [15 Hours]

Economic Thoughts during Colonial Rule: Kautilay‘s economics – Arthasashtra; modern Indian economic thought: Dada Bhoy Naoroji (drain theory), Ranade, Gokhle, Mahatma Gandhi (Khadi and cottage industries), evaluation of Gandhian model, Romesh Chandra Dutt: Causes of Poverty - Remedies.

Unit-III: [15 Hours]

Economic Thought since Independence: Sir. M Visvessvaraya- Planning - Industrialization - Education - Banks - Irrigation - Rural Development, P.C. Mahalanobis Model, C.N. Vakil: Fiscal Policy of India, New Constitution - Economic Consequences of Divided India - Economic Planning - Devaluation of Indian Rupee, P.R. Brahmananda: Wage-Goods Model, A.K. Sen: Poverty and other major contributions.

Unit-VI: [15 Hours]

Economic Thought in Modern India: K.T. Shah: Indian Finance - Trade, Tariffs and Transport - Municipal Government and Municipal Finance - Federal Finance, Radhakamal Mukerjee: Balanced Development ofIndustries - Regional Economics, Gyan Chand: Financial System - Local Finance - Economic Development - Population Problem. Economic Thought with a Socialist Approach.

Suggested Readings:

Basu Kaushik, Of Peoples and Places, Oxford University Press, Delhi, 1995.
Bhatia H L, History of Economic Thought, Vikas Publishing House Pvt Ltd, Ghaziabad, U P. 1980.

Reference:

Bhatia H L, History of Economic Thought, Vikas Publishing House, Delhi.Blaug, M, Economic Theory in Retrospect, Vikas Publishing House, Delhi
Datta Bhabatosh, Indian Economic Thought, Tata McGraw-Hill Pub. Ltd, New Delhi. 1978.
L N Rangarajan, Kautilya: The Arthasastra, Rearranged, translated and introduced (edt); Penguine, New Delhi. 1992.
Lakshmi Subramanian, History of India 1707-1857, Orient Blackswan, Chapter 4, 2010.
Lokanathan V, A History of Economic Thought, S. Chand and Company Limited, New Delhi, 2004.
Madan G R. Economic Thinking in India, S Chand and Company Ltd, New Delhi, 2004.

Course Code **: BEC502** Course Type **: Core** No. of Credits **: 4.00** No. of Hours **: 60**	Course Title **Development Economics**

Course Objective:
The main objectives of this course are to:

- Grasp fundamental concepts and measures of economic development.
- Analyze demographic trends and their impact on development challenges.
- Evaluate various classical and modern theories of economic development.
- Apply economic growth models and concepts of technical progress to development contexts.
- Synthesize insights from diverse theories and data to address real-world development issues.

Course Learning Outcomes:
Upon completion of the course, students can able to:

- Have a comprehensive understanding of the key concepts, theories, and policies in development economics
- Apply this knowledge to analyze and address real-world development issues.

Course Outline:

Unit-I: [15 Hours]

Introduction to Development Economics and measurements: Concepts and approaches of development economics; Economic growth vs. economic development; Developing World – Definition – Characteristics- Measures - Human Development - Poverty - Inequality; Obstacles of Economic Development; SDGs.

Unit-II: [15 Hours]

Demography and Development: Demographic concepts; Birth and death rates, age structure, fertility, and mortality; Demographic transitions; Gender bias and unequal treatment; Connections between income, mortality, fertility choices and human capital accumulation; Migration.

Unit-III: [15 Hours]

Theories of Economic Development: Adam Smith, Ricardo, Marx, Schumpeter, Rostow, Balanced & Unbalanced Growth, Big Push Approach.

Unit-IV: [15 Hours]

Economic Growth and Technical Progress: Harrod-Domar, Solow, Robinson, Kaldor Growth models, Disembodied & embodied and endogenous growth models.

Suggested Readings:
Debraj Ray, *Development Economics*. OUP, 2009.
Michael P. Todaro and Stephen C. Smith, *Economic Development*. Pearson Publications, 2015. Jhingan M. L., *The Economics of Development and Planning*. Vrinda Publications (P) Ltd.2012.

References:
Partha Dasgupta, *Economics, A Very Short Introduction*. OUP, 2007.
Abhijit Banerjee, Roland Benabou and Dilip Mookerjee, *Understanding Poverty*. OUP, 2006. Kaushik Basu, *The Oxford Companion to Economics in India*. OUP, 2007.
Amartya Sen, *Development as Freedom*. OUP, 2000.
Daron Acemoglu and James Robinson, *Economic Origins of Dictatorship and Democracy*, CUP. 2006.
Robert Putnam, *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton University Press, 1994
Subrata Ghatak, *Introduction to Development Economics*. Routledge, London and New York, 2005.

Course Code : **BEC503** Course Type : **Core** No. of Credits : **4.00** No. of Hours : **L 30 T/L60**	Course Title **Python for Economics Data Analysis**

Course Objective:
The main objectives of this course are to:

- Recognize the structures used in these programs, and explain how they work.
- To be familiar with a number of Python libraries for graphing, math, and for basic data analysis, and incorporate the use of these libraries in Python programs.

Course Learning Outcomes:
Upon completion of the course, students should be able to:

- Write simple Python programs.
- Understand data types, conditionals, loops, functions, and classes in Python.
- Perform data visualization and statistical analysis to gain insights from the data and draw relevant conclusions.

Course Outline:

Unit-I: [15 Hours]

Introduction to Python: Why python? basics of python syntax; Data types: numeric types (int, float)**,** strings**,** Booleans**;** Variables and operators: variable assignment**,** arithmetic operators**,** comparison operators**,** logical operators.

Unit-II: [25 Hours]

Introduction to Data structure – Functions and Analytics with Python: Built-in functions and modules; Data structures: lists, tuples, sets**,** dictionaries; Conditional statements; Loops; Loop control statements (break, continue). Packages in python (NumPy, Pandas)**;** Loading and handling data using Pandas**;** Data cleaning and pre-processing techniques**;** Descriptive and exploratory data analysis.

Unit-III: [25 Hours]

Data Visualization: Importance of visualization in data analysis**;** Matplotlib basics: line plots, scatter plots, customizing plots**;** Seaborn for Statistical Visualization: bar plots, histogram, box plots**,** styling and theming plots.

Unit-IV: [25 Hours]

Introduction to Modelling in Python: Hypothesis Testing: significance level, p-values, confidence intervals; Statistical Tests: T-tests, chi-square tests, ANOVA, Non-parametric tests; Simple and Multiple Linear Regression: model formulation, parameter estimation, model evaluation.

Suggested Readings:
McKinney, W. *Python for data analysis: Data wrangling with Pandas, NumPy, and IPython.*, O'Reilly Media, Inc., 2012.
Swaroop, C. H. *A Byte of Python. Python Tutorial*, 2003.

