



ST. XAVIER'S UNIVERSITY, KOLKATA

SYLLABUS FOR BA ECONOMICS (FOR THE BATCH 2022 onwards)

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Sem	Paper Code	Course Title	Full Marks	Pass Marks	CIA MARKS			End-Sem Marks	Credits
					WT	O	ATT		
I	BNHRCC110T	Introductory Microeconomics	100	40	10	5	5	80	6
	BNHRCC120T	Mathematical Methods for Economics -I	100	40	10	5	5	80	6
	BNHRGE130T	Mathematics - I	100	40	10	5	5	80	6
	BNHRAE140T	English Communication - I	50	20	5	2.5	2.5	40	1
	BNHRAE150T	Environmental Studies - I	50	20	5	2.5	2.5	40	1
	BNHRFN160A	Foundation Course-I *	50	15	-			50	1
TOTAL			450	TOTAL			21		
II	BNHRCC210T	Introductory Macroeconomics	100	40	10	5	5	80	6
	BNHRCC220T	Mathematical Methods for Economics -II	100	40	10	5	5	80	6
	BNHRGE230T	Mathematics - II	100	40	10	5	5	80	6
	BNHRAE240T	English Communication- II	50	20	5	2.5	2.5	40	1
	BNHRAE250T	Environmental Studies -II	50	20	5	2.5	2.5	40	1
	BNHRFN260A	Foundation Course - II*	50	15	-			50	1
TOTAL			450	TOTAL			21		
III	BNHRCC310T	Intermediate Microeconomics - I	100	40	10	5	5	80	6
	BNHRCC320T	Intermediate Macroeconomics - I	100	40	10	5	5	80	6
	BNHRCC330T	Statistical Methods for Economics	100	40	10	5	5	80	6
	BNHRGE340T	Statistics - I	100	40	10	5	5	80	6
	BNHRSE350T	Data Analysis	100	40	10	5	5	80	2
TOTAL			500	TOTAL			26		
IV	BNHRCC410T	Intermediate Microeconomics - II	100	40	10	5	5	80	6
	BNHRCC420T	Intermediate Macroeconomics - II	100	40	10	5	5	80	6
	BNHRCC430T	Introductory Econometrics	100	40	10	5	5	80	6

Sem	Paper Code	Course Title	Full Marks	Pass Marks	CIA MARKS			End-Sem Marks	Credits
					WT	O	ATT		
	BNHRGE440T	Statistics – II	100	40	10	5	5	80	6
	BNHRSE450T	Research Methodology	100	40	10	5	5	80	2
TOTAL			500	TOTAL				26	
V	BNHRCC510T	International Economics	100	40	10	5	5	80	6
	BNHRCC520T	Development Economics	100	40	10	5	5	80	6
	BNHRDS531T	Topics in Microeconomics	100	40	10	5	5	80	6
	BNHRDS532T	Political Economy—I	100	40	10	5	5	80	6
	BNHRDS542T	Applied Econometrics	100	40	10	5	5	80	6
TOTAL			400	TOTAL				24	
VI	BNHRCC610T	Public Economics	100	40	10	5	5	80	6
	BNHRCC620T	Indian Economy	100	40	10	5	5	80	6
	BNHRDS631T	Money & Finance	100	40	10	5	5	80	6
	BNHRDS632T	Economics of Education and Health	100	40	10	5	5	80	6
	BNHRDS633T	Environmental Economics	100	40	10	5	5	80	6
	BNHRDS634T	Political Economy—II	100	40	10	5	5	80	6
	BNHRDS635T	Topics in Microeconomics II	100	40	10	5	5	80	6
	BNHRDS640J	Dissertation	100	40	-	15	5	80	6
TOTAL			400	TOTAL				24	

At the beginning of Semester V, the department will announce which of the Discipline Specific Elective papers will be offered in Semesters V and VI. The students are required to choose any two papers from these announced papers. The department may limit maximum/minimum number of students enrolled in any of Discipline Specific Electives that is being offered, and such limit, if any, will be announced at the end of Semester IV.

ACRONYMS (AS APPLICABLE) :

CC=Core Course

GE =Generic Elective

AE=Ability Enhancement Compulsory Course

AC= Additional Compulsory Course

SE= Skill Enhancement Elective Course

DS= Discipline Specific Elective

T=Theory

P=Practical

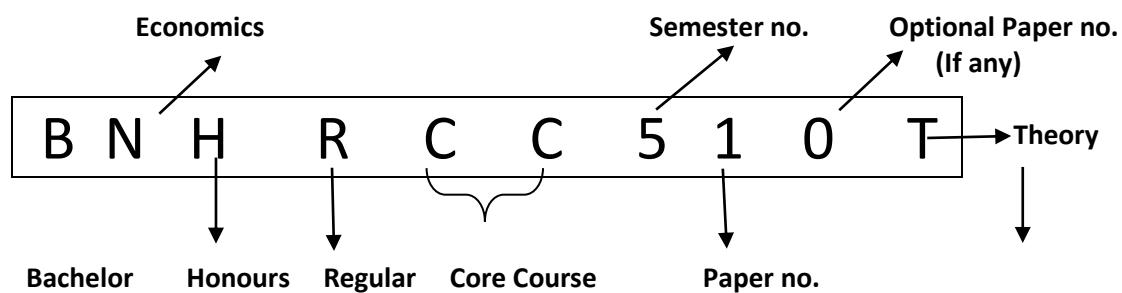
WT= Written test

A=Assignment

ATT=Attendance

O=Others (Seminar, Assignment, etc.)

PAPER CODE ILLUSTRATION:



- **Program Educational Objective for B.A. in Economics:**

This program aims to:

1. Train students the basic Economic principles.
2. To provide a strong foundation with necessary exposure to the different branch of the Economics.
3. Endow the students with the required skills of quantitative methods.
4. Discuss and analyze real-world economic issues as well as the appropriateness of policy responses.

- **Program Educational Outcome (PEOs) for B.A. in Economics:**

After completion of the program, students will:

1. Gain the basic understanding of the Economic theory.
2. Get the exposure of the different branches of Economics to understand the different types of economic problems.
3. Learn the mathematical and statistical techniques, the art of economic modeling necessary to understand the subject.
4. Get an idea of the various types of real-world economic problems and gain an understanding of the various policy responses.

Course Name: Introductory Microeconomics

Course Code: BNHRCC110T

Credit: 6

Semester: I

Nature of the Course: Core Course (CC)

No. of Lecture hours: 75

No. of Tutorial contact hours: 15

Course Learning Outcome: (CLO)

1. The course introduces students to models of how individuals and firms interact within markets, when markets fail, and how government policy may improve outcomes for society.
2. To develop an understanding of the framework that economists use to analyze choices made by individuals in response to incentives and to consider how these choices can also serve the social interest.
3. Relate the basic economic theory and principles to current microeconomic issues and evaluate related public policy
4. To develop thinking capabilities like an economist and the course will illustrate how microeconomic concepts can be applied to analyze real-life situations.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1	Exploring the subject matter of Economics	Why study economics? Scope and method of economics; the economic problem: scarcity and choice; the question of what to produce, how to produce and how to distribute output; science of economics; the basic competitive model; prices, property rights		5		1, 4

		and profits; incentives and information; rationing; opportunity sets; economic systems; reading and working with graphs.				
2	Supply and Demand: How Markets Work, Markets and Welfare	How Markets Work, Markets and Welfare; Markets and competition; determinants of individual demand/supply; demand/supply schedule and demand/supply curve; market versus individual demand/supply; shifts in the demand/supply curve, demand and supply together; how prices allocate resources; elasticity and its application; controls on prices (price ceiling and price floor); taxes and the costs of taxation; consumer surplus; producer surplus and the efficiency of the markets.		20		1, 2, 3, 4
3	The Household	The consumption decision - budget constraint, consumption and income/price changes, demand for all other goods and price changes; description of preferences		20		2, 3, 4

		(representing preferences with indifference curves); properties of indifference curves; consumer 's optimum choice; income and substitution effects				
4	The Firm and Perfect Market Structure	The production process; short run costs and output decisions; costs and output in the long run and the behaviour of profit maximizing firms.		20		1, 3, 4
5	Input Markets	Labour and land markets - basic concepts (derived demand, productivity of an input, marginal productivity of labour); demand for labour; input demand curves; shifts in input demand curves; competitive labour markets; labour markets and public policy.		10		1, 2, 3, 4

Suggested Readings:

1. B. Bernheim and M. Whinston, *Microeconomics*, Tata McGraw-Hill, 2011.
2. N. Mankiw, *Economics: Principles and applications*, Cengage Learning, 2008.
3. Karl E. Case, Ray C. Fair and Sharon M. Oster, *Principles of Economics*, Prentice Hall, 2012.
4. P. A. Samuelson and W. D. Nordhaus, *Economics*, McGraw-Hill Education, 2010.
5. Robert S. Pindyck, Daniel L. Rubinfeld and Prem L. Mehta, *Microeconomics*, Pearson Education India, 2009.
6. G. S. Maddala and E. Miller, *Microeconomics: theory and applications*, McGraw-Hill Education, 1989.

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁	√		√	
CLO ₂	√		√	
CLO ₃	√		√	
CLO ₄				√
For BNHRCC110T	√		√	√

Course Name: Mathematical Methods for Economics I**Course Code:** BNHRCC120T**Credit:** 6**Semester:** I**Nature of the Course:** Core Course (CC)**No. of Lecture hours:** 75**No. of Tutorial contact hours:** 15**Course Learning Outcome: (CLO)**

1. Understanding and analyzing the theory and models taught in the subsequent courses of Microeconomics, Macroeconomics, and Econometrics.
2. Develop the technical skill to build up simple analytical model.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1	Sets theory and Probability	Definition of a set and discussion of related concepts; Set types; Operations on sets; Cartesian product; Introduction to probability theory; Classical definition and axiomatic definition; Conditional probability and independence, Bayes'		12		1

		Theorem; Random variables: discrete and continuous types; Properties of distribution functions, mass functions and density functions; Expectation and Variance of a random variable.				
2	Logic and Relations	Propositions, tautologies, contradictions and negation; Necessary and sufficient conditions; Converse relations; Two-place and three-place relations.		5		1, 2
3	Functions and Correspondences	Definitions; Graphs; Concepts of 'range', 'domain' and 'mapping'; Function and Relation; Different types of relation; Types of functions: quadratic, polynomial, power, exponential, logarithmic, implicit and explicit, composite, inverse, convex, concave functions and their applications,		10		1, 2

		quasi-convex and quasi-concave			
4	The Real numbers	The Algebraic and Order properties of \mathbb{R} ; Absolute value and the Real Line; The Completeness property of \mathbb{R} ; Supremum and Infimum; Intervals		10	1
5	Sequence and Series	Basic Concepts; Convergence and divergence; Algebraic properties and applications		10	1
6	Single-variable optimization	Local and Global optima: geometric characterizations , characterizations using calculus and applications.		10	1, 2
7	Integration of functions	Integration by parts; Method of substitution; Definite integral; Application: Derivation of total cost function from marginal cost function, Derivation of total revenue function from marginal revenue function.		10	1
8	Difference Equations	First order and Second order; Economic application: Cobweb model,		8	1, 2

		Samuelson and Hicks models of business cycles				
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Suggested Readings:

1. K. Sydsaeter and P. Hammond, *Mathematics for Economic Analysis*, Pearson, 2013.
2. K.G. Binmore, *Mathematical Analysis: A straightforward approach*, 2nd Edition, Cambridge University Press, 1983.
3. R.V. Hogg and A.T. Craig, *An Introduction to Mathematical Statistics*, 3rd Edition, Macmillan Company, 1970.
4. John Francis Kenny and E. S. Keeping, *Mathematical Statistics*, Van Nostrand, 1964.
5. Alpha Chiang and Kevin Wainwright, *Fundamental Methods of Mathematical Economics*, 4th Edition, Mc-Graw Hill Education, 2005.

