



## ST. XAVIER'S UNIVERSITY, KOLKATA

**SYLLABUS FOR FOUR YEAR  
B.A. (HONS) IN ECONOMICS  
(Semesters III & IV)**

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- \* Students will choose one of two multidisciplinary papers (syllabus to be provided by other departments)
- \*\* Students will choose either Modern Indian language or Business Communication as an Ability Enhancement paper (Syllabus to be provided by other departments)

## Course Outline

Sem	Paper Type	Course Title	Full Marks	Pass Marks	CIA MARKS			Credits
					WT	O	ATT	
III	Major	Introductory Mathematical Methods for Economics	100	40	20	5	5	4
	Major	Statistical Methods for Economics	100	40	20	5	5	4
	Minor	Probability Theory	100	40	20	5	5	3
	Multidisciplinary	Film Appreciation	100	40	20	5	5	3
	Multidisciplinary	Contemporary Indian Literature in English	100	40	20	5	5	3
	Skill Enhancement Course	Survey Design and Data Analysis (Theory)	40	16	10	-	5	3
		Survey Design and Data Analysis (Practical)	60	24		15		
	Ability Enhancement Course	Modern Indian Language	50	20	10	2.5	2.5	2
Ability Enhancement Course	Business Communication I	50	20	10	2.5	2.5	2	
IV	Major	Introductory Microeconomics I	100	40	20	5	5	4
	Major	Intermediate Macroeconomics I	100	40	20	5	5	4
	Major	Intermediate Mathematical Methods for Economics	100	40	20	5	5	4
	Minor	Mathematics II	100	40	20	5	5	4
	Ability Enhancement Course	Modern Indian Language	50	20	10	2.5	2.5	2
	Ability Enhancement Course	Business Communication II	50	20	10	2.5	2.5	2
	Internship							2

- **Program Outcomes for B.A. in Economics:**

**PO1 Critical Thinking:** Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

**PO2. Effective Communication:** Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.

**PO3. Social Interaction:** Elicit views of others, mediate disagreements and help reach conclusions in group settings.

**PO4. Effective Citizenship:** Demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

**PO5. Ethics:** Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.

**PO6. Environment and Sustainability:** Understand the issues of environmental contexts and sustainable development.

**PO7. Self-directed and Life-long Learning:** Acquire the ability to engage in independent and life-long learning in the broadest context socio-technological changes

**Course Name:** Introductory Mathematical Methods for Economics

**Course Code:**

**Credit:** 4

**Semester:** III

**Nature of the Course:** Major

**No. of Lecture hours:** 45

**No. of Tutorial contact hours:** 15

**Course Outcomes: (CO)**

CO1: Students will be able to identify and examine the basic concepts of Real analysis. (BL1)

CO2: Students will be able to explain the concepts related to Set Theory and Probability. (BL2)

CO3: Students will be able to apply various mathematical concepts and solve mathematical problems. (BL3)

CO4: Understanding and analyzing the theory and models taught in the subsequent courses of Microeconomics, Macroeconomics, and Econometrics. (BL4)

CO5: Develop the technical skill to build up simple analytical model. (BL5 & BL6)

**Course Content:**

<b>Module No.</b>	<b>Module Name</b>	<b>Topic</b>	<b>No. of Lecture Hours allotted</b>	<b>Marks allotted</b>	<b>Associated CO</b>
1	Set, Probability and Logic	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' Theorem; Random variables: discrete and continuous types; Properties of distribution functions, mass functions and density functions; Expectation and Variance of a random variable. Propositions, tautologies, contradictions and negation; Necessary and	15	30%	CO2, CO3, CO4, CO5

		sufficient conditions; Converse relations; Two-place and three-place relations.			
2	Functions and Correspondences	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, quasi-convex and quasi-concave functions and their applications; homogeneous and homothetic functions	20	30%	CO3, CO4, CO5
3	Introduction to Real Analysis	The Algebraic and Order properties of $\mathbb{R}$ ; Absolute value and the Real Line; The Completeness property of $\mathbb{R}$ ; Supremum and Infimum; Intervals; Convergence and divergence; Local and Global optima: geometric characterizations.	17	30%	CO1, CO3, CO4, CO5
4	Integration	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.	8	10%	CO3, CO4, CO5

**Suggested Readings:**

1. Alpha Chiang and Kevin Wainwright, *Fundamental Methods of Mathematical Economics*, 4<sup>th</sup> Edition, Mc-Graw Hill Education, 2005.

2. Hogg, Robert V., Joseph W. McKean, and Allen T. Craig. *Introduction to Mathematical Statistics*. Pearson Education India, 2013.
3. Ok, Efe A. *Real analysis with Economic Applications*. Vol. 10. Princeton University Press, 2007.
4. Ross, Sheldon M., *A first course in probability*. 8<sup>th</sup> Edition, Pearson, 2010.
5. Sydsaeter, Knut. *Mathematics for economic analysis*. Pearson Education India, 2013.