References:
Anderson Sweeney Williams, *Statistics for Business and Economics*. Cengage Learning, 2011.
David W. Hosmer, Stanley Lemeshow, *Applied Logistic Regression* (Wiley Series in probability and statistics).–Wiley-Interscience Publication‖, 2000.
Jiawei Han and MichelineKamber, *Data Mining: Concepts and Techniques*, 2006.
Sarah Stewart, *Python Programming - Python Programming for Beginners*, Platinum Press LLC, 2019.

Course Code : **BEC504** Course Type : **Elective** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Industrial Economics**

Course Objective:
The main objectives of this course are to:

- Provide students an insight into the basic concepts & analytical tools of economics related to firm/industry/organization.
- To understanding of the markets, industrial environment, policies and problems of industrial growth and development.

Course Learning Outcomes:
Upon completion of the course, students can be able to:

- Gain an understanding in certain core concepts and theories of Industrial Economics.
- Analyze the performance of the Indian Industrial Economy against the backdrop of contemporary development.

Course Outline:

Unit-I: [15 Hours]

Introduction: Meaning, Scope and Importance of Industrial Economics; Concepts of Plant, Firm and Industry-Market, Market Structure, and Market Power - Market Conduct and Market Performance; Role, problems and future of public sector industries; Industrial Combinations- causes, mergers and amalgamations, industrial monopoly-control of monopolies.

Unit-II: [15 Hours]

Growth of Firm: Meaning and Need for Growth; Diversification, Vertical Integration and Merger; Conceptual Framework for Theory of Growth of Firm; Review of empirical studies on firm growth, industry price-cost margin, productivity, and enterprise sickness in India.

Unit-III: [15 Hours]

Industrial Location: Factors affecting Location of Industries; Theories of Industrial Location - Alfred Weber, Sargent Florence & August Losch; Empirical evidences of paradoxes to the theories of Industrial Location; Industrial Concentration: Causes and Effects; Need for balanced regional development of industries - role of SIDC; Impact of Industrial Decentralization on Development in India.

Unit IV: [15 Hours]

Industrialisation in India: Indian Industrial Growth & Finance; Recent trends in Indian industrial growth; Performance and problems of Micro, Small, Medium Enterprises; Role of MNC‘s in India; Overview and Growth of the Service Sector in India; Problems of regional imbalance and industrial growth in India; Institutional finance with special reference to IFCI, ICICI, IDBI.

Suggested Readings:

Ferguson P R. and Glenys J. F, Industrial Economics: Issues and Perspective, The Macmillan Press Ltd., 1994.
Desai, S.S.M. and N. Bhalerao, Industrial Economy of India, Himalaya Publishing House, 2010.
Barthwal, R.R. Industrial Economics: An Introductory Textbook, New Age International Publishers, 2011

References:

Divine, P.J. et. al. An Introduction to Industrial Economics, George Allen and Unwin Ltd., London, 1976.
Hay, D A and Morris D J, Industrial Economics: Theory and Evidence, OUP, New Delhi, 1979.
Tirole, Jean, The Theory of Industrial Organization. MIT Press, (Tir) 1992.
S. C Kuchal, ― The Industrial Economy of Indiaǁ, Chaitanya Publishing House.

Course Code **: BEC504** Course Type **: Elective** No. of Credits **: 4.00** No. of Hours **: 60**	Course Title **Game Theory**

Course Objective:
The main objectives of this course are to:

- Gain a thorough understanding of the principles and concepts underlying strategic interactions among rational decision-makers in competitive and cooperative environments.
- Learn to analyze various types of games including simultaneous and sequential games, cooperative and non-cooperative games, zero-sum and non-zero-sum games, and static and dynamic games.
- Master key solution concepts such as Nash equilibrium, subgame perfect equilibrium, dominant strategies, mixed strategies, and evolutionary stable strategies.

Course Learning Outcomes
Upon completion of the course, students can be able to:

- Understand how to model multi-person decision making in an interactive setting.
- Formulate different real life situations as games and learn to predict the optimal strategies of players and how the players can exploit strategic situations for their own benefit.

Course Outline:

Unit-I: [15 Hours]

Introduction to Game Theory: Motivation for game theory in Economics; Terminologies; 2x2 form standard model; Examples of Game Theory.

Unit-II: [15 Hours]

(A) Simultaneous Move Games – Nash Equilibrium; Dominance; Best Response Analysis; Extension of game to more than two players; Multiple Equilibria; Simultaneous Move Games with Continuous Strategies. **(B)** Games with Sequential Moves – Game Tree; Solving Games using Tree; Sub-game Perfect Equilibrium; Second Mover Advantage; Two-stage games, Subgames and Multistage games; Changing order of game.

Unit-III: [15 Hours]

Mixed Strategy Equilibrium – Expected Payoff Function; Nash Equilibria; Dominance; Illustrations.

Unit-IV: [15 Hours]

Voting Theory, Bidding Strategy and Auction – Voting rules and procedures; Voting Paradox; Arrow's Impossibility Theorem; Evaluation of voting system; Median Voter Theorem; Auction types; Bidding Strategies.

Suggested Reading:
Avinash K. Dixit, Susan Skeath, David H. Reiley Jr., Games of Strategy. W. W. Norton & Company, 2004.
Martin J. Osborne. An Introduction to Game Theory, Oxford University Press, 2000.

References:

Avinash Dixit and Barry J. Nalebuff, *The Art of Strategy: A Game Theorist's Guide to Success in Business &Life.* W. W. Norton & Company; Illustrated Edition*, 2010.*

William Spaniel, *Game Theory: The Complete Textbook*, Create Space Independent Publishing Platform, 2014.Ivan Pastine et al, Introducing Game Theory: A Graphic Guide, Icon Books Ltd, 2017.

Course Code : **BEC504** Course Type : **Elective** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Infrastructure Economics**

Course Objectives

The main objectives of this course are to:

- Understand the critical role that infrastructure plays in economic development and growth.
- Understand the multiplier effects of infrastructure investment on employment, productivity, and overall economic activity.

Course Learning Outcomes:

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

- Understand the economic importance of infrastructure.
- Analyze and evaluate infrastructure investments and their impacts.
- Incorporate sustainability and technological advancements into infrastructure planning.
- Address global challenges and compare international infrastructure practices.

Course Outline:

Unit-I: [15 Hours]

Infrastructure and Economic Development: Infrastructure as a public good; Social and physical infrastructure; Special characteristics of public utilities. The peak-load, Off-Load Problem, Dual Principle Controversy; Economies of scale of Joint supply; Marginal Cost Pricing vs. other methods of pricing in public utilities; Cross-subsidization — free prices, equity and efficiency.

Unit-II: [15 Hours]

The structure of Transport Costs and Location of Economic Activities: Demand for Transport, Models of Freight and Passenger Demand, Model Choice; Cost Functions, Principle of Pricing; Inter-modal condition in the Indian Situation, Communications, Rate-making in Telephone Utilities; Principles of Decreasing Costs in Telephone Industry; Characteristics of Postal Services; Criteria for Fixation of Postal Rates, Comparison of Infrastructure in India and World.