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁	√		√	
CLO ₂	√		√	
For BNHRCC120T	√		√	

Course Name: Mathematics I

Course Code: BNHRGE130T

Credit: 6

Semester: I

Nature of the Course: Generic Elective (GE)

No. of Lecture hours: 75

No. of Tutorial contact hours: 15

Course Learning Outcome: (CLO)

1. To understand the Real Analysis in detail.
2. Application of derivative tests in optimization problems appearing in social sciences.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1	Fundamentals of Set Theory	Definition of a Set, subset,		5		1

		laws of algebra on a set, DE Morgan's laws, set of sets, partition in a set, Cartesian products				
2	Relations	Definition, relations on a set, composition of relations, equivalence relation (properties without proofs and examples)		15		1
3	Mapping	Definition, domain, range, into mapping, onto mapping, surjective mapping, injective mapping, injective, bijective mapping, constant mapping, identity mappings, equality of mappings, composition of mappings, inverse of mappings (necessary theorems to be taught if required and no proofs)		15		1
4	Functions	Introduction (the Real Number System, The natural numbers, Integers,		10		1

		<p>Rational Numbers), Peano's Axiom, the well ordering principle, the Archimedean property, open and closed sets, countable and uncountable sets, bounded and unbounded property of sets, supremum and infimum, the least upper bound axiom, definition of a function, graphical representation of functions, finding domain and range of any function, some special functions namely the modulus function, the box function, trigonometrical functions etc.</p>				
5	Sequences	<p>Definition, bounded and unbounded sequences, limit of a sequence and necessary theorems (no proofs required), monotone sequences, convergence and divergence of monotone sequences, monotone</p>		10		1

		convergence theorem, Cauchy Sequences				
6	Series of constant terms	definition, convergence and divergence, the geometric series and the p series, Cauchy's Convergence Criterion as applied to infinite series, some general theorems on divergence (only statements), Series of positive terms and test for their convergence (Comparison Test, Cauchy's Root Test, D' Alembert's Ratio Test, Raabe's Test, Gauss's Test), Alternating Series, Leibnitz theorem for convergence of alternating series		20		1
7	Limit and Continuity	concept of infinity, meaning of the symbols $x \rightarrow a$ and $x \rightarrow \pm\infty$, concept of neighborhood and interval, ϵ - δ definition of limit, geometric significance of a limit, left				1

		<p> hand limit and right hand limit, certain theorems on limit (no proofs required), Cauchy's Criterion for the Existence of Limit of a Function, limit of a function as defined in the language of a sequence, definition of continuity at a point and on an interval, graphical interpretation of continuity, piecewise continuous function: discontinuous functions, types of discontinuity, elementary properties on continuous functions (no proofs), intermediate value property (Bolzano's theorem of continuity, intermediate value property, fixed-point theorem only statements no proofs), Boundedness property of continuous functions, continuity of </p>				
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		inverse functions.				
8	Differentiation and Differentiability	definition, derivability, relation between continuity and derivability, differentiation using the fundamental theorem of differentiation, standard formula and rules for differentiation, implicit and parametric forms, concept of differentiability, sign of the derivative at a point, geometric interpretation of a derivative, Chain Rule (statement and applications), intermediate value property of derivatives.				1, 2
9	Successive Differentiation	the n th derivative of x^k , standard problems on second order differentiation, Leibnitz Theorem on Successive Differentiation				1, 2
10	Maxima Minima and Indeterminate Forms	Indeterminate Forms and L'Hospital's Rule (statement and applications),				1, 2

		maxima and minima definitions, critical value, higher derivative test for the existence of extreme values, an introduction to convex and concave functions				
11	Mean Value Theorems	introduction, Rolle's Theorem (proof required), geometric interpretation of Rolle's theorem, Lagrange's Mean Value Theorem (proof required), geometric interpretation of Lagrange's Mean Value Theorem, Cauchy's Mean Value Theorem (proof required), Taylor's Generalised Mean Value Theorem (Lagrange, Cauchy and Schlomilch-Roche form of Remainder) (only statement), Maclaurin's Theorem (only statement), Young's form of Taylor's				1, 2

		Theorem (only statement) Infinite Series as applied using Taylor's Infinite Series, Power Series Expansion of exponential, cosine, sine and logarithmic functions.				
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Suggested Readings:

1. Alpha Chiang and Kevin Wainwright, *Fundamental Methods of Mathematical Economics*, 4th Edition, Mc-GrawHill Education, 2005.
2. Sheldon Ross, *Introductory Statistics*, Academic Press, 2017.
3. Robert G. Bartle and Donald R. Sherbert, *Introduction to Real Analysis*, 4th Edition, Wiley, 2011.
4. Tom M. Apostol, *Mathematical Analysis*, 2nd Edition, Addition Wesley Publishing Company, Inc., 1974.
5. Walter Rudin, *Principle of Mathematical Analysis*, 3rd Edition, Mc-GrawHill Education, 2013.

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁			√	
CLO ₂			√	
For BNHRGE130T			√	

Course Name: English Communication - I

Course Code: BNHRAE140T

Credit: 1

Semester: I

Nature of the Course: Ability Enhancement Compulsory Course (AE)

No. of Lecture hours: 15

No. of Tutorial contact hours:

Course Learning Outcome: (CLO)

1. Students will be expected to learn how to write Features, Op-eds, Middles, and Editorials.

- Students will be able to develop comprehension skills, improve vocabulary, use proper grammar, acquire writing skills, correspond with others and Enhance skills in spoken English.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1		Theory Of Communication; Types and Modes of Communication; Barriers to communication; Intra-Personal, Inter-Personal and Group Communication		3		1, 2
2		Dialogue; Group Discussion; Effective Communication / Miscommunication; Interview; Public Speaking		4		1, 2
3		Close Reading; Comprehension; Summary paraphrasing; Analysis and interpretation		4		1, 2
4		Report Writing, Making Notes; Letter Writing		4		1, 2

Suggested Readings:

- Fluency In English – Part II, Oxford University Press, 2006.
- Business English, Pearson, 2008.
- Orient Blackswan, Language, Literature, and creativity, 2013.
- Dr. Gauri Mishra, Dr. Ranjana Kaul and Dr. Bratati Biswas, Language through Literature (forthcoming) ed.

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁			√	
CLO ₂			√	
For BNHRAE140T			√	

Course Name: Environmental Studies - I**Course Code:** BNHRAE150T**Credit:** 1**Semester:** I**Nature of the Course:** Ability Enhancement Compulsory Course (AE)**No. of Lecture hours:** 15**No. of Tutorial contact hours:****Course Learning Outcome: (CLO)**

1. Understand concepts and methods from ecological and physical sciences and their application in environmental problem solving.
2. Understand concepts and methods from economic, political, and social analysis as they pertain to the design and evaluation of environmental policies and institutions.
3. Appreciate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.
4. Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1	Introduction to Environmental Studies	Multidisciplinary nature of Environmental Studies; Scope and importance; the need for Environmental Education. Concept of sustainability and sustainable development		2		1, 2, 3
2	Ecosystems	a) What is Ecosystem?		3		1, 2, 4

		<p>Structure: food chains, food webs and function of ecosystem: Energy flow in an Ecosystem: Energy flow in an Ecosystem, Nutrient cycle and ecological successions. Ecological interactions. b) Case studies of the following Ecosystems: a) Forest Ecosystem b) Grassland Ecosystem) Desert Ecosystem d) Aquatic Ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)</p>			
3	Biodiversity and conservation	<p>a) Levels of biological diversity: Genetic, Species and Ecosystem diversity; Biogeographic zones of India; Biodiversity patterns and Global biodiversity hot spots b) India as mega-biodiversity nation; Endangered and endemic species of India c) Threats to biodiversity:</p>		4	1, 2, 4

		<p>Habitat loss, poaching of Wildlife, Man – Wildlife conflicts, biological invasions: Conservation of biodiversity: In-Situ and Ex- Situ conservation of biodiversity</p> <p>d) Nature reserves, tribal populations and rights (Niyamgiri Vedanta, POSCO), and human Wildlife conflicts in Indian context (Sundarban-Human –Tiger encounters)</p> <p>e) Ecosystem and biodiversity services: Ecological, Economic, Social, Ethical, Aesthetic and Informational value.</p>				
4	<p>Environmental pollution and Global Environmental issues</p>	<p>a) Environmental pollution: Types, causes, effects and controls: Air, water, soil, and noise pollution.</p> <p>b) Climate change, Global warming, Ozone layer depletion, acid rain, photo-chemical smog, and impacts on human</p>		6		1, 2, 4

		communities and agriculture c) Nuclear hazards and human health risks (Chernobyl, 3-mile Island, Daiichi – Fukushima) d) Solid-waste Management: Control measures of urban and industrial waste, special reference to e-waste, Biomedical waste e) Pollution Tragedies: Love canal, Bhopal Gas, Endosulfan, Minamata and Flint water				
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Suggested Readings:

1. M. Basu, and S. Xavier, Fundamentals of Environmental Studies, Cambridge University Press, 2016.
2. A. K Mitra and R. Chakraborty, Introduction to Environmental Studies, Book Syndicate, 2016.
3. E. Enger and B. Smith, Environmental Science: A Study of Interrelationships, 12th edition, McGraw-Hill Higher Education; 2010.
4. R. N. Basu, Environment, University of Calcutta, 2000.

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁		√		√
CLO ₂		√		√
CLO ₃		√		√
CLO ₄		√		√
For BNHRAE150T		√		√

Course Name: Intermediate Macroeconomics I

Course Code: BNHRCC210T

Credit: 6

Semester: II

Nature of the Course: Core Course (CC)

No. of Lecture hours: 75

No. of Tutorial contact hours: 15

Course Learning Outcome: (CLO)

1. This course aims to introduce the students to the basic concepts of macroeconomics, which deals with the aggregate economy.
2. This course discusses the preliminary concepts associated with the determination and measurement of aggregate macroeconomic variables like savings, investment, GDP, money, inflation, and the balance of payments.
3. Students will learn the major perspectives on what determines the performance of the overall economy and will learn to analyze impacts on the economy.
4. To understand how the economy is regulated through monetary and fiscal policies.
5. To study the important indicators of the economy and their significance.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1	Introduction to Macroeconomics and National Income Accounting	Measurement of GDP; National Income Accounting in closed economy and open-economy; price indices		15		1,2
2	The Closed Economy in the Short-Run without money	Goods Market equilibrium; Simple Keynesian Model (SKM); Multiplier		15		2,3
3	Money	Functions of money;		15		1,3,4

		quantity theory of money; determination of money supply and demand (only quantity theory of money); credit creation; tools of monetary policy				
4	The Closed Economy in the Short-Run: Goods and Money Market	Goods market equilibrium and IS-Curve; Money Market equilibrium and LM curve; Equilibrium in goods and money market; Fiscal and Monetary Policy		15		1,3,4
5	Inflation	Inflation and its social costs; hyperinflation, Demand Pull Inflation, Cost Push Inflation and Stagflation		15		4,5

Suggested Readings:

1. Andrew B. Abel and Ben S. Bernanke, *Macroeconomics*, Pearson, 2008.
2. Chandana Ghosh and Ambar Ghosh, *Macroeconomics*, PHI Publishers, 2011.
3. Errol D'Souza, *Macroeconomics*, Pearson Education, 2009.
4. Olivier Blanchard, *Macroeconomics*, Pearson Prentice Hall, 2009.
5. Paul R. Krugman, Maurice Obstfeld and Marc J. Melitz, *International Economics: Theory and Policy*, Pearson, 2015.
6. N. Gregory Mankiw, *Macroeconomics*, Worth Publishers, 2015.