**CO-PO Mapping:**

CO/PO	PO <sub>1</sub>	PO <sub>2</sub>	PO <sub>3</sub>	PO <sub>4</sub>	PO <sub>5</sub>	PO <sub>6</sub>	PO <sub>7</sub>
CO <sub>1</sub>	H						M
CO <sub>2</sub>	H						M
CO <sub>3</sub>	H						M
CO <sub>4</sub>	H						M
CO <sub>5</sub>	H						M
Total	3						2

\*H/M/L: High/Medium/Low level of mapping (H=3; M=2; L=1)

**CO Score: 2.5**

**Course Name:** Statistical Methods for Economics

**Course Code:**

**Credit:** 4

**Semester:** III

**Nature of the Course:** Major

**No. of Lecture hours:** 45

**No. of Tutorial contact hours:** 15

**Course Outcomes: (CO)**

1. Ability to analyze different types of data sets (BL4)
2. Understand and critically discuss the issues surrounding sampling and its significance (BL1, BL2, BL3)
3. Students will learn the theoretical basis for techniques widely used in empirical research and consider their application to a wide range of problems.(BL1. BL 3, BL 4, BL 5)
4. To understand the applied statistical concepts for solving the different types of economic issues. (BL 1, BL 3, BL 4, BL 5)

<b>Module No.</b>	<b>Module Name</b>	<b>Topic</b>	<b>No. of Lecture Hours allotted</b>	<b>Marks allotted</b>	<b>Associated Course Learning Outcome (CLO)</b>
1	Sampling theory	Concept of population and Sampling; Sampling distribution; Standard error; Census versus sample enumeration; Limitations of sampling; Types of sampling; Simple random sampling; Method of sampling.	15	25%	1, 2, 3, 4,
2	Index Number	Price and quantity index number; Different formula; Tests for an ideal	15	25%	1, 2, 3,4

		index; application – Cost of living index; Real GDP.			
3	Time Series	Components of time series; Analysis of time series, measurement of trend, measurement of seasonal variation, measurement of cyclical variation	15	25%	1, 2, 3, 4
4	Demographic Methods	Introduction; rates and ratios of vital events; Measurement of mortality: Crude death rate, Crude birth rate, 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: Gross Reproduction rate, Net reproduction rate.	15	25%	1, 2,3, 4

1. John E. Freund, *Mathematical Statistics*, Prentice Hall, 1992.
2. Richard J. Larsen and Morris L. Marx, *An Introduction to*

*Mathematica lStatistics and its Applications*, Prentice Hall, 2011.

3. A. M. Gun, M. K. Gupta and B. Dasgupta, *An Outline of Statistical Theory*, Vol. I & II, World Press, Calcutta.
4. R.V. Hogg and A.T. Craig, *An Introduction to Mathematical Statistics*, 3<sup>rd</sup> Edition, Macmillan Company, 1970.
5. William G. Cochran, *Sampling Techniques*, John Wiley, 2007
6. Peter J. Brockwell and Richard A. Davis, *Introduction to Time Series and Forecasting*, Springer, 2001.
7. Parimal Mukhopadhyay, *Applied Statistics*, Books and Allied (P) Ltd, 1999.

**CO-PO Mapping:**

CO/PO	PO <sub>1</sub>	PO <sub>2</sub>	PO <sub>3</sub>	PO <sub>4</sub>	PO <sub>5</sub>	PO <sub>6</sub>	PO <sub>7</sub>
CO <sub>1</sub>	H						M
CO <sub>2</sub>	H						M
CO <sub>3</sub>	H						M
CO <sub>4</sub>	H						M
Total	3						2

\*H/M/L: High/Medium/Low level of mapping (H=3; M=2; L=1)

**CO Score: 2.5**

**Course Name:** Probability Theory

**Course Code:**

**Credit:** 4

**Semester:** III

**Nature of the Course:** Minor

**No. of Lecture hours:** 45

**No. of Tutorial contact hours:** 15

**Course Outcomes: (CO)**

CO1: Students will be able to understand the basic concepts of probability (BL1&BL2).

CO2: Students will be able to solve problems related to probability.(BL3)

CO3: Students will be able to apply probability theory in the subsequent fields of statistics and econometrics. (BL3&BL4)

CO4: Students will be able to analyze real life events related to the uncertainty and apply the concept of probability to gain a comprehensive knowledge. (BL4&BL5)

<b>Module No.</b>	<b>Module Name</b>	<b>Topic</b>	<b>No. of Lecture Hours allotted</b>	<b>Marks allotted</b>	<b>Associated CO</b>
1	<b>Introduction to probability theory</b>	Probability: Introduction, random experiments, sample space, events and algebra of events. Definitions of Probability – classical, statistical, and axiomatic. Conditional Probability, laws of addition and multiplication, independent events, theorem of total probability, Bayes' theorem and its applications.	15	25%	CO1,CO2
2	<b>Random Variables</b>	Discrete random variables; Expected value; The Bernoulli and Binomial Random Variables; The Poisson random variable; Cumulative distribution function; continuous random variables, expectation and variance	15	25%	CO1,CO2,C O4

		of continuous random variable, Uniform random variable; normal random variable; expectation ; The distribution of a function of random variable.			
3	<b>Properties of Expectation</b>	Introduction; Expectation of sums of random variables; covariance, variance of sums , and correlation; conditional expectation ; moment generating functions; general definition of expectation	10	20%	CO2,CO3
4	<b>Limit Theorem</b>	Introduction; Chebyshev's inequality and weak law of large numbers; The central limit theorem ; The strong law of large numbers	5	5%	CO2,CO3