Unit-III: [15 Hours]

Energy Sector in the Process of Economic Development: Demand for Energy, Effects of Energy Shortages. Energy Conservation, Renewable and Nonconventional Sources of Energy, Energy Modelling, Optimal Energy Policy in the Indian Context, Electricity, Gas and Water Supply, Relative Economics of Thermal, Hydro and Nuclear Power Plants, National Power Grid, Financing Water Utilities, Urban and Rural Water Supply.

Unit-IV: [15 Hours]

Education and Economic Growth: Social Demand, Rate of Return and Manpower Balance Approaches. The Case for Universal, Free, Primary Education; Structure of higher education and problems of its financing in India; Human Resources sand Management. Demand and supply of healthcare; Financing of health care and resource constraints;

Suggested Readings

Crew, M.A. and P.R. Kleindorfer, Public Utility Economics, Macmillan, London, 1979.
Indian Council of Social Sciences Research (ICSSR), Economics of Infrastructure, Vol. VI, New Delhi, 1976.

References:

National Council of Applied Economic Research (NCAER), India Infrastructure, 1996.Report: Policy Implications for Growth and Welfare, NCAER, New Delhi.
Parikh, K.S. (Ed.), India Development Report — 1999-2000, Oxford, New Delhi, 1999.Turvey, R. (Ed.), Public Enterprises, Penguin, Harmondswort, 1968.

Course Code : **BEC511** Course Type : **Minor** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Indian Economic Development**

Course Objectives:
The main objectives of this course are to:

- To understanding the basic feature of the Indian economy and its planning process.
- To study the developing insight into the agricultural and industrial development of India.
- To understand the problems and policies relating to major sectors of India economy and challenges.

Course Learning Outcome:
After this, the students would be able to:

- Evaluate the challenges and opportunities in India's growth and development.
- Critically assess policies and their impacts on various aspects of the economy.
- Apply analytical skills to interpret economic data and engage with current economic issues.

Course Outline:

Unit-I: [15 Hours]

Economic Growth and Development: Economic Growth, Development and Underdevelopment, Planned and Mixed Economy, Development indicators of India, Population Growth, HDI, GDI, National Income; Globalization and its impact on Indian Economy.

Unit-II: [15 Hours]

Agriculture and Rural Development: Cropping Pattern in India, Trends in Agriculture Production and Productivity, Agriculture Price and Marketing Policy, Green Revolution, land reforms, Agricultural Subsidies & Food Security, Agricultural Finance, Rural Infrastructure in India, Policies for Agricultural and Rural Development, WTO and Indian Agriculture.

Unit-III: [15 Hours]

Industrial Development in India: Programmes of Industrial Development under the plans, Role of Industrialization, MRTP Act, New Industrial policy-1991, Major Industries of India, MSMEs, MNC, Privatization and Disinvestment.

Unit-IV: [15 Hours]

Services Sector in India: Growth and Contribution of Services Sector in India, Infrastructure & Economic Development: Critical Issues & Policies in Infrastructure Development, Technology and Development, Foreign Trade in Services.

Suggested Readings:

Dutt R. and Sundharam K. P. M. Indian Economy. S. Chand & Company Ltd., New Delhi.
Dutt, Amlan, An Introduction to India‘s Economic Development since 19th century, Popular Parkashan, Mumbai.

Reference:

Government of India, Economic Survey, (Annual), Ministry of Finance, New Delhi. Kapila, Uma, (ed.) Indian economy since independence, Academic Foundation, Delhi.
Misra, S. K. and Puri V. K. Indian Economy — Its Development Experience. Himalaya Publishing House, Mumbai.
Sandesara, J.C. (1992), Industrial Policy and Planning, 1947-1991; Tendencies, Interpretations and Issues, Sage Publications; New Delhi.
Thirlwall A.P, (2006) Growth and Development, 6th Education, West press Pvt. Ltd. New Delhi

Course Code **: BEC512** Course Type **: SIP** No. of Credits **: 2.00** No. of Hours **: 4 to 6 weeks**	Course Title **Summer Internship**

Course Description:
Students who have completed Semester IV must participate in a minimum 4-weeks and maximum 6-weeks internship during the semester break before Semester V begins.

This internship aims to expose students to a professional environment and help them apply classroom concepts to real-world scenarios, highlighting the strengths and limitations of theoretical models. Students will regularly document their experiences and findings in an internship report, maintaining originality and adhering to the internship timeline. Each student must submit four copies of the report, including a preliminary and a concluding report, which will be evaluated for a total of 60 marks.

Finally, students will present their internship reports to a panel of internal and external evaluators, engaging in an in-depth discussion. The panel, consisting of internal faculty members, will assess the students' commitment and learning. This presentation is worth 40 marks. To pass the course, a student must achieve at least 40 out of 100 marks (40%).

SEMESTER-VI

Course Code : **BEC601** Course Type : **Core** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Indian Economy**

Course Objectives:
The main objectives of this course are to:

- Identify and analyze major challenges to economic development, including poverty, inequality, and unemployment.
- Examine the role and performance of agriculture, industry and service sectors in the Indian economy, including issues of productivity, sustainability, and rural development.
- Develop the ability to critically evaluate economic policies and their outcomes, and propose policy recommendations.

Course Learning Outcome:
After this, the students would be able to:

- Evaluate growth and development indicators and challenges.
- Understand the dynamics of key economic sectors.
- Assess poverty, inequality, and demographic trends.
- Apply analytical skills to interpret economic data and engage with current economic issues.

Course Outline:

Unit-I: [15 Hours]

Demographic Issues and Economic Planning in India: Growth rate, Density, Sex and Age Composition of population; Demographic Dividend; population policy; Rural and Urbanization Migration; Planning Objectives, Targets and Achievements from First Five Year Plan to 12th Five Year Plan, NITI Aayog.

Unit-II: [15 Hours]

Economic Reforms in India and Foreign Trades Policies and Impact: Banking sector reform, Reforms in tax policy, Financial Crisis, Reforms in Labour market, Exchange Rate policy of India, Salient Features of India‘s Foreign Trade - Composition, Direction of Trade, Trends in India‘s Foreign Trade, Recent Changes in Trade Policy.

Unit-III: [15 Hours]

Poverty and Unemployment: Poverty: absolute and relative – Poverty line and its measurements, Poverty and Inequality, Poverty Alleviation Programmes; Unemployment and recent policies for employment generation; Inflation – Causes, Consequences and Anti-inflationary Policy.

Unit-IV: [15 Hours]

Indian Economy and Environment: The Environment (Protection) Act 1986, The National Forest Policy 1988, National Environmental Policy 2006; Global deal with Climate Change: Intergovernmental Panel for Climate Change (IPCC), Impact of Climate Change on India, Global Response on Climate Change, Possible Role of India.

Suggested Readings:

Bhattacharya, R.N (Ed), Environmental Economics: An Indian Perspective, Oxford University Press, 2001.
Dutta, R and K P M Sundaram - Indian Economy, S. Chand, New Delhi.

Reference:

Government of India (Current Year): Economic Survey, Ministry of Finance, New Delhi. Kapila, Uma, (ed.) Indian economy since independence, Academic Foundation, Delhi
Mahajan V. S. Environmental Protection – Challenges & Issues, Deep & Deep Publishers New Delhi, 2003. Mishra S K and V K Puri, Indian Economy, Himalayan Publishing House, Mumbai.