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁	√	√		
CLO ₂	√	√		√
CLO ₃	√			√
CLO ₄	√			
CLO ₅	√			
For BNHRCC210T	√	√		√

Course Name: Mathematical Methods for Economics II**Course Code:** BNHRCC220T**Credit:** 6**Semester:** II**Nature of the Course:** Core Course (CC)**No. of Lecture hours:** 75**No. of Tutorial contact hours:** 15**Course Learning Outcome: (CLO)**

1. Understanding and analyzing the theory and models taught in the subsequent courses of Microeconomics, Macroeconomics, and Econometrics.
2. Develop the technical skill to build up simple analytical models.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1	Linear Algebra	Vector spaces: algebraic and geometric properties, scalar products, norms, orthogonality; linear transformations: properties, matrix representations and elementary operations; systems of linear equations: properties of their solution sets;		20		1, 2

		determinants: characterization, properties and applications.				
2	Functions of several real variables	Geometric representations: graphs and level curves; differentiable functions: characterizations, properties with respect to various operations and applications; second order derivatives: properties and applications; the implicit function theorem, and application to comparative statics problems; homogeneous and homothetic functions: characterizations and applications.		20		1, 2
3	Multi- variable optimization	Convex sets; geometric properties of functions: convex functions, their characterizations, properties and applications; further geometric properties of functions: quasi- convex functions, their characterizations, properties and applications; unconstrained optimization: geometric characterizations, characterizations		20		1, 2

		using calculus and applications; constrained optimization with equality constraints: geometric characterizations, Lagrange characterization using calculus and applications; properties of value function: envelope theorem and applications.				
4	Differential equations	Defining Order and degree of Differential equations, First order and Second order differential equation, Applications: Output Adjustment in SKM, Price adjustment in competitive markets		15		1, 2

Suggested Readings:

1. Alpha Chiang and Kevin Wainwright, *Fundamental Methods of Mathematical Economics*, 4th Edition, Mc-graw Hill Education, 2005.
2. Avinash K. Dixit, *Optimization in Economic Theory*, 2nd Edition, Oxford University Press, 1990.
3. Carl P. Simon and Lawrence Blume, *Mathematics for Economists*, W.W. Norton and Company Inc., 1991.
4. K. Sydsaeter and P. Hammond, *Mathematics for Economic Analysis*, Pearson, 2013.

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁	√		√	
CLO ₂	√		√	
For BNHRCC220T	√		√	

Course Name: Mathematics II

Course Code: BNHRGE230T

Credit: 6

Semester: II

Nature of the Course: Generic Elective (GE)

No. of Lecture hours: 75

No. of Tutorial contact hours: 15

Course Learning Outcome: (CLO)

1. Understand the Matrix and Vector in details.
2. Relate matrices and linear transformations, compute Eigen values and Eigen vectors of linear transformations.
3. Know the fundamental concept of integration for single and multivariate functions.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1	Matrices and Gaussian Elimination	Introduction, the Geometry of Linear Equations, An Example of Gaussian Elimination, Matrix Notation and Matrix Multiplication, Triangular Factors and Row Exchanges, Inverses and Transposes		15		1
2	Vector Spaces and Subspaces	Solving $Ax = 0$ and $Ax = b$, Linear Independence, Basis, and Dimension, The Four Fundamental Subspaces, Linear Transformations		15		1
3	Orthogonal vectors and	Cosines and Projections onto		10		1

	Orthogonal spaces	Lines, Projections and Least Squares, Orthogonal Bases and Gram-Schmidt				
4	Determinants	Introduction, Properties of the Determinant, Formulas for the Determinant, Applications of Determinants		15		1, 2
5	Eigen Values and Eigenvectors	Introduction, Diagonalization of a Matrix, Difference Equations and Powers A^k , Differential Equations		10		1, 2
6	Positive definite matrices	Minima, Maxima, and Saddle Points, Tests for Positive Definiteness, Singular Value Decomposition		10		1, 2
7	Integration of Single and Multivariate functions	Areas under two dimensional curves, Indefinite integrals of a one variable function, Definite integral, Double Integral, Geometry of bivariate functions; Surface and Volume		10		3

Suggested Readings:

1. B.C. Das and B.N. Mukherjee, *Integral Calculus*, 4th Edition, Calcutta: U.N. Dhur, 1964.
2. Hoffman and Kunze, *Linear Algebra*, 2nd Edition, Pearson, 1978.
3. K. Sydsaeter and P. Hammond, *Mathematics for Economic Analysis*, Pearson Education Asia, Delhi, 2005.
4. Strang Gilbert, *Linear Algebra and its Application*; 4th Edition, Thomson, 2006.

5. Sheldon Ross, *Introductory Statistics*, Academic Press, 2017.

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁			√	
CLO ₂			√	
CLO ₃			√	
For BNHRGE230T			√	

Course Name: English Communication - II

Course Code: BNHRAE240T

Credit: 1

Semester: II

Nature of the Course: Ability Enhancement Compulsory Course (AE)

No. of Lecture hours: 15

No. of Tutorial contact hours:

Course Learning Outcome: (CLO)

1. Students will be expected to learn how to write Features, Op-eds, Middles and Editorials.
2. Students will be able to develop comprehension skills, improve vocabulary, use proper grammar, acquire writing skills, correspond with others and Enhance skills in spoken English.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1	Literature	Short Stories	The Last Leaf – O Henry, The Astrologer’s Day – R.K. Narayan, The Postmaster – Rabindranath Tagore	3		1, 2
		Poems	The Listeners – Walter de la Mare, The Highway Man – Alfred Noyes,			

			Stopping by the Woods – Robert Frost			
2	Language	Monologue	Narrate the story of The Astrologer’s Day, The Listeners and Stopping by the Woods in form of a prose monologue	4		1, 2
		Dialogue writing	Narrate the story of The Astrologer’s Day and The Listeners in the form of a dialogue	4		1, 2
		Group discussion	Discuss in your group: 1) ‘The Astrologer’s Day’ is a snapshot of contemporary India; 2) ‘The Listeners’ evokes a sense of mystery; 3) The image of love as depicted in ‘The Last Leaf;’ 4)The Theme of romance in The Highway Man; 5) Themes in Stopping by the Woods. 6)The theme of Individual aspiration in The Postmaster			
		Interview	Face an interview on the topics 1) the ‘relevance of astrology in the scientific age;’2) ‘significance of art’ in life with reference to The	4		1, 2

			Last Leaf; 3) The correlation between 'love' and 'sacrifice' with reference to The Highway Man. 4) Reflections on life in Stopping by the Woods. 5) Human relationship with reference to The Postmaster			
		Comprehension	Answer questions from the select sections of The Last Leaf or The Postmaster			
		Summary and paraphrasing	Paraphrase the poems, 'The Highway Man' and 'The Listeners' and Stopping by the Woods.			
		Write a report on any given topic				
		Write a letter as per the given directions				

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁			√	
CLO ₂			√	
For BNHRAE240T			√	

Course Name: Environmental Studies - II

Course Code: BNHRAE250T

Credit: 1

Semester: II

Nature of the Course: Ability Enhancement Compulsory Course (AE)

No. of Lecture hours: 15

No. of Tutorial contact hours:

Course Learning Outcome: (CLO)

1. Understand concepts and methods from ecological and physical sciences and their application in environmental problem solving.
2. Understand concepts and methods from economic, political, and social analysis as they pertain to the design and evaluation of environmental policies and institutions.
3. Appreciate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.
4. Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1	Natural Resources: Renewable and Non-renewable Resources	a) Land resources and land use change; Land degradation, soil erosion and desertification. b) Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations. c) Disaster management: floods, earthquake, cyclones and landslides.		6		1, 2, 3

		<p>Resettlement and rehabilitation of project affected persons; case studies. Water: Use and over-exploitation of surface and groundwater, floods, droughts, conflicts over water (international & inter-state).</p> <p>d) Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs, case studies.</p>				
2	Environmental Management: Laws, Policies & Practices	<p>UN Initiatives and International agreements: Montreal and Kyoto protocols, Paris Climate Summit (2015) and Convention on Biological Diversity (CBD).</p> <p>Environmental ethics: Role of Indian and other religions and cultures in environmental conservation.</p> <p>Green Politics, Earth Hour, Green Option Technologies,</p>		7		1, 2, 4

		<p>ISO standards: ISO 9000 and 14000.</p> <p>Environmental communication and public awareness, Role of National Green Tribunal; EIA Formulations, stages, Merits and demerits: case studies (e.g., CNG vehicles, Bharat IV stage)</p> <p>Environment Laws: Environment Protection Act (1986); Air (Prevention & Control of Pollution) Act (1981); Forest Conservation Act (1980); Water (Prevention and control of Pollution) Act (1974); Wildlife Protection Act (1972), Biodiversity Act (2002)</p>				
3	Human Population and the Environment	<p>Human population growth: Impacts on environment, human health and welfare. Family Welfare Programs, Human Rights. Environmental movements: Chipko, Silent valley, Bishnoi,</p>		2		1, 2, 4

		Narmada Bachao Andolan, Nava Danya. Role of Information Technology (IT) in environment and Human Health				
4	Field work / Paper Writing			Equal to 5 Lectures		1, 2, 4

Suggested Readings:

1. M. Basu, and S. Xavier, Fundamentals of Environmental Studies, Cambridge University Press, 2016.
2. A. K Mitra and R. Chakraborty, Introduction to Environmental Studies, Book Syndicate, 2016.
3. E. Enger and B. Smith, Environmental Science: A Study of Interrelationships, 12th edition, McGraw-Hill Higher Education; 2010.
4. R. N. Basu, Environment, University of Calcutta, 2000.