#### Suggested Readings

1. Hogg, R.V., Tanis, E.A. and Rao, J.M. (2009). Probability and Statistical Inference, 7th Ed, Pearson Education, New Delhi.
2. Miller, I. and Miller, M. (2006). John E. Freund's Mathematical Statistics with Applications, 7th Ed., Pearson Education, Asia.
3. A. M. Mood, F. A. Greybill and D. C. Boes(1974), Introduction to the theory of statistics, McGraw Hill Education.
4. Sheldon Ross ,(2022), A First Course in PROBABILITY , Pearson , 10<sup>th</sup> Edition.

#### CO-PO Mapping:

CO/PO	PO <sub>1</sub>	PO <sub>2</sub>	PO <sub>3</sub>	PO <sub>4</sub>	PO <sub>5</sub>	PO <sub>6</sub>	PO <sub>7</sub>
CO <sub>1</sub>	H	M					
CO <sub>2</sub>	H	H					
CO <sub>3</sub>	H	H	M				M
CO <sub>4</sub>	H	H	M				M
Total	3	2.75	2				2
<b>CO Score: 2.44</b>							

**Course Name:** Film Appreciation  
**Course Code:**  
**Credit:** 3  
**Semester:** III  
**Nature of the Course:** Multidisciplinary  
**No. of Lecture hours:** 30  
**No. of Tutorial contact hours:** 15

### Course Outcomes

The course intends to

- **CO1:** Observe with knowledge and reflect upon the articulation of a film's content, form and structure.
- **CO2:** Identify and define the formal and stylistic elements of film. Develop an understanding of film language and terminology, and analyze the ways in which that this language constructs meaning and ideology.
- **CO3:** Gain a basic understanding of film theory and global film history, to be able to identify significant movements and articulate key concepts.
- **CO4:** Demonstrate familiarity with diverse forms of the moving image, including, for example, the feature film, experimental and avant-garde cinema, video art and moving image installation, television and digital media.
- **CO5:** Understand the relationship between film form and its historical and cultural contexts. Describe how a film offers a set of social, political and cultural ideas and questions through form and content.

### Syllabus

Module No.	Module Name	Topic(s)	Description	No. of Hours Allocated	Marks Allotted	Credit of each module	Associated Course Outcome
1	<b>Key Concepts</b>	Genealogy of cinema, Film and other arts, Basic Film Theories, Genre, Semiotics of Cinema.		15 hrs	40%	1	CO1, CO3, CO4
2	<b>Traditions in World</b>	Chaplin and evolution of comedy, German		15 hrs	30%	1	CO2, CO3, CO4

	<b>Cinema</b>	Expressionism, Soviet Silent Cinema, Italian Neo-Realism, French New Wave, Asian/Iranian cinema.					
3	<b>Cinema in India</b>	Indian Silent cinema, Coming of sound and Indian masters, Indian Popular cinema and Bollywood, South Indian Cinema.		15 hrs	30%	1	CO1, CO4, CO5

### References:

1. Constanzo, William V. Great Films and How to Teach Them. Illinois: National Council of Teachers of English , 2004. — Corey, Melinda and George Ochoa.
2. The American Film Institute. New York: Dorling Kindersley Publishing, Inc., 2002.
3. Dick, Bernard F. Anatomy of Film, 6th Edition. New York: St Martin's, 2010
4. Key Concepts in Cinema Studies by Hayward Susan
5. Film Studies : The Basics by Amy Villarejo
6. Oxford Dictionary of Film Studies by Annete Kuhn
7. Making Meaning : Inference and Rhetoric in the Interpretation of Cinema by David Bordwell
8. Film Studies : An Introduction by Warren Bucland
9. [http://www.twymanwhitney.com/film/components\\_film\\_reviewing.html](http://www.twymanwhitney.com/film/components_film_reviewing.html)
10. <https://www.theguardian.com/film/2016/oct/21/western-films-hollywood-enduring-genre>  
<https://platt.edu/blog/film-society-films-impact-society-popular-culture/>

**CO-PO mapping**

	<b>PO 1</b>	<b>PO 2</b>	<b>PO 3</b>	<b>PO 4</b>	<b>PO 5</b>	<b>PO 6</b>	<b>PO 7</b>
	<b>Critical Thinking</b>	<b>Effective Communication</b>	<b>Social Interaction</b>	<b>Effective Citizenship</b>	<b>Ethics</b>	<b>Environment and Sustainability</b>	<b>Self-directed and Life-long Learning</b>
CO 1		M	H				M
CO 2	H	M					M
CO 3	M		H				
CO 4		H					M
CO 5	H	M					
<b>TOTAL</b>	<b>2.6</b>	<b>2.25</b>	<b>2</b>				<b>2</b>

\*H/M/L: High/Medium/Low level of mapping (H=3; M=2; L=1)