Course Code : **BEC602** Course Type : **Core** No. of Credits : **4.00** No. of Hours : **L 30 T/L 60**	Course Title **Research Methodology & Data Analysis using SPSS**

Course Objectives:

The main objectives of this course are to:

- Orient the students towards the basics of research and process of research.
- Enable the students to choose a method appropriate to one's own research problem.
- Train the student in software programmes for efficiently writing project/dissertation report.

Course Learning Outcomes:

At the end of this course, the students should be able to:

- Understand basic concepts of research and its methodologies
- Identify appropriate research topics and also define research problem and parameters.
- Handle software programmes like Excel, SPSS and LaTeX.

Course Outline:

Unit-I: [15 Hours]

Introduction to Research Methodology: Meaning of Research - Types of Research - Research Process - Criteria of Good Research and Ethics – Research Methods versus Methodology - Problems Encountered by Researchers in India. Review of Literature - Research Gap - Research Problem - Research Design and its types- Features of a good research design - Objectives – Scope – Hypothesis – Limitations - Identifying Methodology – Preparation of report.

Unit-II: [15 Hours]

Data collection techniques and Data Analysis: Sampling - Sample Size - Sampling Techniques – Census and sample survey- Sample Design – Preparation of Questionnaire -Measurements of scaling- Sources of error in measurement. Data Collection – Primary Data - Secondary data- Qualitative Data - Quantitative Data - Data Analysis and Interpretation.

Unit-III: [30 Hours]

Introduction to SPSS (Statistical Package for Social Sciences): Data entry and cleaning; Tabulation; Central Tendencies, Measures of Distribution, Measures of Asymmetry; Graphs; Transform / Select Data; Correlation and Linear Regression; Estimation and Hypothesis Testing; and other Statistical Dependence techniques.

Unit-IV: [30 Hours]

Introduction to LaTeX: Installation of the software LaTeX; Understanding Latex compilation - Basic Syntax- Writing equations; Page Layout- Titles, Abstract Chapters, Sections, References, citation; Table of contents, Figure handling - numbering, List of figures, List of tables, Generating index; Packages: Geometry, Hyperref, amsmath, amssymb, algorithms, algorithmic graphic, color; Classes: article, book, report, slide, etc.

Suggested Readings:

Kothari, C.R. *Research Methodology: Methods and Techniques*. New Age International Publishers, Latest Edition.

Lokesh Jasrai, *Data Analysis Using SPSS*, SAGE Publications India Pvt Ltd, New Delhi, 2020.

Firuza K A, *A Short Introduction to Latex: A Book for Beginners*, Create space Independent Publishing Platform, 2019.

References:

W L Neuman, *Social Research Methods, Quantitative and Qualitative Approaches*, Pearson, 2012.William J. Goode and Paul K. Hatt, *Methods in Social Research*, Surjeet Publications, Latest.

Ranjit Kumar, *Research Methodology: A Step-by- Step Guide for Beginners*, SAGE, 4th Edition (Latest).Cooper and Schindler, *Business Research Methods*. McGraw Hill, 2010

Panneerselvam, R., *Research Methodology*. Prentice Hall of India, 2006.

Kumar, R, *Research Methodology: A Step-by-Step Guide for Beginners*. Sage, 2014.Phanse, S, *Research Methodology: Logic, Methods, and Cases*, OUP, 2016.

Course Code : **BEC603** Course Type : **Elective** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Financial Economics**

Course Objectives:
The main objective of this course is to:

- Provide an in-depth knowledge to the students about the structure,organization and working of financial markets, institutions and role of various regulatory bodies.

Course Learning Outcomes:
Upon completion of the course, students can be able to:

- Understand the structure of financial system in India.
- Indian financial systems organization and workings in current scenario.
- Understand the working of commercial banks.

Course Outline:

Unit-I: [15 Hours]

Overview of Indian Financial System: Structure and Organization; Financial Institutions and Economic Development.

Unit-II: [15 Hours]

(A) Money market and Financial Market: Organization, Types of Instruments, Participants, Trading mechanism, Role and functions of Reserve Bank of India (RBI). (B) **Financial Markets:** Functions, Participants and Regulation of Primary Market, trading and settlement procedure on stock exchanges, Role and functions of Securities and Exchange Board of India (SEBI), Depository System.

Unit-III: [15 Hours]

Commercial Banks: Prudential norms for classification, valuation and operation of investment portfolios by banks, Management of Non-Performing assets, prudential norms relating to capital adequacy, Risk Managementin Banks.

Unit-IV: [15 Hours]

Non-Banking Finance Companies (NBFCs): Types of NBFCs, RBI Guidelines, Asset Liability Management. Mutual Funds: Role as a financial intermediary, Organization and Structure, Types of mutual fund schemes, SEBI (Mutual Funds) Regulations 1996.

Suggested Readings:

Khan M.Y., Indian Financial System, Tata McGraw Hill, Latest Edition.
Bhole L.M., Financial Institutions and Markets: Structure, Growth and Innovations, Tata McGraw Hill, Latest Edition.

References:

Kohn M., Financial Institutions and Markets, Tata McGraw Hill, Latest edition.
Madura J., Financial Markets and Institutions, South-Western, Cengage Learning, Latest Edition.
Avdhani V. A., Investment and Securities Markets in India, Himalaya, Latest Edition. (The list of cases and specific references including recent articles will be announced in class)

Course Code : **BEC603** Course Type : **Elective** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Money and Banking**

Objective of the Course:
The main objectives of this course are to:

- Introduce the basic concepts of banking as a financial intermediary and bank as a financial institution.

Course Learning Outcomes:
Upon completion of the course, students can be able to:

- Understand current trends and Developments in the Banking system
- Critically evaluate policies related to Banking System.

Course Outline:

Unit-I: [15 Hours]

Money: Functions, kinds of money, kinds of deposits and measures of money supply; Demand for money: classical, neo classical, Keynesian, Baumol's and Tobin's; Supply of money: H theory of money supply, money multiplier process, determinants of money multiplier.

Unit-II: [15 Hours]

Monetary Policy: Objectives, targets, Indicator, Instruments of monetary policy; monetary policy duringdepression; monetary policy during inflation; role of monetary policy in developing countries; current monetary policy of Reserve Bank of India

Unit-III: [15 Hours]

Indian Banking System: Development of Banking since independence; Reserve Bank of India; shortcomings of Indian Banking System; Banking Sector Reforms; Commercial Banks: classification, functions, organization, structure and credit creation; Banker and Customer, Types of Customers, General Relationship and Special Relationship between Banker and Customer KYC Norms, CIBIL.

Unit-IV: [15 Hours]

Central Banking: Functions of Central Bank Quantitative Credit Controls and Qualitative Credit Controls History of Reserve Bank of India, Anywhere Banking, ATMs, RTGS, Indigenous Banking, Cooperative Banks, Regional Rural Banks, SIDBI, NABARD and EXIM Bank.