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁		√		√
CLO ₂		√		√
CLO ₃		√		√
CLO ₄		√		√
For BNHRAE250T		√		√

Course Name: Intermediate Microeconomics I

Course Code: BNHRCC310T

Credit: 6

Semester: III

Nature of the Course: Core Course (CC)

No. of Lecture hours: 75

No. of Tutorial contact hours: 15

Course Learning Outcome: (CLO)

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

1. Learn about the basic elements of consumer theory and production theory.
2. Comprehend how market price and output decisions are taken in different market structures.
3. Analyze pricing by firms with market power.
4. Get a solid grasp of microeconomic analysis at the intermediate level using mathematical techniques where appropriate.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1	Theories of Consumer Behavior and Applications	Application of basic concepts of consumer theory (Cobb-Douglas preference, CES utility function, Perfect complements and Perfect substitutes goods), Intertemporal choice (saving and borrowing), Revealed preference, Choice under uncertainty – utility function and expected utility, risk aversion and risk preference, Applications of Consumer Behaviour in Construction of Price Indices – Laspeyers and Paasche's indices		13		1, 4
2	Production and Costs	Technology; isoquants;		12		1, 4

		production with one and more variable inputs; Types of production functions- Cobb-Douglas, fixed-coefficient and CES functions; returns to scale; short run and long run costs; cost curves in the short run and long run; economies of scale.				
3	Perfect Competition	Assumptions; short run and long run equilibrium; Application of tax and subsidy and other government policies		15		2, 3, 4
4	Monopoly	Sources of Monopoly; barriers to entry- output determination and price rule, measure and sources of monopoly power, social costs of monopoly power- deadweight loss; multiplant monopoly; application of tax and subsidy; advertising in monopoly; pricing with market power- first-, second- and third-degree price discrimination; bundling; peak-load pricing		20		3, 4
5	Input Market	Derived demand for input, marginal		15		2, 3, 4

		product and marginal revenue product, input demand for competitive firm and competitive industry, returns to scale and product exhaustion. Input demand under monopoly and monopsony: Role of Trade Union.				
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Suggested Readings:

- Anindya Sen, *Microeconomics: Theory and Applications*, Oxford University Press, 1999.
- C. E. Ferguson and J.P. Gould, *Microeconomic Theory*, AITBS Publishers and Distributors, New Delhi.
- C. Snyder and W. Nicholson, *Fundamentals of Microeconomics*, Cengage Learning, 2010.
- Hal. R Varian, *Intermediate Microeconomics*, A modern Approach, 8th Edition, WW Norton and Company Inc., 2010.
- Hugh Gravelle & Ray Rees, *Microeconomics*, 3rd Edition, Pearson Education India, 2004.
- Michael D. Whinston & B. Douglas Bernheim, *Loose-Leaf for Microeconomics*, 2nd Edition, McGraw-Hill Education, 2013.
- Robert S. Pindyck, Daniel Rubinfeld & Prem L. Mehta, *Microeconomics*, 7th Edition, Pearson Education India, 2009.
- Satya R. Chakrabarty, *Microeconomics*, Allied Publishers, 2002.

CLO-PLO Mapping:

CLO/PLO	PLO1	PLO2	PLO3	PLO4
CLO1	√			
CLO2	√	√		√
CLO3	√	√		√
CLO4			√	
For BNHRCC310T	√	√	√	√

Course Code: BNHRCC320T

Credit: 6

Semester: III

Nature of the Course: Core (CC)

No. of Lecture hours: 75

No. of Tutorial contact hours: 15

Course Learning Outcome (CLO):

1. To learn the basics of Aggregate demand and Aggregate supply for an economy.
2. To be able to learn how fiscal policy and monetary policy operate and the pros and cons of both policies.
3. To learn how national income is determined in an open economy.
4. To be able to analyze how equilibrium takes place both in the goods market and the foreign market and how this equilibrium is affected by fiscal and monetary policy.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1	Aggregate Demand (AD) and Aggregate Supply (AS) curves	Derivation of AD and AS curves: interaction of AD and AS		10		1
1	Aggregate Demand (AD) and Aggregate Supply (AS) curves	Comparative static exercises: fiscal policy, monetary policy, wage-cut (Keynes effect)		10		1, 2
1	Aggregate Demand (AD) and Aggregate Supply (AS) curves	Expectation & AS curve: Alternative models—Sticky wage, worker's misperception model, incomplete information model & sticky price model		10		1, 2
2	Inflation, Unemployment	Phillips Curve—		5		1

	and expectations	Adaptive and rational expectations				
2	Inflation, Unemployment and expectations	Policy ineffectiveness debate; monetary policy and time inconsistency model		10		1, 2
3	Balance of Payments and Exchange rate	Balance of Accounts in an open economy; Determination of national income		10		3, 4
3	Balance of Payments and Exchange rate	Country & repercussion effect—open economy multiplier with & without repercussion effect; fixed & flexible exchange rate, adjustment of demand and supply of foreign exchange		10		3, 4
3	Balance of Payments and Exchange rate	Effect of devaluation in output & trade balance; Marshall-Lerner condition; J-curve effect; Mundell-Fleming model under alternative exchange rate regimes; Asset approach and overshooting of exchange rate		10		3, 4

Suggested Readings:

1. Andrew B. Abel and Ben S. Bernanke, *Macroeconomics*, 7th Edition, Pearson, 2011.

2. Errol D'Souza, *Macroeconomics*, 1st Edition, Pearson, 2009.
3. Olivier Blanchard, *Macroeconomics*, 5th Edition, Pearson Education, 2009.
4. Paul R. Krugman, Maurice Obstfeld and Marc Melitz, *International Economics: Theory and Policy*, 9th Edition, Pearson Education, 2012.
5. N. Gregory Mankiw. *Macroeconomics*, 7th Edition, Worth Publishers, 2010.
6. Rudiger Dornbusch, Stanley Fischer and Richard Startz, *Macroeconomics*, 11th Edition, McGraw Hill Education, 2010.
7. Rudiger Dornbusch, *Open Economy Macroeconomics*, Basic Books, 1980.
8. Steven M. Sheffrin, *Rational Expectations*, 2nd Edition, Cambridge University Press, 1996.

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁	√		√	√
CLO ₂	√		√	√
CLO ₃	√		√	√
For BNHRCC320T	√		√	√

Course Name: Statistical Methods for Economics

Course Code: BNHRCC330T

Credit: 6

Semester: III

Nature of the Course: Core Course (CC)

No. of Lecture hours: 75

No. of Tutorial contact hours: 15

Course Learning Outcome: (CLO)

1. Describe and discuss the key statistical terminology, concepts, tools, and techniques.
2. Critically evaluate the underlying assumptions of analysis tools.
3. Understand and critically discuss the issues surrounding sampling and significance.
4. Discuss critically the uses and limitations of statistical analysis.
5. Solve a range of problems using the techniques covered.
6. Conduct basic statistical analysis of the data.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1	Descriptive Statistics	Presentation of Data;		25		1, 3, 4, 5, 6

		Frequency Distribution; Measures of central tendency, Dispersion, Moments, Skewness and Kurtosis; Bivariate Frequency Distribution – correlation and regression.				
2	Index Number	Price and quantity index number; Different formula; Tests for an ideal index; application – Cost of living index; Real GDP.		5		1, 2, 5, 6
3	Univariate Probability Distribution	Discrete distribution - Binomial, Poisson; Continuous Distributions - Uniform, Normal, Exponential (Properties of each distribution; mean and variance).		25		1, 2, 5, 6
4	Jointly Distributed Random Variables	Density function of Bivariate normal distribution and obtaining means, variances and correlation coefficients.		10		1, 2, 5, 6

5	Sampling	Concept of sampling and random sampling. Principal steps in a sample survey; Methods of sampling -SRSWR, SRSWOR, Stratified sampling. Sampling vs non-sampling error.		10		1, 2, 3, 4, 5, 6
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Suggested Readings:

1. Jay L. Devore, *Probability and Statistics for Engineers*, Cengage Learning, 2010.
2. John E. Freund, *Mathematical Statistics*, Prentice Hall, 1992.
3. A. M. Mood, F. A. Greybill and D. C. Boes, *Introduction to the theory of statistics*, McGraw Hill Education, 1974.
4. Richard J. Larsen and Morris L. Marx, *An Introduction to Mathematical Statistics and its Applications*, Prentice Hall, 2011.
5. R.V. Hogg and A.T. Craig, *An Introduction to Mathematical Statistics*, 3rd Edition, Macmillan Company, 1970.
6. William G. Cochran, *Sampling Techniques*, JohnWiley, 2007

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁		√	√	
CLO ₂		√	√	
CLO ₃			√	
CLO ₄			√	√
CLO ₅			√	
CLO ₆			√	√
For BNHRCC330T		√	√	√

Course Name: Statistics I
Course Code: BNHRGE34OT
Credit: 6
Semester: III
Nature of the Course: Generic Elective (GE)
No. of Lecture hours: 75
No. of Tutorial contact hours: 15

Course Learning Outcome: (CLO)

1. Ability to analyze different types of data sets.
2. Students will learn the theoretical basis for techniques widely used in empirical research and consider their application in a wide range of problems.
3. To understand the concepts and apply descriptive statistical tools for a given data set.
4. To understand the probability theories and to apply probability distributions to various economic problems.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1	Introduction to Statistics			5		1
2	Presentation and Collection of Data	Frequency and non-frequency data		5		1
3	Measures of Central tendency	Mean, Median, Mode, Quartile, Percentile		10		1, 2, 3
4	Measures of Dispersion	Range, Mean deviation, Standard deviation, relative measures		10		1, 2,3
5	Moments, Skewness and Kurtosis			5		1, 2, 3
6	Correlation and Regression			10		1, 2, 3
7	Introduction to Probability theory	Probability measure/ Probability set function.		10		1, 2, 4

		Probability Space. Conditional probability and independence, Bayes Theorem.				
8	Random variables	Discrete and continuous types. Properties of distribution functions, mass functions and density functions. Expectations of a random variable.		10		2, 4
9	Transformations of variables	Discrete and continuous types.		10		2

Suggested Readings:

1. David Freedman, Robert Pisani and Roger Purves, *Statistics*, W. W. Norton & Company, 1998.
2. Goon A. M., Gupta M. K. and Das Gupta. B., *Basic Statistics*, World Press, Calcutta.
3. Robert V. Hogg, Joseph W. McKean and Allen Thornton Craig, *Introduction to Mathematical Statistics*, Pearson Education.
4. Sheldon M. Ross, *Introduction to Probability Models*, Elsevier Science, 2006.

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁		√		√
CLO ₂		√	√	√
CLO ₃			√	
CLO ₄			√	
For BNHRGE340T		√	√	√

Course Name: Data Analysis

Course Code: BNHRSE350T

Credit: 2

Semester: III

Nature of the Course: Skill Enhancement Elective (SE)

No. of Lecture hours: 15

No. of Tutorial contact hours: 15

Course Learning Outcome: (CLO)

1. To demonstrate the univariate, bivariate and multivariate data analysis techniques.
2. To perform the data analysis using various software packages (MS Excel).
3. Effectively visualize the data and interpret the data.
4. To learn the process of reporting the results.
5. To evaluate the Indian data.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1	Sources of data; Population census versus sample surveys; Random sampling; Designing of questionnaire pre-testing of questionnaire for collection of primary data.			3		1, 3, 5
2	Descriptive statistics: mean, median, mode, measures of dispersion, skewness and kurtosis, simple correlation; rank correlation. Graphical representation of data sets: pie chart, bar chart; linear and nonlinear curve			10		1, 2, 3, 4

	fitting; Introduction to probability theory; random sampling using random number table, ANOVA based Tests.					
3	Analysis of Indian Data: Economic Survey, RBI Bulletin on currency and finance, ASI DATA, Foreign Trade Statistics, NSS Consumer surveys.			2		1, 2, 3, 5

Suggested Readings:

1. A.M. Goon, M.K. Gupta, B. Dasgupta, *Fundamentals of Statistics: Volume 1&2*, World Press Private Ltd, 2013.
2. M.R. Spiegel, *Theory and Problems of Probability and Statistics*, Schaum Outline Series, 1980.
3. Official websites of RBI, Government of India, NSS, ASI.
4. W. G. Cochran, *Sampling Techniques*, 3rd Edition, Wiley, 1977.
5. P. H. Karmel and M. Polasek, *Applied Statistics for Economists*, 4th edition, Pitman, 1978.