**Course Name:** Contemporary Indian Literature in English

**Course Code:**

**Credit:** 3

**Semester:** III

**Nature of the Course:** Multidisciplinary

**No. of Lecture hours:** 30

**No. of Tutorial contact hours:** 15

**Course Outcomes (CO):**

CO1: Comprehending an overview of Indian Literature through an understanding of the poetry, short stories and prose works of Indian writers in the contemporary scenario (BL 5)

CO2: Analyzing fictional works as well significant essays to foster and develop critical insights with regards to the socio-economic and cultural context of India today (BL1 & BL 3)

CO3: Illustrating the implementation of various lenses and producing varied perspectives from the readings of the selected texts (BL2, BL4 & BL6)

CO4: Assessing and critiquing the political and philosophical ideologies established in contemporary India via challenges posed by essays and other literature (BL2 & BL4)

CO5: Applying the knowledge gained from contextualizing the texts within the locus of contemporary India and a movement towards developing original explorations after examining representations of the issues and conflicts that the country is facing (BL1, BL3 & BL4)

**Course Content**

<b>Module</b>	<b>Texts</b>	<b>Credits</b>
Module 1 - Poetry	(Any one poet to be taught)  a. Jeet Thayil - Selections from Penguin Book of Indian Poetry in English  b. Sujata Bhatt - "Search For My Tongue", "A Different History"  c. Dom Moraes - Selections from <i>Collected Poems</i>	1
Module 2 - Fiction	(Any one to be taught)  a. Ruskin Bond - Selected Stories from <i>The Laughing Skull</i>  b. Sona Charaipotra and Samira Ahmed - Selected Stories from <i>Magic Has No Borders</i>  c. Perumal Murugan - <i>One Part Woman</i>	1

Module 3 - Essays	(Any one to be taught)  a. Amartya Sen - “The Argumentative Indian” or “Our Culture, Their Culture” <i>The Argumentative Indian</i>  b. Tamsüla Ao - “Ao-Naga Myths in Perspective” <i>On Being a Naga: Essays</i>	1
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### References:

Adami, Esterino. *Language, Style and Variation in Contemporary Indian English Literary Texts*. Routledge, 2023.

Ao, Tamsüla. “Ao-Naga Myths in Perspective.” *On Being a Naga Essays*. Heritage Publishing House, 2014.

Bhatt, Sujata. *Collected Poems*. Carcanet, 2013.

Bond, Ruskin. *The Laughing Skull*. Rupa Publications, 2016.

Charaipotra, Sona, et al. *Magic Has No Borders*. HarperCollins, 2023.

Mehrotra, Arvind Krishna. *A History of Indian Literature in English*. Columbia University Press, 2003.

Moraes, Dom. *Collected Poems: 1954-2004*. Penguin Books, 2004.

Murugan, Perumal. *One Part Woman*. Translated by Aniruddhan Vasudevan, Pushkin Press, 2019.

Sen, Amartya. “The Argumentative Indian,” *The Argumentative Indian: Writings on Indian History, Culture and Identity*. Penguin, 2006.

Thayil, Jeet, and Madhu Kapparath. *The Penguin Book of Indian Poets*. Penguin Random House India Pvt. Ltd., 2022.

*Contemporary Indian Poetry in English*. Edited by Jaydip Sarkar and Shirsendu Mondal, Authorspress, 2015.

*Contemporary Indian English Poetry and Drama: Changing Canons and Responses*. Edited by Arnab Kumar Sinha et al., Cambridge Scholars Publishing, 2019.

## CO-PO Mapping

	BL	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CO 1	5	M	M					
CO 2	1, 3	H		H				
CO 3	2, 4, 6	M	M	H				M
CO 4	2, 4	H		M	H	M		H
CO 5	1, 3, 4	H				M		
		13/5	4/2	8/3	3/1	4/2		5/2
		2.6	2	2.6	3	2		2.5

\*H/M/L: High/Medium/Low level of mapping (H=3; M=2; L=1)

**CO- PO Attainment =  $14.7/6 = 2.45$**

**Course Name:** Survey Design & Data Analysis

**Course Code:**

**Credit:** 3 (1 credit for theory + 2 credits for practical)

**Semester:** III

**Nature of the Course:** Skill Enhancement Course (SEC)

**No. of Lecture hours:** 30

**No. of Practical hours:** 15

**Course Outcomes: (CO)**

CO1: Ability to analyze different types of data sets. (BL 4)

CO2: Understand and critically discuss the issues surrounding sampling and significance. (BL 2, BL3)

CO3: gain practical skills, hands-on training, soft skills, etc., to enhance the employability of students. (BL 3, BL 4, BL 5)

CO4: Students will learn the theoretical basis for techniques widely used in empirical research and consider their application to a wide range of problems. (BL 1, BL 2, BL 3)

CO5: the capacity to develop appropriate methodology and tools for data collection,

the appropriate use of statistical and other analytical tools and techniques (BL 1, BL 2, BL 3, BL 4, BL 5)