Suggested Readings: :

Mishkin, Frederic (2008): The Economics of Money, Banking, and Financial Markets, Pearson Addition Wesley, New York, 7th Edition.

References:

KPM Sundaram and V L Varsheney, Banking Theory: Law & Practice.
B. Santhanam; Margam Publications, Banking Theory, Law and Practice.
Aryasri, Banking and Financial Systems.
Vijaya Raghavan, Introduction to Banking.
M. Y. Khan, Indian Financial System.
Murthy & Venugopal, Indian Financial System.

Course Code **: BEC603** Course Type **: Elective** No. of Credits **: 4.00** No. of Hours **: 60**	Course Title **Financial Derivatives**

Course Objective:
The main objective of this course is to:

- Provide an in-depth understanding of financial derivatives in terms of concepts,structure, instruments and trading strategies for profit and risk management.

Course Learning Outcomes:
Upon completion of the course, students can be able to:

- Understand current trends in the Derivative Market
- Critically evaluate and Investment in the Derivative Market.

Course Outline:

Unit-I: [15 Hours]

Introduction: Derivatives - History of Derivatives Markets - Uses of Derivatives - Critiques of Derivatives - Need for Derivatives - Evolution of Derivatives in India - Major Recommendations of Dr. L.C. Gupta Committee - Benefits of Derivatives in India - Types of Derivatives - Derivatives Trading at NSE/BSE.

Unit-II: [15 Hours]

Forward and Futures: Financial Derivatives - Features, Types - Forward: Pricing and Trading Mechanism - Forward Contract - Features of Forward Contract - Classification of Forward Contracts - Forward Trading Mechanism, Futures: Types of Financial Futures Contract - Evolution of Futures Market in India - Traders in Futures market in India - Functions and Growth of Futures Markets - Futures Market Trading Mechanism - Forward Contract Vs. Futures Contract.

Unit-III: [15 Hours]

Options: Concept of Options – Types - Option Valuation - Option Positions: Naked and Covered Option - Underlying Assets in Exchange-traded Options - Determinants of Option Prices - Basic Principles of Option Trading

Unit-IV: [15 Hours]

(A) Swaps: Concept, Nature, Evolution and Features of Swap - Types of Financial Swaps - Interest Rate Swaps - Currency Swap - Debt Equity Swap - Commodity Swaps - Equity Index Swaps. **(B) Hedging**: Concepts – Model - Basic Long and Short Hedges - Cross Hedging - Basis Risk and Hedging - Basis Risk vs. Price Risk - Hedging Effectiveness - Devising a Hedging Strategy - Hedging Objectives - Management of Hedge.

Suggested Readings:

John Hull, Options, Futures and other Derivatives, Pearson Education
S. L. Gupta, Financial Derivatives, Prentice Hall.

References:

Parameshwaran, Financial Derivatives, Mcgraw Hill.
D. C. Patwari, Options and Futures- An Indian Perspective, Jaico Publishing House. Punithavati Pandian, Security Analysis and Portfolio Management, Vikas Publishing House.
Prasanna Chandra, Security Analysis and Portfolio Management, Tata McGraw Hill.
Sanjeev Aggarwal, A Guide to Indian Capital Markets, Bharat Publishing.
NCFM Derivatives (Dealers) Module NCFM Currency Derivatives Modules

Course Code : **BEC611** Course Type : **Minor** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Agricultural Finance and Marketing**

Course Objectives:

The main objective of this course is to:

- Provide exposure to the happenings in the Agricultural Economics and facilitate a better-informed decision making on the part of the learner

Course Learning Outcomes:

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

- Comprehend the fundamentals of agricultural finance and marketing.
- Evaluate and secure agricultural credit from various sources.
- Analyze agricultural markets and supply chains.
- Enhance analytical and critical thinking skills in agricultural finance and marketing.

Course Outline:

Unit-I: [15 Hours]

Agricultural Finance and Agriculture Sector in India: Meaning and Importance of Agriculture - Share of Agriculture in National Income - Employment in Agriculture - The Rural Economy - Agricultural Labour - Labour Problems, Land reforms, Definitions of agricultural Finance, Importance, need of Agricultural Finance, problems of agricultural credit in India.

Unit-II: [15 Hours]

Agricultural Credit in Institutional Agencies: Meaning and Definitions of Co-operation, Regional Rural Banks - National Bank for Agriculture and Rural Development (NABARD) - Reserve Bank of India - Government Policy for Agricultural Credit, KCC.

Unit-III: [15 Hours]

(A) Agricultural Marketing: Meaning, Definitions and Scope of Agricultural Marketing, Main Defects of Agricultural Marketing - Establishment of Regulated Markets - Warehousing Facilities - Marketing Functions, Marketing Efficiency-Measures to Improve Marketing Efficiency, Agricultural Prices.

(B) Role of Government in Agricultural Marketing: NAFED, NCDC, PDS and Recommendations on Agricultural Price Policy.

Unit-IV: [15 Hours]

Issues of Agribusiness: Scope, Issues and Strategies of Agribusiness. Agribusiness in the Context of Globalization: Agribusiness Opportunities - Impact of World Trade Organization (WTO) and Agribusiness - WTO Agreements and Indian Agriculture.

Suggested Readings:

Sadhu A et al, *Fundamentals of Agricultural Economics*. Himalaya Publishing House, Delhi, 2014.Lekhi R. K. and Singh Joginder, *Agriculatural Economics*. Kalyani Publishers,2015.

References:

Gardner et al, *Handbook of Agricultural Economics*.North-Holland, chapter 1, 2000.

Bhaduri, A., *The Economic Structure of Backward Agriculture*, Macmillan, Delhi,1984.

Dantwala, M.L. et.al, *Indian Agricultural Development since Independence*.Oxford & IBH, New Delhi, 1991.

World Bank, *Agriculture for Development reports.* Latest.

Government of India, Planning Commission: ‒Risk Management in Agriculture‖, 2007.

Basu, Kaushik, *India's Foodgrain Policy: An Economic Theory perspective*, in Uma Kapila Ed, *IndianEconomy since Independence*, Academic Foundation, NewDelhi, 2012.

S. Subba Reddy, P. Raghu Ram, T.V. Neelkanta Sastry, I. Bhavani Devi, *Agricultural Economics* 2012

Course Code : **BEC612** Course Type : **Dissertation** No. of Credits : **4.00** No. of Hours : **One Semester**	Course Title **Dissertation-I**

Dissertation-I: Course Description

Each student must choose an emerging research issue and work on exploring it through various methods learnt through the programme. The final dissertation need to be submitted to the department, after due clearance from the research supervisor. Assessment will be done by both internal advisor and an external expert based on the written dissertation and a presentation.

Faculty Allotment for the Research Project

Faculty allotment to each student will be done by the internal advisory committee based on the student's selected topic/area of interest and availability of faculty in the department.

Evaluation of the Research Project

A two stage evaluation process will be involved for assignment of final marks and grades.