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁		√	√	√
CLO ₂		√	√	
CLO ₃			√	
CLO ₄			√	√
CLO ₅			√	√
For BNHRSE350T		√	√	√

Course Name: Intermediate Microeconomics II

Course Code: BNHRCC410T

Credit: 6

Semester: IV

Nature of the Course: Core Course (CC)

No. of Lecture hours: 75

No. of Tutorial contact hours: 15

Course Learning Outcome: (CLO)

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

1. Understand the efficiency of markets and the environment where the standard market mechanism fails to generate the desirable outcomes.
2. Learn about game theoretic approaches and their usage to analyze different economic situations.
3. Get a solid grasp of microeconomic analysis using mathematical techniques where appropriate.
4. Apply economic theory to a variety of real-world scenarios.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1	Market Structure and Game Theory	Monopolistic competition; Game theory and oligopoly; bilateral monopoly		25		1, 2, 3
2	General Equilibrium, Efficiency and Welfare	Equilibrium and efficiency under pure exchange and production; Overall efficiency and welfare economics, Fundamental theorems of Welfare Economics.		25		3
	Market Failure	Externality and solution –		20		1, 3, 4

		Pigouvian taxation and subsidy, Coase solution; Public goods and markets with asymmetric information.				
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Suggested Readings:

A. K. Dixit and S. Skeath, *Games of strategy*, Fourth international student edition, WW Norton & Company, 2015.

Anindya Sen, *Microeconomics: Theory and Applications*, Oxford University Press, 1999.

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

David M. Kreps, *A Course in Microeconomics*, Princeton University Press, 1992.

Hal R. Varian, *Intermediate Microeconomics*, a Modern Approach ,8th edition, W.W. Norton and Company, Affiliated East-West Press (India), 2010.

Hal R. Varian, *Microeconomic Analysis*, 3rd edition, W.W. Norton and Company, 1992

Jean Tirole, *Theory of Industrial Organization*, MIT Press, 1988.

M. J. Osborne and A. Rubinstein, *Models in Microeconomic Theory*, Open Book Publishers, 2020.

Martin J. Osborne, *An Introduction to Game Theory*, Oxford University Press, New Delhi, 2004.

P. K. Dutta, *Strategies and Games*, The MIT Press, 1999.

R. M. Starr, *General equilibrium theory: An introduction*, Cambridge University Press, 2011.

Robert Gibbons, *A Primer in Game Theory*, Princeton University Press, 1992.

CLO/PLO	PLO1	PLO2	PLO3	PLO4
CLO1	√			
CLO2	√	√		
CLO3			√	
CLO4	√			√
For BNHRCC410T	√	√	√	√

Course Name: Intermediate Macroeconomics—II

Course Code: BNHRCC420T

Credit: 6

Semester: IV

Nature of the Course: Core (CC)

No. of Lecture hours: 75

No. of Tutorial contact hours: 15

Course Learning Outcome: (CLO)

1. To be able to understand the differences between various macroeconomic schools of thought.
2. To be able to learn about micro foundations of Macroeconomic variables.
3. To be able to explore main aspects of economic growth theories.
4. To be able to relate macroeconomic theory to current macroeconomic issues in economy.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1	Schools of Macroeconomic Thoughts	Classicals; Keynesians; Rational Expectations; New Keynesians; menu costs, wage-price spiraling; coordination failure		15		1
2	Microeconomic Foundations	Consumption: Keynesian Consumption Function; Fisher's Theory of Optimal Intertemporal Choice; Life-cycle and Permanent Income Hypothesis		15		2, 4
		Investment: Keynesian theory of investment; determinants of fixed		10		2, 4

		investment; residential investment and inventory investment				
		Demand for Money: Keynesian theory of regressive expectations; Tobin's theory of speculative demand for money; Baumol Tobin's theory of transaction demand for money		15		2, 4
3	Economic Growth	Harrod Domar Model; Solow Model		10		3
		Golden rule, Technological Progress and elements of endogenous growth		10		3

Suggested Readings:

1. Andrew B. Abel and Ben S. Bernanke, *Macroeconomics*, 7th Edition, Pearson, 2011.
2. Chandana Ghosh and Ambar Ghosh, *Macroeconomics*, PHI Publishers, 2011.
3. Errol D'Souza, *Macroeconomics*, 1st Edition, Pearson, 2009.
4. Olivier Blanchard, *Macroeconomics*, 5th Edition, Pearson Education, 2009.
5. Paul R. Krugman, Maurice Obstfeld and Marc Melitz, *International Economics: Theory and Policy*, 9th Edition, Pearson Education, 2012.
6. N. Gregory Mankiw. *Macroeconomics*, 7th Edition, Worth Publishers, 2010.
7. Rudiger Dornbusch, Stanley Fischer and Richard Startz, *Macroeconomics*, 11th Edition, McGraw Hill Education, 2010.
8. Amartya Sen, *Growth economics*, Penguin modern economic readings, 1970
9. Charles I. Jones, *Introduction to Economic Growth*, 2nd Edition, W.W. Norton & Company, 2002.
10. Robert J. Gordon, *Macroeconomics*, Prentice-Hall India Limited, 2011.

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁	√	√		
CLO ₂	√		√	

CLO ₃	√		√	
For BNHRCC420T	√	√	√	

Course Name: Introductory Econometrics

Course Code: BNHRCC430T

Credit: 6

Semester: IV

Nature of the Course: Core Course (CC)

No. of Lecture hours: 75

No. of Tutorial contact hours: 15

Course Learning Outcome: (CLO)

1. To understand the appropriate regression analysis for a given dataset.
2. To analyze the performance of the regression analysis using the appropriate statistical tools.
3. To understand the violation of the assumptions of this analysis and remedies for these problems.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1	Simple Linear Regression Model: Two Variable Case	Estimation of model by method of ordinary least squares; properties of estimators; goodness of fit; tests of hypotheses; scaling and units of measurement; confidence intervals; Gauss-Markov theorem; forecasting		15		1, 2
2	Multiple Linear Regression Model:	Estimation of parameters; properties of OLS estimators; goodness of fit -		15		1, 2

		R ² and adjusted R ² ; partial regression coefficients; testing hypotheses – individual and joint; functional forms of regression models.				
3	Violations of Classical Assumptions :	Consequences, Detection and Remedies: Multicollinearity; Heteroscedasticity; Serial correlation.		10		1, 3
4	Specification Analysis:	Omission of a relevant variable; Inclusion of irrelevant variable; Tests of specification errors.		15		1, 2
5	Dummy variable:	Dummy variable for changes in intercept term, slope coefficient; Dummy variable trap; Dummy variable test.		10		1, 2
6	Time-Series Analysis:	Models of Time Series: White noise, Random Walk, Moving Average, Auto Regressive Process, Auto		10		1, 2

		Regressive Moving Average Process; Different components of time series and their measurements.				
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Suggested Readings:

1. Christopher Dougherty, *Introduction to Econometrics*, Oxford University Press, 2011.
2. Damodar N. Gujarati and Dawn C. Porter and Sangeetha Gunasekar, *Basic Econometrics*, 5th Edition, McGraw-Hill Education, 2012.
3. Jeffrey Wooldridge, *Introduction to Econometrics: A modern approach*, 5th Edition, Cengage Learning, 2014.
3. Jan Kmenta, *Elements of Econometrics*, Indian Reprint, Khosla Publishing House.
4. John Johnston and John Enrico DiNardo, *Econometric Methods*, 4th Edition, McGraw-Hill Education, 1997.
5. G.S. Maddala, *Introduction to Econometrics*, Macmillan USA, 1988.

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁		√	√	
CLO ₂		√	√	
CLO ₃		√	√	
For BNHRCC430T		√	√	

Course Name: Statistics II
Course Code: BNHRGE440T
Credit: 6
Semester: IV

Nature of the Course: Generic Elective (GE)

No. of Lecture hours: 75

No. of Tutorial contact hours: 15

Course Learning Outcome: (CLO)

1. Ability to analyse different types of data sets.
2. Students will learn the theoretical basis for techniques widely used in empirical research and consider their application to a wide range of problems.
3. To understand the concepts and apply inferential statistical tools to a given data set.
4. To understand the applied statistical concepts for solving the different types of economic issues.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1	Basic concepts of Statistical Inference	Population & parameter, random sample & statistic; Point and Interval Estimation, confidence level, testing of hypothesis; Distributions of functions of random variables; Sampling distribution of a statistic and its standard error; Elements of hypothesis testing: Null and alternative hypotheses, simple & composite hypotheses, critical region, type I and type II errors, level of significance, size, power, p-		20		1, 2, 3

		value. Exact tests and confidence intervals: classical and p-value approaches.				
2	Tests for Categorical data	Tests of proportions, tests of association and goodness-of-fit using Chi-square test, Yates' correction.		5		1, 3
3	Tests for the significance of correlation coefficient.	Sign test for median, Sign test for symmetry, Wilcoxon two-sample test.		5		1, 3
4	Analysis of variance	One-way and two-way classification. Brief exposure of three basic principles of design of experiments: treatment, plot and block. Analysis of completely randomized design randomized complete block design.		15		1, 2, 3
5	Time Series	Components of time series; Decomposition of time series- Additive and multiplicative model with their merits and demerits; Measurement of trend by method of free-hand curve, method of semi-averages		10		1, 2, 3

		and method of least squares; Measurement of seasonal variations by method of ratio to trend.				
6	Index numbers	Definition; Criteria for a good index number; Different types of index numbers; Construction of index numbers of prices and quantities; Consumer price index number; Uses and limitations of index numbers.		5		1, 4
7	Statistical Quality Control	Importance of statistical methods in industrial research and practice; Determination of tolerance limits; Causes of variations in quality: chance and assignable; General theory of control charts, process & product control; Control charts for variables: X-bar and R-charts; Control charts for attributes: p and c-charts.		5		1, 4
8	Demographic Methods	Introduction; Measurement of population, rates and ratios of vital events; Measurement of		5		1, 4

		mortality: CDR, SDR (w.r.t. Age and sex), IMR, Standardized death rates; Life (mortality) tables: definition of its main functions and uses; Measurement of fertility and reproduction: CBR, GFR, and TFR; Measurement of population growth: GRR, NRR.				
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Suggested Readings:

1. Peter J. Brockwell and Richard A. Davis, *Introduction to Time Series and Forecasting*, Springer, 2001.
2. George Casella and Roger L. Berger, *Statistical Inference*, Brooks/Cole Publishing Company, 1990.
3. A. M. Gun, M. K. Gupta and B. Dasgupta, *An Outline of Statistical Theory*, Vol. I & II, World Press, Calcutta.
4. Douglas C. Montgomery, *Introduction to Statistical Quality Control*, Wiley, 2020.
5. Alexander M. Mood, Duane C. Boes and Franklin A. Graybill, *Introduction to the Theory of Statistics*, Tata McGraw-Hill, 1974.
6. Parimal Mukhopadhyay, *Applied Statistics*, Books and Allied (P) Ltd, 1999.