<b>Module No.</b>	<b>Module Name</b>	<b>Top ic</b>	<b>No. of Lecture Hours allotted</b>	<b>Marks allotted</b>	<b>Associated Course Learning Outcome (CLO)</b>
1	Basic concepts of sampling and data collection	An overview of sample survey process; Different techniques of sampling; Representation of a numerical sample- Primary versus Secondary Data; Collection of Primary Data; Guidelines for constructing	15	33.3%	1, 2,4

		questionnaire;  Introduction to some Indian survey data, viz., Census of India, NSS, NFHS			
2*	Data Analysis- <b>Practical</b>	Making questionnaire; Analysis of secondary data; Problems in processing; Types of Analysis; Descriptive measures- Presentation– Diagrams; graphs; charts. Report writing; Layout of Research report.	15	33.3%	1,3,4,5
3*	<b>Practical</b> Applications using Indian survey based dataset <b>(practical)</b>	Basic features of the database, sampling methods, key indicators. Estimating descriptive statistics and making graphs and charts based on NSS, NFHS	15	33.3%	1,2,3,4,5

\*modules 2 and 3 will be practical based

**Suggested Readings:**

1. Gerber, Alan S & Green Donald P. Field Experiments: Design, Analysis and Interpretation
2. Groves, R.M., Fowler, F.J. Jr., Couper, M.P., Lepkowski, J.M., Singer, E., &

- Tourangeau, R. (2009). Survey Methodology, 2nd Edition. New York: Wiley.
3. Aarons, H. (2020). A practical introduction to survey design: a beginner's guide. *A Practical Introduction to Survey Design*, 1-360.
  4. A. M. Gun, M. K. Gupta and B. Dasgupta, *An Outline of Statistical Theory*, Vol. I & II, World Press, Calcutta.
  5. NSSO Reports, NFHS Reports
  6. Reviving Employments and Livelihoods in India: Covid-19 and After, Azim Premji University, 2021
  7. State of Working India 2023, Azim Premji University, 2023

### CO-PO Mapping

CO/PO	PO <sub>1</sub>	PO <sub>2</sub>	PO <sub>3</sub>	PO <sub>4</sub>	PO <sub>5</sub>	PO <sub>6</sub>	PO <sub>7</sub>
CO <sub>1</sub>	H						M
CO <sub>2</sub>	H						M
CO <sub>3</sub>	H	M		M			M
CO <sub>4</sub>	H						M
CO <sub>5</sub>	H						M
Total	3	2		2			2

\*H/M/L: High/Medium/Low level of mapping (H=3; M=2; L=1)

**CO Score: 2.25**

**Course Name:** Intermediate Microeconomics I

**Course Code:**

**Credit:** 4

**Semester:** IV

**Nature of the Course:** Major

**No. of Lecture hours:** 45

**No. of Tutorial contact hours:** 15

**Course Outcomes:**

CO1: The students will get a grasp of microeconomic analysis at the intermediate level using mathematical techniques where appropriate. (BL1, BL2, BL3)

CO2: Students will be able to describe the behavioural economics approach to understanding decision-making. (BL1, BL4)

CO3: Students will be able to comprehend how market price and output decisions are taken in different market structures. (BL1, BL2, BL3)

CO4: Students will be able to analyze pricing by firms with market power. (BL1, BL2, BL3)

**Course Content:**

Module No.	Module Name	Topic	No. of Lecture Hours allotted	Marks allotted	Associated CO
1	Theories of Consumer Behaviour 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.	18	28%	CO1, CO2
2	Production and Costs	Technology; isoquants; production with one and more variable inputs; Types of production functions - Cobb - Douglas, fixed - coefficient and CES functions; returns to	18	28%	CO1, CO2

		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.	12	22%	CO1, CO3
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; pricing with market power - first -, second - and third - degree price discrimination.	12	22%	CO1, CO3, CO4

### 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.

### CO-PO Mapping:

CO/PO	PO <sub>1</sub>	PO <sub>2</sub>	PO <sub>3</sub>	PO <sub>4</sub>	PO <sub>5</sub>	PO <sub>6</sub>	PO <sub>7</sub>
CO <sub>1</sub>	H						M
CO <sub>2</sub>	H						M
CO <sub>3</sub>	H			M			M
CO <sub>4</sub>	H			M			M
Total	3			2			2

\*H/M/L: High/Medium/Low level of mapping (H=3; M=2; L=1)

**CO Score: 2.33**

**Course:** Intermediate Macroeconomics I

**Course Code:**

**Credit:** 4

**Semester:** III

**Nature of the Course:** Major

**No. of Lecture hours:** 45

**No. of Tutorial contact hours:** 15

**Course Outcomes: (CO)**

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 significance of expectation in Macroeconomics.
3. Students will learn the major perspectives on macroeconomic policy issues, trade-off government face between inflation and unemployment.
4. Students will be able to understand how aggregate economy functions in an open economy framework and related policy issues.