1. Evaluation of dissertation

Each student has to submit three copies of dissertation to the department after due permission from the research supervisor and the dissertation must be free of plagiarism check. The evaluation of dissertation carries 60 marks. An average of marks given by both internal advisor and external expert will be considered for evaluation of dissertation report.

2. Viva-Voice Examination

Each student must present research project once it completed and submitted to the department. The evaluation will be done by both internal supervisor and an external expert. The viva-voice examinationcarries 40 marks and these marks are divided into five categories; (i) Communication skills, (ii) Clarity on subject, (iii) Body language, (iv) Ability to answer questions, and (v) Overall impression. Each category carries 8 marks. At the end, an average of marks assigned by both internal advisor and external expert will be considered to score for the viva-voice marks.

Consolidated Evaluation

The department shall consolidate marks of both viva-voice examination and dissertation and submit to the Controller of Examinations.

SEMESTER-VII

Course Code : **BEC701** Course Type : **Core** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Agriculture Economics**

Course Objectives:
The main objectives of this course are to:

- Provide exposure to the happenings in the Agricultural Economics and facilitate a better-informed decision making on the part of the learner

Course Learning Outcomes:
Upon completion of the course, students can be able to:

- Understand the functioning of agro-economy and its inter-connection especially in context of Indian Economy.
- Know the various facets of agricultural studies.

Course Outline:

Unit-I: [15 Hours]

Agricultural Production & Productivity: Nature and Scope of agricultural economics, contribution of agriculture to National Economy; Basic concepts in production, agricultural production as compared to industrial production, Trends in agricultural production & productivity; cropping pattern.

Unit-II: [15 Hours]

Agricultural Finance & Marketing: Scope and Role of Marketing, Problem & Prospects in Agricultural Marketing, Agricultural Market Reforms. Problems of Agricultural credit in India; Meaning and Definitions of Co-operative, Regional Rural Banks, NABARD, Kisan Credit Card (KCC).

Unit-III: [15 Hours]

Agricultural Inputs & Price Policy: Irrigation, Fertilisers, HYV of Seeds, Pesticide, and Green revolution: Implementation, and its Impact, Recommendations on Agricultural Price Policy.

Unit-IV: [15 Hours]

Sustainable Agriculture & Food Security: Sustainable agriculture - Impact of Climate change on Indian agriculture - Sustainable water management in agricultural sector, PDF, Subsidies, Organic farming- Present status and future scope.

Suggested Readings:
Sadhu A et al., *Fundamentals of AgriculturalEconomics*. Himalaya Publishing House, Delhi, 2014.Lekhi R. K. and Singh Joginder, *Agriculatural Economics*. Kalyani Publishers,2015.

References:

Gardner et al., *Handbook of Agricultural Economics*.North-Holland, chapter-1, 2000. Bhaduri, A., *The Economic Structure of Backward Agriculture*, Macmillan, Delhi,1984.

Dantwala, M.L. et.al, *Indian Agricultural Development since Independence*.Oxford & IBH, New Delhi, 1991.

World Bank, *Agriculture fosr Development reports.* Latest.

Government of India, Planning Commission: ‒Risk Management in Agriculture‖, 2007.

Basu, Kaushik, *India's Foodgrain Policy: An Economic Theory perspective*, in Uma Kapila Ed, *IndianEconomy since Independence*, Academic Foundation, NewDelhi, 2012.

S. Subba Reddy, P. Raghu Ram, T. V. Neelkanta Sastry, Bhavani Devi, *Agricultural Economics* 2012.

Course Code : **BEC702** Course Type : **Core** No. of Credits : **4.00** No. of Hours : **60**	Course Title **International Economics**

Course Objective:
The main objectives of this course are to:

- To explore and critically analyze classical and modern trade theories, and their relevance in the current global economy.
- To study different trade policies, their objectives, tools, and impacts on domestic and global markets, including tariffs, quotas, and trade agreements.
- To examine the causes, processes, and effects of globalization on national economies, including the benefits and challenges it poses for different countries and regions.

Course Learning Outcomes:
After completion of the course, the students would be able to:

- Understand theoretical and empirical concepts in international trade, equip students with a thorough analytical grasp of trade theory, ranging from Ricardian to modern theories.
- Develop a solid foundation in international economics, equipping them with the skills and knowledge needed to navigate and influence the complex global economic landscape.

Course Outline:

Unit-I: [15 Hours]

Introduction: Introduction to international economics; An overview of world trade, Balance of Trade (BOT)and Balance of Payments (BOP), Trade vs. Protection.

Unit-II: [15 Hours]

Theories of International Trade: Classical Theory: Adam Smith's theory of absolute cost difference, Ricardo's theory of comparative cost. The Neo-classical Theory: Heckscher-Ohlin Theory, Leontief Paradox, Rybczynski Theorem. New trade theories, the international location of production, firms in the global economy, outsourcing and multinational enterprises.

Unit-III: [15 Hours]

International Macroeconomic and Trade Policy: Instruments of trade policy, Tariff & Non-tariff Barriers, Stolper-Samuelson Theory, Political Economy of trade policy, controversies in trade policy. Fixed versus flexible exchange rates, international monetary systems, SDR, financial globalization and financial crises, Role of IMF, WTO and IBRD in international trade.

Unit-IV: [15 Hours]

Globalization and Financial Crisis: The notion of globalization, historical changes, importance and issues; World financial crises- Lessons of the past.

Suggested Readings:
Paul Krugman et al. *International Economics: Theory and Policy*. Addison-Wesley, Pearson, 9th Edition, 2012. Dominick Salvatore, *International Economics: Trade and Finance*. John Wile Int. Student Edition, 10th Edition.

References:

Bhagwati, J. N. (ed.): *International Trade: Selected Readings*. Cambridge University Press, Mass, 1981.Crockett, A.: *International Money: Issues and analysis*. The ELBS and Nelson, London, 1982.

Greenaway, D.: *International Trade Policy*. Macmillan Publishers Ltd. London, 1983.Heller, H. R.: *International Monetary Economics*. Prentice Hall, India, 1968.

Kenan, P. B.: *The International Economy*. Cambridge University Press, London, 1994.Kindlaberger, C. P.: *International Economics*. R.D. Irwin, Homewood, 1983.

Krugman, P. R. & M. Obstfeld: *International Economics: Theory and Policy*. Glenview, Foresman, 1994.

Course Code : **BEC711** Course Type : **Minor** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Entrepreneurial Skill Development**

Course Objective:
The main objectives of this course are to:

- Understand the importance of entrepreneurial skills and advance their skills in customer developmentsand validation, competitive analysis.
- Encourage students to think creatively and develop innovative solutions to real-world problems, cultivating an entrepreneurial mindset.
- Equip students with the skills to identify, assess, and manage risks associated with starting and running a business.

Course Learning Outcomes:
At the end of this course, the students should be able to:

- Well-prepare to embark on entrepreneurial ventures, contribute to existing businesses with innovative ideas, and navigate the complexities of the business world with confidence and competence.
- Consider entrepreneurship opportunities that address societal issues while being financially sustainable.