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁		√		√
CLO ₂		√	√	√
CLO ₃			√	
CLO ₄			√	
For BNHRGE440T		√	√	√

Course Name: Research Methodology

Course Code: BNHRSE450T

Credit: 2

Semester: IV

Nature of the Course: Skill Enhancement Elective (SE)

No. of Lecture hours: 15

No. of Tutorial contact hours: 15

Course Learning Outcome: (CLO)

1. Develop an understanding of various types of research, research objectives, research processes, research designs, and sampling.
2. Have a basic understanding of the strategy for a literature review, the goal of a literature review, and how to use a literature review.
3. Have adequate knowledge of data analysis, sampling and hypothesis testing procedures.
4. To do the process of reporting the research findings and writing an article or research paper.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1	Understanding the nature of research			1		1
2	Formulating the research topic			1		1, 4
3	Review of Literature			2		2, 4
4	Approaches to research and research strategy			1		1
5	Research Ethics			1		4
6	Collection of data: Questionnaire Design			2		3, 4
7	Sample Selection Methods			2		3, 4
8	Analyzing Data			2		3, 4
9	Writing Project Report			2		2, 4
10	Referencing Styles			1		2, 4

Suggested Readings:

1. William G. Cochran, *Sampling Techniques*, Wiley India, 2007.
2. C.R. Kothari and G.Garg, *Research Methodology: Methods and Techniques*, New Age International Publishers.
3. J. Bethlehem, *Applied Survey Methods: A Statistical Perspective*, Wiley.
4. Ranjit Kumar, *Research Methodology: A Step by Step Guide for beginners*, Sage Publications.
5. R. M Groves, Fowler, F.J., Couper, M.P., Lepkowski, J.M., Singer, E. and Tourangeau, R, *Survey Methodology*, Wiley.

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁	√	√		√
CLO ₂	√			
CLO ₃			√	
CLO ₄	√			√
For BNHRSE450T	√	√	√	√

Course Name: International Economics**Course Code:** BNHRCC510T**Credit:** 6**Semester:** V**Nature of the Course:** Core Course (CC)**No. of Lecture hours:** 75**No. of Tutorial contact hours:** 15**Course Learning Outcome: (CLO)**

1. Have a good conceptual understanding of the key concepts of international trade.
2. Ability to outline the development of trade theory historically, differentiating between standard classical and orthodox trade theories.
3. To understand the processes of international economic relations and conceptualizing its impact on international trade.
4. To acquire skills that would help those to take rational decisions on issues related to the international economy.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1.	Theories of International trade:	Basics of trade: Comparative advantage; externalities; international equilibrium; offer curves,		45		1, 2, 3

		<p>terms of trade and stability; Walrasian static stability and Marshall-Lerner condition; gains from trade</p> <p>Comparative versus absolute advantage; David Ricardo's theory of comparative advantage; one-factor economy, production possibility frontier, relative demand and relative supply, terms of trade; Trade in Ricardian world, Complete specialization & GFT</p> <p>Factor endowment & trade; H-O theorem and physical vs. price definitions of factor abundance; Properties of the HO model: Factor intensity ranking, one-to-one correspondenc</p>				
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		<p>e between commodity price ratio & factor price ratio (Stolper-Samuelson theorem), One to one correspondence between endowment ratio and production proportion (Rybczynsky's theorem); Taste bias and invalidation of HO theorem; Leontief Paradox; FPE theorem and sources of its disruption</p>				
2	International trade policy	<p>Trade Policy and its effect; Partial Equilibrium Analysis of Tariff - cost-benefit, Quota, Quota- Tariff equivalence & non-equivalence, monopoly effects of quota, subsidy and voluntary export restraint; General Equilibrium Analysis- distinction between large and small economy, welfare effects of a tariff on</p>		20		3, 4

		small country and large country. Tariff ridden offer curve, Tariff war, Optimum tariff for large economy, Metzler's Paradox.				
3	Open economy macroeconomics	Concepts of Exchange rate – Real and Nominal exchange rate, REER and NEER; Purchasing Power parity; Concepts of Spot and Forward market; Hedging and Covered interest parity condition; India's BOP and exchange rate policy.		10		3, 4

Suggested Readings:

1. Paul R. Krugman, Maurice Obstfeld and Marc J. Melitz, *International Economics: Theory and Policy*, Pearson Education, 2015.
2. R. Caves, J. Frankel and R.W. Jones, *World Trades & Payments* (9th Ed), Pearson Education,
3. Rajat Acharyya, *International Economics: An Introduction to Theory and Policy*, Oxford University Press, 2013.
4. Francisco L. Rivera-Batiz, Luis A Rivera-Batiz and Luis Rivera-Batiz, *International Finance and Open Economy Macroeconomics*, Macmillan, 1994.

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁	√		√	
CLO ₂	√	√	√	
CLO ₃		√		√
For BNHRCC510T	√	√	√	√

Paper: Development Economics**Course Code:** BNHRCC520T**Credit:** 6**Semester:** V**Nature of the Course:** Core Course (CC)**No. of Lecture hours:** 75**No. of Tutorial contact hours:** 15**Course Learning Outcome: (CLO)**

1. To understand the notion of economic development, its measurement, and its various obstacles.
2. To understand the problems of underdevelopment and ways to overcome those problems.
3. To understand the concept of poverty, inequality and to learn about commonly used inequality and poverty measures.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1	Conceptions of Development	Alternative measures of development, documenting the international variation in these measures, comparing development trajectories across nations and within them.		15		1, 2
2	Poverty and Inequality	Definitions, Measures and		25		3

		<p>Mechanisms</p> <p>Inequality axioms; a comparison of commonly used inequality measures; connections between inequality and development; poverty measurement; characteristics of the poor; mechanisms that generate poverty traps and path dependence of growth processes.</p>				
3	Poverty trap and coordination failure	<p>Poverty traps, coordination failures, complementarities, history versus expectations, uneven growth and aspirations</p>		10		2, 3
4	Growth Models and Empirics	<p>The Harrod-Domar model, the Solow model and its variants, endogenous growth models and evidence on the determinants of growth</p>		10		1, 2
5	Dual economics structure	<p>Surplus labour and disguised unemployment; Lewis model; Harris-Todaro model.</p>		5		1, 2
6	Globalization and Development	<p>Globalization in historical perspective; the economics and</p>		10		1, 2

		<p>politics of multilateral agreements; trade, production patterns and world inequality; financial instability in a globalized world.</p>				
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Suggested Readings:

1. Debraj Ray, *Development Economics*, Oxford University Press, 2009.
2. Partha Dasgupta, *Economics, A Very Short Introduction*, Oxford University Press, 2007.
3. Abhijit Banerjee, Roland Benabou and Dilip Mookerjee, *Understanding Poverty*, Oxford University Press, 2006.
4. Thomas Schelling, *Micro motives and Macro behavior*, W. W. Norton, 1978.
5. Albert O. Hirschman, *Exit, Voice and Loyalty: Responses to Decline in Firms, Organizations and States*, Harvard University Press, 1970.
6. Raghuram Rajan, *Fault Lines: How Hidden Fractures Still Threaten the World Economy*, Princeton University Press, 2010.
7. Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*, Cambridge University Press, 1990.
8. Dani Rodrik, *The Globalization Paradox: Why Global Markets, States and Democracy Can't Coexist*, Oxford University Press, 2011.
9. Michael D. Bordo, Alan M. Taylor and Jeffrey G. Williamson (ed.), *Globalization in Historical Perspective*, University of Chicago Press, 2003.

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁	√			
CLO ₂		√		√
CLO ₃	√	√		√
For BNHRCC520T	√	√		√

Course Name: Topics in Microeconomics I

Course Code: BNHRDS531T

Credit: 6

Semester: V

Nature of the Course: Discipline Specific Elective (DSE)

No. of Lecture hours: 75

No. of Tutorial contact hours: 15

Course Learning Outcome: (CLO)

1. The course will provide knowledge of different measures of risk aversion and the extent of risk aversion. The course will provide advanced knowledge regarding rational consumer and firm decision-making in a risky environment.
2. The course will provide the students with advanced-level knowledge of game theory techniques and how to implement those techniques.
3. The course will provide the students with the knowledge to solve problems and applications related to microeconomics theory.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1	Choice under Uncertainty	Expected utility Theorem, measures of risk aversion. Applications- a) investment in risky assets b) insurance		25		1, 3
2	Game Theory	Normal form games: The normal form; dominant and dominated strategies; dominance solvability; mixed strategies; Nash equilibrium; symmetric single population games; Applications- a) Cournot, b) Bertrand c) Tragedy of		50		2, 3

		Commons d) Voting game Extensive form games with perfect information: The game tree; strategies; subgame perfection; backward induction in finite games; behavioral strategy; commitment; Stackelberg model; stage game; application of stage game in oligopoly market and international trade; bargaining.				
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Suggested Readings:

1. Robert Gibbons, *A Primer in Game Theory*, Princeton University Press, 1992.
2. Martin J. Osborne, *An Introduction to Game Theory*, Oxford University Press, New Delhi, 2004.
3. P. K. Dutta, *Strategies and Games*, The MIT Press
4. Avinash K. Dixit, Susan Skeath and David H. Reiley, *Games of Strategy*, WW Norton & Company, 2015.
5. Eugene Silberberg, *The structure of economics; A mathematical analysis*, McGraw-Hill, 1990.

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁		√	√	
CLO ₂		√	√	
CLO ₃				√
For BNHRDS531T		√	√	√

Course Name: Political Economy—I

Course Code: BNHRDS532T

Credit: 6

Semester: V

Nature of the Course: Discipline Specific Elective (DSE)

No. of Lecture hours: 75

No. of Tutorial contact hours: 15

Course Learning Outcome (CLO):

1. To provide an introduction to alternative theoretical frameworks in economics.
2. To analyze the systemic structures and institutions of capitalism through a framework of political economy relying on the concepts of class, power, state and market and their interactions.
3. To learn the historical evolution of some of the advanced capitalist economies through a political economy perspective.
4. To familiarize students with classic texts as well as contemporary literature on political economy

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1	Introduction to Political Economy	Why Political Economy? Genesis of Political Economy. How is it different from neoclassical economics?		5		1
2	Analysing Social Change in Historical Perspective	The Method of historical materialism, the transition from feudalism to capitalism, capitalism as a historical process— alternative perspectives. An introduction to the critique of historical materialism.		25		2, 4
3	Capitalism	Basic features of		20		2, 4

	as an Evolving Economic System	capitalism: accumulation and crisis; mechanisms of coping with crisis; capitalism as a spontaneous system. monopoly capitalism— alternative perspectives				
4	State and Capitalism	Economic Policies in the initial years of development of USA, Germany, etc. Role of the state— contestations and interdependence. State as an arena of conflict; State as an instrument of mitigating crisis and its limitations. Imperialism—the basic foundations		25		2, 3

Suggested Readings:

1. Lange, O. (1963). *Political Economy*, Vol 1., Macmillan
2. Gurley, J. (1978). The Materialist Conception of History. In R. Edwards, M. Reich, T. Weisskopf (eds): *The Capitalist System, 2nd Edition*, Prentice-Hall
3. Hunt, E. (2004). *History of Economic Thought*, Shilpi Publications
4. Habib, I. (1995). Capitalism in History. *Social Scientist*, 23, 15-31
5. Sanyal, K. (2007). *Rethinking Capitalist Development: Primitive Accumulation, Governmentality and Post-Colonial Capitalism*, Routledge
6. Sweezy, P. (1942). *The Theory of Capitalist Development*, Monthly Review Press
7. Baran, P. (1973). *The Political Economy of Growth*, Pelican
8. Schumpeter, J. (1976). *Capitalism, Socialism and Democracy*, Allen and Unwin
9. Shaikh, A. (2000). 'Economic Crises', Entry in T. Bottomore, et al. (eds): *The Dictionary of Marxist Thought*, Maya Blackwell
10. Chang, Ha-Joon. (2002). *Kicking Away the Ladder: Development Strategy in Historical Perspective*, Anthem Press
11. Patnaik, P. (2020). Introduction in Lenin, V.I.: *Imperialism, the Highest Stage of Capitalism*, Leftword