**Course Content:**

<b>Module No.</b>	<b>Module Name</b>	<b>Topic</b>	<b>No. of Lecture Hours allotted(Lectures+ Tutorial )</b>	<b>Marks allotted</b>	<b>Associated Course Outcome (CO)</b>
1	Short-Run and medium run equilibrium: AD-AS Analysis	Derivation of Aggregate Demand schedule; Derivation of Aggregate Supply schedule; Interaction of aggregate demand and supply to determine equilibrium output, price level and employment; Fiscal and Monetary policy	15	25%	CO1,CO3
2	Expectation and Aggregate Supply curve	Alternative models: Sticky wage, worker's misperception model, incomplete information model & sticky price model.	15	25%	CO2,
3	Philips curve and theory of expectations	Inflation unemployment and expectations, Phillips Curve; Adaptive and rational expectations; policy ineffectiveness debate	15	25%	CO3,

4	Issues in Open Economy	Fixed vs Flexible exchange rate; Mundell-Fleming model ; purchasing power parity; asset market approach; Dornbusch's overshooting model; interest rate parity	15	25%	CO3,CO4
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### Suggested Readings:

1. Andrew B. Abel and Ben S. Bernanke, *Macroeconomics*, 7<sup>th</sup> edition, Pearson.
2. Errol D'Souza, *Macroeconomics*, Pearson Education.
3. Olivier Blanchard, *Macroeconomics*, 5<sup>th</sup> Edition, Pearson.
4. Dornbusch, R and Fischer, S (1994), *Macroeconomics*, 6<sup>th</sup> Edition, McGraw Hill
5. Carlin, Wendy and Soskice, David (2006), *Macroeconomics: Institutions, Instability and the Financial System*, Indian Ed. Oxford University Press.

### CO-PO Mapping:

CO/PO	PO <sub>1</sub>	PO <sub>2</sub>	PO <sub>3</sub>	PO <sub>4</sub>	PO <sub>5</sub>	PO <sub>6</sub>	PO <sub>7</sub>
CO <sub>1</sub>	H	M					
CO <sub>2</sub>	H		M				M
CO <sub>3</sub>	H						H
CO <sub>4</sub>	M			M			H
CO <sub>5</sub>	H	M					H
Total	2.8	2	2	2			2.25

\*H/M/L: High/Medium/Low level of mapping (H=3; M=2; L=1)

**CO Score: 2.21**

**Course Name:** Intermediate Mathematical Methods for Economics

**Course Code:**

**Credit:** 4

**Semester:** IV

**Nature of the Course:** Major

**No. of Lecture hours:** 45

**No. of Tutorial contact hours:** 15

**Course Outcomes (CO):**

CO1: Students will be able to identify and examine the basic concepts of Linear algebra. (BL1)

CO2: Students will be able to explain the concepts related to Optimization. (BL2)

CO3: Students will be able to apply various mathematical concepts and solve mathematical problems. (BL3)

CO4: Understanding and analyzing the theory and models taught in the subsequent courses of Microeconomics, Macroeconomics, and Econometrics. (BL4)

CO5: Develop the technical skill to build up simple analytical model. (BL5 & BL6)

**Course Content:**

<b>Module No.</b>	<b>Module Name</b>	<b>Topic</b>	<b>No. of Lecture Hours allotted</b>	<b>Marks allotted</b>	<b>Associated CO</b>
1	Linear Algebra	Matrices and Vectors: Matrix operations, Vector operations, types of matrix, transpose and inverse; Determinants: properties and operations; Eigenvalues and Eigenvectors; Definiteness of Matrices; Cramer's rule; Solving system of equations; Leontief Input-Output model	15	25%	CO1, CO3, CO4, CO5
2	Comparative statics and the concept of Derivative	Rate of Change and the Derivative; Rules of differentiation; Partial differentiation; Total differentials; Total derivatives; Derivatives of Implicit functions; Comparative static of General-Function Models	15	25%	CO2, CO3, CO4, CO5
3	Optimization Problem	Optimum Values and Extreme Values; Relative Maximum and Minimum; First-	15	25%	CO2, CO3, CO4, CO5

		Derivative test, Second-Derivative test; Unconstraint Optimization; Constraint optimization with Equality Constraints			
4	Difference and Differential Equations	First and Second order Linear difference and differential equation; First order Non-linear difference and differential equation	15	25%	CO3, CO4, CO5

### Suggested Readings:

1. Alpha Chiang and Kevin Wainwright, *Fundamental Methods of Mathematical Economics*, 4<sup>th</sup> Edition, Mc-Graw Hill Education, 2005.
2. De la Fuente, Angel. *Mathematical methods and models for economists*. Cambridge University Press, 2000.
3. Ok, Efe A. *Real analysis with Economic Applications*. Vol. 10. Princeton University Press, 2007.
4. Strang, Gilbert. *Introduction to linear algebra*. Wellesley-Cambridge Press, 2022.
5. Sydsaeter, Knut. *Mathematics for economic analysis*. Pearson Education India, 2013.

### CO-PO Mapping:

CO/PO	PO <sub>1</sub>	PO <sub>2</sub>	PO <sub>3</sub>	PO <sub>4</sub>	PO <sub>5</sub>	PO <sub>6</sub>	PO <sub>7</sub>
CO <sub>1</sub>	H						M
CO <sub>2</sub>	H						M
CO <sub>3</sub>	H						M
CO <sub>4</sub>	H						M
CO <sub>5</sub>	H						M
Total	3						2

\*H/M/L: High/Medium/Low level of mapping (H=3; M=2; L=1)

**CO Score: 2.5**

**Course Name:** Mathematics II

**Course Code:**

**Credit:** 4

**Semester:** 2

**Nature of the Course:** Minor

**No. of Lecture hours:** 45

**No. of Tutorial contact hours:** 15

**Course Outcomes: (CO)**

CO1: Students will be able to identify and examine the basic concepts of Linear Algebra.