Course Outline:

Unit-I: [15 Hours]

Foundations of Entrepreneurship: Introduction, Concept of Entrepreneur, Entrepreneurship and Enterprise; Definition of Entrepreneurship, Objectives of Entrepreneurship Development, Phases of Entrepreneurship Development, and Role of Entrepreneurship.

Unit-II: [15 Hours]

Characteristics of Entrepreneurship: Entrepreneurship Skills; Meaning, Types of Entrepreneurship Skills; The Entrepreneurial Mindset, Characteristics of Entrepreneurship, and Traits of Entrepreneurship.

Unit-III: [15 Hours]

Entrepreneurship Development Skills: Business management skills, Teamwork and leadership skills, Communication and listening, Customer service skills, and Financial skills; Analytical and problem-solving skills, Critical thinking skills, Strategic thinking and planning skills, Technical skills, Time management and organizational skills,

Unit-IV: [15 Hours]

Marketing Skills: Branding, marketing and networking skills, Entrepreneurial skills in the workplace, Entrepreneurial Imagination and Creativity.

Suggested Readings:

Arya Kumar, Entrepreneurship, Pearson, Delhi.
Poornima MCH, Entrepreneurship Development –Small Business Enterprises, Pearson, Delhi.
Sangeetha Sharma, Entrepreneurship Development, PHI Learning.

References:

KanishkaBedi, Management and Entrepreneurship, Oxford University Press, Delhi.
Anil Kumar, S., et.al, Entrepreneurship Development, New Age International Publishers, New Delhi.
Khanka, SS, Entrepreneurship Development, S. Chand, New Delhi.
Peter F. Drucker,Innovation and Entrepreneurship.
A.Sahay, M. S. Chhikara, New Vistas of Entrepreneurship: Challenges &Opportunities.
Dr B E V L Naidu, Entrepreneurship. Seven Hills Publishers.

Course Code : **BEC712** Course Type : **Minor** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Gender Economics**

Course Objective:
The main objectives of this course are to:

- To create awareness on gender issues in organized and unorganized sectors.
- To learn about gender economic situation at local and global level.
- To acquire knowledge about gender budgeting and mainstreaming.

Course Learning Outcomes:
At the end of this course, the students should be able to:

- Critically evaluate practices, policies and theories by following scientific approach to knowledge development with respect to gender.
- Capability to apply analytic thought to a body of knowledge and analyse, evaluate evidence, arguments, claims, and beliefs on the basis of empirical evidence gender issues.

Course Outline:

Unit-I: [15 Hours]

Gender Economics: Concept and definition; Changing concept from growth to development, concept of gender development; Women's role in Development; Different approaches to development - WID, WAD, GAD; Concept of Self-Help Groups and its role in gender development.

Unit-II: [15 Hours]

Women as Workers: Women in primary, secondary and tertiary sectors; Invisibility of women's works and wage differential with reference to gender; Challenges of women in service sector; Feminization of poverty; Gendered jobs and social inequality; Sex segregation at work place; Women's role in trade union; Sexual harassment at workplace; Vishakha Guidelines & the Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013.

Unit-III: [15 Hours]

Gender in Organized and Unorganized Sector: Gender difference in organized and unorganized sector; Changing work pattern-Increasing in formalization; Migration and its impact on gender development; Role of training and skills in income generation.

Unit-IV: [15 Hours]

Gender in Economic Planning: Initiatives towards recognition of women as agents of development from sixth five-year plan; Invisibility of women in official data system; Gender Responsive Planning and Gender Budgeting.

Suggested Readings:

Ganeshmurthy, V. N., Women in the Indian Economy, New Century Publications, New Delhi, 2009.Bhatt, G. M. Role of Women in Indian Economy, V L Media Solutions, New Delhi, 2008.
IAWS, Feminist Approaches to Economic Theories A Report, IAWS, New Delhi, 1995.

References:

Kapadia K, The Violence of Development: The Political Economy of Gender In India, Zubaan Books, Delhi, 2002.
Promilla Kapur (ed), Empowering Indian Women, Publication Division, Govt. of India, New Delhi, 2000.Kaila H.L, Women, Work and the Family, Rawat Publications, Jaipur, 2005.
Malcom Harper, Profit for the Poor - Cases in Micro Finance, Oxford and IBH, New Delhi, 1998.
Varghese. S, Employment of Women in the unorganized manufacturing sector, University Book House Jaipur, 2003.
Balakrishnan A. Rural Landless women Labourers, Problems and Prospects, Kalpaz Publications, New Delhi, 2005.
U. Kalpagam, Gender in Economics: The Indian Experience, EPW. Vol. 21, No. 43, Oct. 25, 1986.

Course Code : **BEC713** Course Type : **CSP** No. of Hours : **4.00** No. of Hours : **4 Weeks**	Course Title **Community Service Project**

Introduction

Community Service Project (CSP) is an experiential learning strategy that integrates meaningful community service with instruction, participation, learning and community development. The CSP involves students in community development and service activities which applies the experience of personal and academic development. It is meant to link the community with students' academic interest for mutual benefit. The community will be benefited with the focused contribution of the students for the regional development. The department finds an opportunity to develop social sensibility and responsibility among students and also emerge as a socially responsible institution.

Objectives:

- To sensitize students to the living conditions of the people in different geographical areas.
- To help students to realize the stark realities of the society and bring an attitudinal change towards the development societal consciousness, sensibility, responsibility and accountability.
- To make students aware of their inner strength and help them to find better solutions to the social problems.
- To make students socially responsible citizens and are sensitive to the needs of the disadvantaged sections.
- To help students to initiate developmental activities in the community in coordination with public and government authorities.
- To develop a holistic life perspective among the students by making them study culture, traditions, habits, lifestyles, resource utilization, wastages and its management, social problems, public administration system and the roles and responsibilities of different persons across different social systems.

Course Learning Outcomes:

- Positive impact on students' academic learning
- Improves students' ability to apply what they have learned from the real world
- Positive impact on academic outcomes such as demonstrated complexity of understanding, problem analysis, problem-solving, critical thinking, and cognitive development
- Improved ability to understand complexity, ambiguity and reduced stereotypes and greater inter- cultural understanding.

Course Description:

After the completion of VI semester, the student/s could take up a CSP work related to their domain or subject area. It should take at least four weeks of time to complete, and the student/s must complete it before the commencement of the semester VII.

During this time, students must write reports on regular basis. Originality of content and adherence to deadlines are to be taken seriously. Each student will submit at least 4 individual reports including a Preliminary Report and a Concluding Report – which will account for a total of 60 marks.

Each student will make a presentation based on the final project report to a panel of internal and external evaluators. This session will include an in-depth discussion, where the panel members will evaluate the level of commitment of the students and the learning achieved. This presentation will account for 40 marks.

A student must earn at least 40 marks out of the 100 (40% of 100) to clear the internship component of the course.

SEMESTER-VIII

Course Code : **BEC801** Course Type : **Core** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Financial Markets**

Course Objective:
The main objectives of this course are to:

- To expose students to the theory and functioning of the monetary and financial sectors of the economy.
- To highlight the organization, structure and role of financial markets and institutions.
- To discuss financial and banking sector reforms and monetary policy with special reference to India are also covered.