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁		√		√
CLO ₂		√		√
CLO ₃		√		√
CLO ₄		√		√
For BNHRDS532T		√		√

Course Name: Applied Econometrics**Course Code:** BNHRDS542T**Credit:** 6**Semester:** V**Nature of the Course:** Discipline Specific Elective (DSE)**No. of Lecture hours:** 75**No. of Tutorial contact hours:** 15**Course Learning Outcome: (CLO)**

1. To understand the appropriate regression analysis for a given data set.
2. Students will learn the theoretical basis for techniques widely used in empirical research and consider their application in a wide range of problems.
3. Ability to handle different types of data set.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1	Stages in empirical research	Stages in empirical research		5		2
2	Review of Linear Regression	Review of Multiple Linear Regression Model; Regression Diagnostics and Specification: Model misspecification, functional forms, Model selection		15		1, 2
3	Limited dependent variables	Logit and Probit models for binary responses, Tobit		15		1, 3

		models for truncated data				
4	Time-Series Analysis	Models of Time Series: White noise, Random Walk, Moving Average, Auto Regressive Process, Auto Regressive Moving Average Process; Different components of time series and their measurements		10		1, 3
5	Panel Data Models	Methods of estimation; fixed effects model; random effects model		10		1, 3
6	Introduction to Econometric Software	Applications of Econometric Software Packages using STATA/ E-VIEWS		20		2, 3

Suggested Readings:

1. Damodar N. Gujarati, Dawn C. Porter and Sangeetha Gunasekar, *Basic Econometrics*, 5th Edition, McGraw-Hill Education, 2012.
2. G.S. Maddala and Kajal Lahir, *Introduction to Econometrics*, 4th Edition, Wiley-India, 2009.
3. Jeffrey M. Wooldridge, *Introductory Econometrics: A Modern Approach*, 6th Edition, Cengage Learning, 2015.

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁			√	
CLO ₂	√	√	√	
CLO ₃	√	√		
For BNHRDS542T	√	√	√	

Course Name: Public Economics

Course Code: BNHRCC610T

Credit: 6

Semester: VI

Nature of the Course: Core Paper (CC)

No. of Lecture hours: 75

No. of Tutorial contact hours: 15

Course Learning Outcome: (CLO)

1. Describe the major sources of revenue and expenditure for the government.
2. Compare explanations for government intervention.
3. Demonstrate why competition is efficient.
4. Explain the sources of market failure and potential policy responses.
5. Discuss the design of the tax structure using the concepts of efficiency and equity
6. Describe how the level of government expenditures is determined.
7. Demonstrate how the interaction between jurisdictions affects the choice of policy.
8. Employ economic analysis to evaluate policy proposals.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
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1	Introduction to Public Economics	Nature and scope of public economics, theory of public good, Distinction between Pure public good and Private good, private provision and public provision, Lindahl equilibrium, voting equilibrium.		20		2
2	Externality and market failure	Externalities, market failure and government intervention, Coase Theorem, public expenditure to finance development		15		3, 4
3	Theory of Taxation	Canons of taxation; benefit principle; equal sacrifice principle; ability to pay principle Incidence and burden of taxes, effects of taxation on income distribution, work efforts, and on savings. Laffer curve;		20		5, 7, 8

		optimal taxation				
4	Public Expenditure and Public Debt	Meaning and classification of public expenditure. government budget and its types government expenditure, tax multipliers, balanced budget multiplier, Fiscal federalism in India; Meaning of Public Debt, Sources of Public Borrowings, internal and external borrowing, effects of public debt		20		1, 6, 7, 8

Suggested Readings:

1. A. B. Atkinson and J. E. Stiglitz, *Lectures on Public Economics*, McGraw-Hill, 1980.
2. J. Hindriks and G. D. Myles, *Intermediate Public Economics*, The MIT Press, 2006.
3. R. A. Musgrave and P. B. Musgrave, *Public Finance in Theory and Practice*, McGraw Hill Publications, 1989.
4. Amaresh Bagchi (ed), *Readings in Public Finance*, OUP, 2005.

5. J. E. Stiglitz, *Economics of Public Sector*, W. W Norton and Company, 2000.

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁	√			√
CLO ₂		√	√	
CLO ₃		√		√
BNHRCC610T	√	√	√	√

Course Name: Indian Economy

Course Code: BNHRCC620T

Credit: 6

Semester: VI

Nature of the Course: Core Course (CC)

No. of Lecture hours: 75

No. of Tutorial contact hours: 15

Course Learning Outcome: (CLO)

1. Develop ideas about the basic characteristics of Indian economy and its potential.
2. Grasp the importance of planning undertaken by the government of India and have knowledge of the various objectives, failures, and achievements as the foundation of the ongoing planning and economic reforms undertaken by the government.
3. To understand the basic characteristics of economic development and the growth of Indian economy.
4. To analyze new economic policies (privatization, liberalization and globalization) in India.
5. Understanding of problems and measures from a contextual standpoint.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1	Indian Economic Development since Independence	Major features of the economy at independence; growth and development under different policy regimes—goals, constraints, institutions and		20		1, 2, 3

		policy framework; an assessment of performance— sustainability and regional contrasts; structural change, savings and investment.				
2	Population and Human Development	Demographic trends and issues; education; health and malnutrition.		20		1, 3
3	Economic Reforms in India	Economic Reforms in Trade, Finance and regulatory framework		20		4, 5
4	International Comparisons	growth and human development		15		1, 4, 5

Suggested Readings:

1. Jean Dreze and Amartya Sen, *An Uncertain Glory: India and its Contradictions*, Princeton University Press, 2013.
2. Pulapre Balakrishnan, The Recovery of India: Economic Growth in the Nehru Era, *Economic and Political Weekly*, November, 2007.
3. Rakesh Mohan, Growth Record of Indian Economy: 1950-2008. A Story of Sustained Savings and Investment, *Economic and Political Weekly*, May, 2008.
4. S.L. Shetty, India's Savings Performance since the Advent of Planning, in K.L. Krishna and A. Vaidyanathan, *Institutions and Markets in India's Development*, 2007.
5. T. Dyson, India's Demographic Transition and its Consequences for Development in Uma Kapila, *Indian Economy Since Independence*, 19th edition, Academic Foundation, 2008. (36)
6. Kaushik Basu and A. Maertens, *The New Oxford Companion to Economics*, Oxford University Press, 2013.
7. Sukhamoy Chakraborty, *Development Planning, The Indian Experience*, Oxford University Press.
8. Uma Kapila, *Indian Economy Since Independence*, 19th edition, Academic Foundation, 2008.
9. Isher J. Ahluwalia and I.M.D. Little, *India's Economic Reforms & Development*, 2nd Edition, Oxford University Press, 2012.
10. Vijay Joshi and I.M.D. Little, *India's Economic Reforms 1991- 2001*, Oxford University Press, 1996.

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁				√
CLO ₂	√			√
CLO ₃				√
CLO ₄	√			√
CLO ₅	√			√
For BNHRCC620T	√			√

Course Name: Money & Finance**Course Code:** BNHRDS631T**Credit:** 6**Semester:** VI**Nature of the Course:** Discipline Specific Elective (DSE)**No. of Lecture hours:** 75**No. of Tutorial contact hours:** 15**Course Outcome:**

On completion of this course, the students will be able:

1. To understand the working of the financial institutions.
2. To analyse the policies pertaining to the monetary policies and financial markets.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1	Introduction to Money and Banking	Role of Financial Intermediaries; Theory of determination of money supply- money multiplier approach.		20		2
2	Monetary Policy	Multiple objectives of the Central Bank; Choice of targets- Money		20		1, 2

		supply or interest rate; Rules versus Discretion- Time inconsistency problem; Taylor rule and its macroeconomic implications.				
3	Financial Globalization and Financial Crisis	Financial Markets and Instruments; Problem of asymmetric information- adverse selection and moral hazard in financial markets; Financial acceleration hypothesis.		20		1, 3
4	Financial Structure and Alternative Source of Financing	The Modigliani-Miller Theorem on equivalence between debt and equity; Breakdown of the equivalence; Role of net worth in determining fragility of the financial system; Some recent examples including financial meltdown in USA.		15		1, 3

References :

1. B.B. Blejer, and M.B. Skreb, *Financial Policies in Emerging Markets*, MIT Press, 2002.
2. F. Mishkin and S. Eakins, *Financial Markets and Institutions*, Pearson Education, 2015.
3. Peter Bofinger, Julian Reischle and Andrea Schächter, *Monetary Policy- Goals, Institutions, Strategies and Instruments*, Oxford University Press, 2001.
4. R. Mohan, *Growth and Financial Stability-Central Banking in an Emerging Market*, Oxford University Press, 2011.
5. Rudiger Dornbusch, Stanley Fischer and Richard Startz, *Macroeconomics*, McGraw Hill Education, 2010.
6. Stephen Ross, Randolph Westfield, Jeffrey Jaffe, *Corporate Finance*, McGraw-Hill Education, 2016.
7. T. A. Knoop, *Modern Financial Macroeconomics-Panics, Crashes, and Cirises*, Wiley-Blackwell.
8. X. Freixas, & J. Rochet, *Microeconomics of Banking*, MIT Press.

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁		√		
CLO ₂		√		√
CLO ₃				
For BNHRDS631T		√		√

Course Name: Economics of Education and Health**Course Code:** BNHRDS632T**Credit:** 6**Semester:** VI**Nature of the Course:** Discipline Specific Elective (DSE)**No. of Lecture hours:** 75**No. of Tutorial contact hours:** 15**Course Learning Outcome: (CLO)**

1. To understand the implications of social issues in the field of Economics.
2. Students will learn the theoretical basis for understanding the Economics of social sectors.
3. Students will get a broad overview of the sectoral variations in health and education.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1	Role of Health and Education in Human Development	Importance in poverty alleviation, health and education outcomes and their relationship with macroeconomic performance.		15		1
2	Education: Investment in Human Capital	Rate of return to education: private and social; quality of education; signaling or human capital; theories of discrimination; gender and caste discrimination in India.		15		1, 2
3	Education Sector in India: An Overview	Literacy rates, school participation, school quality measures.		10		2, 3
4	Microeconomic Foundations of Health Economics	Demand for health, uncertainty and health insurance market, alternative insurance mechanisms, market failure and rationale for public intervention; equity and inequality.		10		3

5	Evaluation of Health Programs	Costing, cost effectiveness and cost-benefit analysis; burden of disease.		10		2
6	Health Sector in India: An Overview	Health outcomes, health systems, health financing.		10		1, 3

Reference:

1. Becker G.S, *Human Capital: A theoretical and empirical analysis with special reference to education*, Columbia University Press, NY, 1964.
2. Aghion, P., L. Boustan, C. Hoxby, and J. Vandenbussche (2009). *The Causal Impact of Education on Economic Growth: Evidence from the United States*. Brookings Papers on Economic Activity.
3. William, Jack, *Principles of Health Economics for Developing Countries*, World Bank Institute Development Studies, 1999.
4. World Development Report, *Investing in Health*, The World Bank, 1993.
5. *The economics of social Determinants of health and health inequalities*: World Health Organization 2013.
6. Kingdon, G. G. (2007). The progress of school education in India. *Oxford Review of Economic Policy*, 23(2), 168-195.
7. Prakash, V. (2007). Trends in growth and financing of higher education in India. *Economic and Political Weekly*, 3249-3258.