CO2: Students will be able to explain the concepts related to Matrices & Determinants.

CO3: Students will be able to apply various mathematical concepts of Linear Algebra.

CO4: Students will be able to analyse the concepts related to Eigen Values & Eigen Vectors

CO5: Students will be able to integrate various mathematical concepts and develop and understanding about solving mathematical problems.

**Course Content:**

Module No.	Module Name	Topic	No. of Lecture Hours allotted	Marks Allotted	Associated CO
1	Integration	Integration: Introduction to Integration of Single Functions & Multivariate functions; Areas under two dimensional curves, Indefinite & Definite Integrals of a one variable, Double integral, Geometry of bivariate functions; Surface & volume.	15	25%	
2	Matrices & Determinants	Matrices & Determinants: systems of linear equations: Linear Equations; Equivalent Systems of Linear Equations I: Inverses of Elementary Row-operations, Row-equivalent matrices; Equivalent Systems of Linear Equations II: Homogeneous Equations, Examples; Row-reduced Echelon Matrices; Row-reduced Echelon Matrices and Non-homogeneous Equations; Elementary	15	25%	

		<p>Matrices, Homogeneous Equations and Non-homogeneous Equations; Invertible matrices, Homogeneous Equations Non-Homogeneous Equations;</p> <p>Determinants: Characterization 25% and Properties; Cramer's Rule and Linear Equations; Adjoint and Inverse of Matrix; Economic Applications of Matrix and Determinants.</p>			
3	<p>Vector Spaces; BASIS AND DIMENSION:</p>	<p>Vectors: An Introduction and Properties; Vector spaces; Elementary Properties in Vector Spaces. Subspaces, Spanning Sets, Linear Independence, Dependence.</p> <p>BASIS AND DIMENSION: Basis for a vector space; Dimension of a vector space; Dimensions of Sums of Subspaces; Vectors: Inner Product Spaces, Norms and Orthogonality, The Gram-Schmidt Procedure</p>	15	25%	
4	<p>LINEAR TRANSFORMATIONS; EIGENVALUES AND EIGENVECTORS</p>	<p>Linear Transformations; The Null Space and the Range Space of a Linear Transformation; The Matrix of a Linear Transformation; Matrix for the Composition and the Inverse. Similarity Transformation; The Transpose of a Linear Transformation. Matrices of a Linear Transformation and its Transpose</p> <p>EIGENVALUES AND EIGENVECTORS: Eigenvalues and</p>	15	25%	

		Eigenvectors of Linear Operators; Diagonalization of Linear Operators, Diagonalization of a matrix; The Minimal Polynomial; The Cayley-Hamilton Theorem.			
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**Suggested Readings:**

1. Alpha Chiang and Kevin Wainwright, *Fundamental Methods of Mathematical Economics*, 4th Edition, Mc-GrawHill Education, 2005.
2. Robert G. Bartle and Donald R. Sherbert, *Introduction to Real Analysis*, 4th Edition, Wiley, 2011.
3. Tom M. Apostol, *Mathematical Analysis*, 2nd Edition, Addition Wesley Publishing Company, Inc., 1974.
4. B.C. Das and B.N. Mukherjee, *Integral Calculus*, 4th Edition, Calcutta: U.N. Dhur, 1964.
5. Hoffman and Kunze, *Linear Algebra*, 2nd Edition, Pearson, 1978.
6. K. Sydsaeter and P. Hammond, *Mathematics for Economic Analysis*, Pearson Education Asia, Delhi, 2005.
7. Strang Gilbert, *Linear Algebra and its Application*; 4th Edition, Thomson, 2006.

**CO-PO Mapping:**

CO/PO	PO <sub>1</sub>	PO <sub>2</sub>	PO <sub>3</sub>	PO <sub>4</sub>	PO <sub>5</sub>	PO <sub>6</sub>	PO <sub>7</sub>
CO <sub>1</sub>	M						M
CO <sub>2</sub>	H						M
CO <sub>3</sub>	H						M
CO <sub>4</sub>	H						M
CO <sub>5</sub>	H						M
Total	2.8						2

\*H/M/L: High/Medium/Low level of mapping (H=3; M=2; L=1)

**CO Score: 2.4**

**Course Name:** Introduction to Development Economics

**Course Code:**

**Credit:** 4

**Semester:** III

**Nature of the Course:** Minor

**No. of Lecture hours:** 45

**No. of Tutorial contact hours:** 15

**Course Outcomes: (CO)**

CO1: Students will be able to understand the notion of economic development and its difference with the concept of growth. (BL2, BL4)

CO2: Students will be able to understand the issues of structural transformation in less developed economies. (BL1, BL3)

CO3: Students will be able to understand the concept of human development, poverty, inequality and learn to develop commonly used human development, inequality and poverty indices. (BL3, BL6)