Course Learning Outcomes:
Upon completion of the course, students can be able to:

- This allows students to understand current banking system policies and financial market outcomes.
- It also enables them to critically evaluate policies.

Course Outline:

Unit-I: [15 Hours]

Investment Theory and Structure of Interest Rates: Introduction to financial economics, Structure Financial System, Time Value of Money; Future Value, Present Value, Future value of an annuity, Present value of annuity, Basic Ratio Analysis; Introduction to Capital Budgeting.

Unit-II: [15 Hours]

Indian Banking System: Changing role and structure; banking sector reforms; Basel Norms, Recent Innovations in Banking Sector, CIBIL, RBI; Regulatory bodies.

Unit-III: [15 Hours]

(A) Capital Market: Primary market and Secondary Market, Financial Services; Fee based financial services and fund based financial services; Role of financial markets Money market. **(B) 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.

Unit-IV: [15 Hours]

Stock Evaluation Methods: Fundamental vs. Technical analysis-Factor affecting stock prices-Economic analysis and Industry analysis.

Suggested Readings:
F. S. Mishkin and S. G. Eakins, Financial Markets and Institutions. Pearson Education, 6th Edition, 2009.
L. M. Bhole and J. Mahukud, Financial Institutions and Markets. Tata McGraw Hill, 5th Edition, 2011.
M. R. Baye and D. W. Jansen, Money, Banking and Financial Markets. AITBS, 1996

References:
F. J. Fabozzi, et al., Foundations of Financial Markets and Institutions. Pearson Education, 3rd Edition, 2009.
Rakesh Mohan, Growth with Financial Stability- Central Banking in an Emerging Market, OUP Press, 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.
RBI - Report of the Working Group: Money Supply Analytics and Methodology of Compilation. 1998.
RBI - Bulletin, Annual Report and Report on Currency and Finance (latest).

Course Code : **BEC802** Course Type : **Core** No. of Credits : **4.00** No. of Hours : **60**	Course Title **Strategic Leadership and Management**

Course Objective:
The main objectives of this course are to:

- To introduce foundations of strategic leadership and management concepts, theories and case studies.
- To equip the student with the tools, and principles of strategy leadership, strategy formulation and execution.

Course Learning Outcomes:
On completing the course students will be able to:

- Analyze the main structural features of an industry and develop strategies that position the firm most favorably in relation to competition and influence industry structure to enhance industry attractiveness.
- Recognize the different stages of industry evolution and recommend strategies appropriate to eachstage.

Course Outline:

Unit-I: [15 Hours]

Foundations of Strategic Leadership: Survey of Leadership Theories, Strategy and Strategic Leadership, Leadership qualities and skills. Leadership as envisioning transformations and facilitating change processes.

Unit-II: [15 Hours]

Personal Leadership: Fundamental Individual Issues and Frameworks for Personal Growth, Self-assessment: MBTI, Type Talk, Other assessments, Leading a Relationship: Individual Issues and Interpersonal Dynamics; Transactional Analysis, Games, and Authenticity; The Twelve Behavioral Choices as Indicators for Types of Relationship.

Unit-III: [15 Hours]

Team Leadership: Interpersonal Underworld and Group Emotional Processes, Task Interdependence and Types of Business Processes; Organizational and Technological Imperatives.

Unit-IV: [15 Hours]

Strategic Leadership at Organizational Level: Understanding Organizations and Business, Frameworks to conceptualize organizational strategies, Framing Issues of Organizational Transformations.

Suggested Readings:

Hackman, M. Z., & Johnson, C. E., Leadership: A communication perspective, Long Grove, IL: Waveland, 4th Editions, 2004.

Jackson, B., & Parry, K., A very short, fairly interesting and reasonably cheap book about studying leadership, Thousand Oaks, CA: Sage, 2008.

References:

Sanjay Kumar & Pushp Lata, Communication Skills, Oxford University Press.Courtland L. Bovee, John. V. Thill, Business Communication Today.

Raymond V Lesikar, Marie, E, Flatley, Kathryn Re ntz, NeerjaPande, Business Communication, Mcgraw Hill.

Course Code **: BEC811** Course Type **: Dissertation** No. of Credits **: 12.00** No. of Hours **: One Semester**	Course Title **Dissertation - II**

I. Dissertation-II: Course Description

Dissertation-II is the major research work in the semester VIII (final semester) for the award of the degree of Bachelor of Science (Hons) in Economics. Each student must choose a research issue with contemporary relevance to Indian society and economy, and work on addressing it through the various research methods learnt through the programme. The final dissertation needs to be submitted to the department, after fulfilling the requirements – submission of the written dissertation, and a presentation before internal faculties and an external expert.

II. Faculty Allotment for the Dissertation

An internal committee constituted in the department will take a decision on allocation of faculties as per the topic/area of interest. In most cases, the faculty allotted for the dissertation-I will continue to supervise for dissertation-II; or allocation of faculties will be made a fresh depending upon the students' selected topic/area of interest and availability of faculty in the department.

III. Evaluation of the Research Project

A two-stage evaluation process will be involved for assignment of final marks and grades.

IV. Evaluation of dissertation

Each student has to submit three copies of dissertation to the department after due permission from the research supervisor and the dissertation must be free of plagiarism check. The evaluation of dissertation carries 60 marks. An average of marks given by both internal advisor and external expert will be considered for evaluation of dissertation report.

V. Viva-Voice Examination

Each student must present research project once it completed and submitted to the department. The evaluation will be done by both internal supervisor and an external expert. The viva-voice examinationcarries 40 marks and these marks are divided into five categories; (i) Communication skills, (ii) Clarityon subject, (iii) Body language, (iv) Ability to answer questions, and (v) Overall impression. Each category carries 8 marks. At the end, an average of marks assigned by both internal advisor and external expert will be considered to score for the viva-voice marks.

VI. Consolidated Evaluation

The department shall consolidate marks of both viva-voice examination and dissertation and submit to the Controller of Examinations.

SCHOOL OF ARTS, HUMANITIES AND SOCIAL SCIENCES
DEPARTMENT OF ECONOMICS

B.Sc. (Hons) Economics

Four-Year B.Sc. (Hons) Economics Programme

List of Minor Courses to be offered by the Department of Economics to the other Department Students

Sl. No	Course Code	Course Titles	Total Credits	L	T	P
Semester I						
1	BEC111	Basics of Microeconomics	4	3	1	
Semester II						
2	BEC211	Basics of Macroeconomics	4	3	1	
Semester III						
3	BEC311	Principles of Public Finance	4	3	1	
Semester IV						
4	BEC411	Economics of Social Sectors	4	3	1	
Semester V						
5	BEC511	Indian Economic Development	4	3	1	
Semester VI						
6	BEC611	Agricultural Finance & Marketing	4	3	1	
Semester VII						
7	BEC711	Entrepreneurial Skill Development	4	3	1	
8	BEC712	Gender Economics (Online/Offline)	4	3	1	
Total Minor Courses: 9						