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁				√
CLO ₂		√		√
CLO ₃		√		√
For BNHRDS632T		√		√

Course Name: Environmental Economics

Course Code: BNHRDS633T

Credit: 6

Semester: VI

Nature of the Course: Discipline Specific Elective (DSE)

No. of Lecture hours: 75

No. of Tutorial contact hours: 15

Course Learning Outcome: (CLO)

At the end of this course, students will be

1. Able to learn about the main theoretical and empirical concepts in environmental economics.
2. Equipped with a thorough analytical grasp of environmental policy theory, ranging from externalities to international environmental agreements.
3. Familiarized with the main issues in environmental valuation and with the basic features of the environmental policy tools.
4. Able to demonstrate their understanding of the economic concepts of environmental policy.
5. Able to understand the different aspects of sustainable development.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1	Introduction	What is environmental economics; review of microeconomics and welfare economics.		9		1
2	The Theory of Externalities	Pareto optimality and market failure in the presence of externalities; property rights and the Coase theorem.		13		1, 2
3	The Design and Implementation of Environmental Policy	Overview; pigouvian taxes and effluent fees; tradable permits; choice between taxes and quotas under uncertainty; implementation of environmental policy.		15		3, 4

4	International Environmental Problems	Trans-boundary environmental problems; economics of climate change; trade and environment.		15		2, 4
5	Measuring the Benefits of Environmental Improvements	Non-Market values and measurement methods; risk assessment and perception.		15		1,3
6	Sustainable Development	Concepts; measurement.		8		5

Suggested Readings:

Charles Kolstad, *Intermediate Environmental Economics*, Oxford University Press, 2nd edition, 2010.

Geoffrey Heal, 2012, Reflections – defining and measuring sustainability, *Review of Environmental Economics and Policy*, Volume 6:147-163.

Maureen L. Cropper and Wallace E. Oates, 1992, —Environmental Economics: A Survey, *Journal of Economic Literature*, Volume 30:675-740.

Richard G. Newell, William A. Pizer and Daniel Raimi, 2013, Carbon markets 15 years after Kyoto: Lessons learned, new challenges, *Journal of Economic Perspectives*, Volume 27:123- 46.

Robert N. Stavins (ed.), *Economics of the Environment: Selected Readings*, W.W. Norton, 5th edition, 2005.

Roger Perman, Yue Ma, James McGilvray and Michael Common, *Natural Resource and Environmental Economics*, Pearson Education/Addison Wesley, 3rd edition, 2003.

Bhattacharya R (ed), *Economics of the Environment: An Indian Perspective*, OUP, 2000.

Sengupta R., *Ecology and Economics: An Approach to Sustainable Development*, OUP, 2001.

N. Hanley, J. Shogren and B. White. *Introduction to Environmental Economics*, CUP, 1999.

G. Hardin. *The Tragedy of the Commons*, Reprinted In: U. Sankar, ed. *Environmental Economics*, OUP, 2001.

R. S. Pindyck and D. L. Rubinfeld, *Microeconomics*, Chapter 18, Prentice Hall; 7th Edition, 2008.

T. W. Pearce and R. K. Turner. *Economics of Natural Resources and the Environment*, 1990.

W. Beckerman. Sustainable development': is it a useful concept?, *Environmental Values*, 3(3), pp. 191-209, 1994.

R.H. Coase, The Problem of Social Cost, *Journal of Law and Economics*, 3, pp. 1-44, 1960.

CLO-PLO Mapping:

CLO/PLO	PLO1	PLO2	PLO3	PLO4
CLO1	√	√		
CLO2		√		√
CLO3		√		
CLO4		√		√
CLO5		√		
For BNHRDS633T	√	√		√

Course Name: Political Economy—II

Course Code: BNHRDS634T

Credit: 6

Semester: VI

Nature of the Course: Discipline Specific Elective (DSE)

No. of Lecture hours: 75

No. of Tutorial contact hours: 15

Course Learning Outcome:

1. To introduce students to the historical experiences of capitalism from a political economy perspective.
2. To be able to analyze new developments under capitalism like globalization, role of finance etc.
3. To be able to analyze the changing dynamics of the labour processes under capitalism.
4. To know the critiques of capitalism from the feminist and environmentalist perspectives

Course Content:

Modul	Module Name	Topic	Descriptio	No. of	Marks	Associate
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e No.			n	Lecture Hours allotted	allotted	d Course Learning Outcome (CLO)
1	Historical Overview	Historical overview of capitalism from the French revolution to the pre-globalization period from a political economy perspective.		5		1
2	Changing Dynamics of Labour Processes	Fordist and post-Fordist production. The changing dynamics of production, market and labour processes. Contestations within the workplace. Wage bargaining and labour politics.		15		3
3	State and Globalization	Globalization, policy convergence and democracy—Welfare state, development and state autonomy		15		2
4	Changing Role of Finance	Role of finance in capital accumulation. Globalization of finance—financialisation, financial liberalization and financial		15		2

		crisis				
5	Social Dimension of Capitalism	Globalisation and uneven development—growth, inequality, exclusion. Caste and gender under capitalism		15		4
6	Feminist & environmentalist perspective on capitalism	Gender in work, accumulation and globalisation; issues in environment and sustainability		10		4

Suggested Readings:

1. Beaud, Michel: *A History of Capitalism, 1500-2000*, Monthly Review Press, 2001 (Chapters 4, 5)
2. Duménil, G and Lévy, D: *The Crisis of Neoliberalism*, Harvard University Press, 2011 (Chapter 1)
3. Tonkiss, Fran: *Contemporary Economic Sociology: Globalisation, Production, Inequality*, Routledge, 2006 (Chapter 4)
4. Marglin, Stephen: 'What do Bosses do? The Origins and Functions of Hierarchy in Capitalist Production', *Review of Radical Political Economics*, Vol 6(2), 1974
5. Rodrik, Dani: *The Globalization Paradox: Democracy and the Future of the World Economy*, WW Norton, 2011
6. Epstein, Gerald: *Financialization and the World Economy*, Edward Elgar, 2005 (Chapters 1 & 2)
7. Harvey, David: *A Brief History of Neoliberalism*, Oxford University Press, 2005 (Chapters 3 & 4)
8. Deshpande, Ashwini: *The Grammar of Caste: Economic Discrimination in Contemporary India*, Oxford University Press, (Chapters: 1, 2, 4)
9. Boyce, J.K: *The Political Economy of the Environment*, Edward Elgar, 2002 (Chapter 4)
10. Magdoff, F and Foster, J.B. : *What Every Environmentalist Needs to Know*, Monthly Review Press, 2011 (Chapters 3 & 4)
11. Gottfried, Heidi: *Gender, Work and Economy—Unpacking the Global Economy*, Polity, 2013 (Chapter 10)

12. Kabeer, Naila: *Gender and Social Protection Strategies in the Informal Economy*, Routledge, 2010 (Chapter 3)
13. Nancy, Folbre and Julie A Nelson: “For Love or Money—or Both?”, *Journal of Economic Perspectives*, Vol. 14(4), 2000

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁		√		√
CLO ₂		√		√
CLO ₃		√		√
CLO ₄		√		√
For BNHRDS634T		√		√

Course Name: Topics in Microeconomics II

Course Code: BNHRDS635T

Credit: 6

Semester: VI

Nature of the Course: Discipline Specific Elective (DSE)

No. of Lecture hours: 75

No. of Tutorial contact hours: 15

Course Learning Outcome: (CLO)

1. The course will provide the students advanced level knowledge of game theory techniques and the implementation of those techniques.
2. The course will provide the students the basic concept of economics of information.
3. To able to solve problems and applications related to microeconomics theory.

Course Content:

Module No.	Module Name	Topic	Description	No. of Lecture Hours allotted	Marks allotted	Associated Course Learning Outcome (CLO)
1	Repeated Games	Finitely repeated games and backward induction; infinitely repeated games; history dependent strategies; one-step deviation		5		1, 3

		property; the repeated prisoners 'dilemma; idea of folk theorem. Tacit collusion				
2	Simultaneous move games with incomplete information (Bayesian games)	Strategies; Bayesian Nash equilibrium; auctions; other applications		15		1, 3
3	Extensive form games with imperfect information	Strategies; beliefs and sequential equilibrium; applications.		15		1, 3
4	Information economics	Adverse selection; signaling games; screening; moral hazard		10		2, 3

Suggested Readings:

1. Robert Gibbons, *A Primer in Game Theory*, Princeton University Press, 1992.
2. Martin J. Osborne, *An Introduction to Game Theory*, Oxford University Press, New Delhi, 2004.
3. P. K. Dutta, *Strategies and Games*, The MIT Press, 1999.
4. Avinash K. Dixit, Susan Skeath and David H. Reiley, *Games of Strategy*, WW Norton & Company, 2015.
5. Jean Tirole, *Theory of Industrial Organization*, MIT Press, 1988.
6. Hal R. Varian, *Microeconomic Analysis*, 3rd edition, W.W. Norton and Company, 1992.
7. Paul Belleflamme and Martin Peitz, *Industrial Organization Markets and Strategies*, Cambridge University Press, 2015.

CLO-PLO Mapping:

CLO/PLO	PLO ₁	PLO ₂	PLO ₃	PLO ₄
CLO ₁		√	√	
CLO ₂		√	√	
CLO ₃				√
For BNHRDS635T		√	√	√

Course Name: Dissertation
Course Code: BNHRDS640J
Credit: 6
Semester: VI

Group Project with individual viva

CO-LO Mapping for BA in Economics

Course Code/Name	PO₁	PO₂	PO₃	PO₄
BNHRCC110T	√		√	√
BNHRCC120T	√		√	
BNHRGE130T			√	
BNHRAE140T			√	
BNHRAE150T			√	
BNHRFN160A			√	
BNHRCC210T	√	√		√
BNHRCC220T	√		√	
BNHRGE230T			√	
BNHRAE240T			√	
BNHRAE250T			√	
BNHRFN260A			√	
BNHRCC310T	√	√	√	√
BNHRCC320T	√		√	√
BNHRCC330T		√	√	√
BNHRGE340T		√	√	√
BNHRSE350T		√	√	√
BNHRCC410T	√	√	√	√
BNHRCC420T	√	√	√	
BNHRCC430T		√	√	
BNHRGE440T		√	√	√
BNHRSE450T	√	√	√	√
BNHRCC510T	√	√	√	√
BNHRCC520T	√	√		√
BNHRDS531T		√	√	√
BNHRDS532T		√		√
BNHRDS542T	√	√	√	
BNHRCC610T	√	√	√	√
BNHRCC620T	√			√
BNHRDS631T		√		√
BNHRDS632T		√		√
BNHRDS633T	√	√		√
BNHRDS634T		√		√
BNHRDS635T		√	√	√
BNHRDS640J		√	√	√
Final Outcome	√	√	√	√