CO4: Students will be able to analyze the problems of development and ways to overcome underdevelopment. (BL4, BL5)

<b>Module No.</b>	<b>Module Name</b>	<b>Topic</b>	<b>No. of Lecture Hours allotted</b>	<b>Marks allotted</b>	<b>Associated Course Learning Outcome (CLO)</b>
1.	Growth and Development	Growth vs development. Is per-capita income a good measure of development? Commodities vs Capabilities Low Level Equilibrium Trap and Big Push, Rostow's stages of growth-- Take off to Self Sustained Growth, Vicious Cycle of Poverty. Balanced vs unbalanced growth.	20	30%	CO1, CO4
2.	Poverty and Inequality	Poverty: measures and indices. Absolute and Relative Poverty, Inequality: Measurement and indices. Horizontal and Vertical Inequality, Axiomatic Approach to Measuring Poverty and Inequality: Multidimensional measures	10	20%	CO3
3.	Human Development	From income to multi-dimensional measure of development--Human Development Index, Gender Development Index, Inequality Adjusted Human Development Index	10	20%	CO3, CO4

4.	Pathways to economic development	Capital accumulation, Environment, Sectoral issues in development: Agriculture and Industry; dual economy: surplus labour, disguised unemployment, Lewis Model and Harris-Todaro Model.	20	30%	CO2, CO4
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### Suggested Readings:

- Dutt, A. K. (2014). *Pathways to economic development*. OUP Catalogue.
- Sen, Amartya (2001). *Development as freedom (2nd ed.)*. Oxford New York: Oxford University Press.
- Sen, A. (2008). *The Idea of Justice*. The Belknap Press of Harvard University Press.
- Ray, D. (1998). *Development economics*. Princeton University Press.

### CO-PO Mapping:

CO/PO	PO <sub>1</sub>	PO <sub>2</sub>	PO <sub>3</sub>	PO <sub>4</sub>	PO <sub>5</sub>	PO <sub>6</sub>	PO <sub>7</sub>
CO <sub>1</sub>	H				M		M
CO <sub>2</sub>	H				M		M
CO <sub>3</sub>	H				M		M
CO <sub>4</sub>	H				M		M
Total	3				2		2

\*H/M/L: High/Medium/Low level of mapping (H=3; M=2; L=1)

**CO Score: 2.3**

**Course Name:** Sustainable Development

**Course Code:**

**Credit:** 3

**Semester:** III

**Nature of the Course:** Multi-Disciplinary

**No. of Lecture hours:** 30

**No. of Tutorial contact hours:** 15

**Course Outcomes:**

CO1: The students will be able to apply fundamental economic principles to practical environmental sustainability issues. (BL1, BL2)

CO2: Students will be able to demonstrate knowledge of the economic factors influencing the connections between sustainable growth and the environment. (BL1, BL4)

CO3: Students will be able to identify major sustainability challenges and gain an understanding of the different policy responses. (BL6)

CO4: Students will be able to learn the tools and techniques to address sustainable development problems. (BL3, BL6)

**Course Content:**

Module No.	Module Name	Topic	No. of Lecture Hours allotted	Marks allotted	Associated CO
1	Introduction	Need for studying the economics of sustainable development; meaning of sustainable development – Comparison with static and dynamic economic efficiency; Sustainable development Goals.	17	35%	CO1, CO2, CO3
2	Weak versus strong sustainability	Weak versus strong sustainability; Rawls and Solow Sustainability, role of discounting, Inter- and Intra-generational equity and sustainability.	13	32%	CO1, CO2
3	Valuation	Compensating & Equivalent variation- WTP vs WTA: Why Differ. Household Production Function; Market instruments:	15	33%	CO1, CO3, CO4

		Carbon prices, emission trading.			
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**Suggested Readings:**

C.D. Kolstad, *Environmental Economics*, OUP, 2010.

Daly, H.E., *Beyond Growth: The Economics of Sustainable Development*, Beacon Press, 1996.

Murty, M.N. (2009), *Environment, Sustainable Development, and Well-being: Valuation, Taxes and Incentives*, Oxford University Press, Delhi

N. Hanley, J. Shogren, Ben White, *Environmental Economics-In Theory and Practice*, Palgrave Macmillan, 2007

Pearce, D. and E. Barbier, *Blueprint for a Sustainable Economy*, Earthscan, 2000.

Rogers, P. K.F. Jalal and J.A. Boyd, *An Introduction to Sustainable Development*, Earthscan, 2008

Sengupta, R. (2012), *Ecological Limits and Economic Development*, Oxford University Press, Delhi

**CO-PO Mapping:**

CO/PO	PO <sub>1</sub>	PO <sub>2</sub>	PO <sub>3</sub>	PO <sub>4</sub>	PO <sub>5</sub>	PO <sub>6</sub>	PO <sub>7</sub>
CO <sub>1</sub>	M					H	M
CO <sub>2</sub>			H	M		H	
CO <sub>3</sub>	H			M	M	H	
CO <sub>4</sub>						H	
CO <sub>5</sub>						H	
Total	2.5		3	2	2	3	2

\*H/M/L: High/Medium/Low level of mapping (H=3; M=2; L=1)

**CO Score: 2.41**