

LALIT CHANDRA BHARALI COLLEGE



COURSE FILE

DEPARTMENT OF ECONOMICS

SESSION: 2019-20, 2020-21, 2021-22, 2022-23

COURSE CODE: ECO-HC-1026

COURSE NAME: MATHEMATICAL METHODS IN ECONOMICS-I

Paper Taught By

J. Goswami (2019-20)
J. Goswami, J. Hazarika (2020-21)
J. Goswami, J. Hazarika (2021-22)

Prepared By

[Signature]

DEPARTMENT OF ECONOMICS
LCB COLLEGE, MALIGAON, GUWAHATI-11

Reviewed

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I.Q.A.C.
Co-ordinator,
L.C.B. College

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L.C.B. College

Vision

To enable students, grasp the core ideas of economic theory with the use of mathematical concepts

Mission

To make quality education accessible to all students of Economics Honours and sort ways for reaching out to them despite their differences

To cultivate excellence by identifying and moulding the best minds

To equip students with skills of mathematics

To instil a sense of responsibility among the learners

Objectives to materialize this mission:

- To make use of all the infrastructure to facilitate the students to grasp the required knowledge and skills.
- To provide a liberal and free environment to translate the vision and the mission into a reality.
- To nurture critical and creative temperament.
- To sensitize and engage students on issues core to the course

Syllabus

ECO-11C-1026: MATHEMATICAL METHODS IN ECONOMICS-I

Course Description

This is the first of a compulsory two-course sequence. The objective of this sequence is to transmit the body of basic mathematics that enables the study of economic theory at the undergraduate level, specifically the courses on microeconomic theory, macroeconomic theory, statistics and econometrics set out in this syllabus. In this course, particular economic models are not the ends, but the means for illustrating the method of applying mathematical techniques to economic theory in general. The level of sophistication at which the material is to be taught is indicated by the contents of the prescribed textbook.

Course Outline

1. Preliminaries

Sets and set operations, relations and functions, number system

2. Functions of one real variable

Elementary types of functions: quadratic, polynomial, power, exponential, logarithmic, convex, quasi-convex and concave functions, limit and continuity of functions

3. Differential calculus

Differentiation of a function, Basic rules of differentiation, partial and total differentiation, second and higher order derivatives for single variable, economic applications of differentiation

4. Single variable optimization

Local and global optima: geometric characterization, characterization using calculus: tests for maximization and minimization, applications: profit maximization, cost minimization, revenue maximization

5. Integration of functions

Meaning and significance of integration, basic rules of integration, significance of a constant after integration, applications: derivations of total functions (total cost, total revenue, consumption and

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saving functions) from marginal functions, consumer's surplus and producer's surplus, problems relating to investment and capital formation

Readings:

1. K. Sydsaeter and P. Hammond, *Mathematics for Economic Analysis*, Pearson Educational Asia: Delhi, 2002
2. Chiang A.C. and K. Wainwright, *Fundamental Methods of Mathematical Economics*, McGraw Hill International Edition
3. Baruah S.N., *Basic Mathematics and its Economic Applications*, MacMillan

Program Specific Outcome:

Undergraduate Program with Economics Honours

- PSO1:** The students will be provided a well-founded education in Economics
- PSO2:** The structured curriculum will support the students with a sound academic development that will provide our students to prepare for further studies and career in economics
- PSO3:** To provide the students with an opportunity to pursue courses that emphasise quantitative and theoretical aspects of economics
- PSO4:** To provide a well-resourced learning environment, with field trips, lectures by prominent resource persons, group discussions and the like for their development in analysing and solving economics issues
- PSO5:** The students are given an opportunity to update themselves with the recent trends in economic developments
- PSO6:** A structured teaching plan with different modes of experiential learning like drafting questionnaire and conducting primary survey, preparing write ups; participative learning ways and problem-solving avenues to learn the different modules in the curriculum
- PSO7:** Two value added course on computer basics and Mathematica, and Basic statistics in Research Methodology with MS Excel and SPSS to complement the regular curriculum with related skills
- PSO8:** Students shall be able to go for PG courses in Economics, go for MBA, pursue Teaching jobs, and bank P.O. Also, Clerical jobs in banks, other competitive exams like UPSC exams and APSC exams.

Course Outcome

Paper Eco HC 1026

Mathematical Methods in Economics-1

1. Students will be able to understand the basic mathematical concepts of sets, number systems and relations and functions
2. Using examples from economic theory students shall be able to understand the meaning and graphical representation of different types of functions
3. Students will be able to know the concepts of limit and continuity of functions and the meaning and evaluation of derivatives
4. Students will know about the economic applications of derivatives as well
5. With the concepts of maxima and minima of functions students will be able to know its significance in economics
6. Students will be able to know the mathematical tool of integration and the applications of the same in economics

Departmental Academic Calendar, 2021-22

Department of Economics, L.C.B. College

Month	Date	No. of working days	Particulars	Holidays	Curriculum Based and other academic activities	CIE	Remarks
August, 2021	1	-	-	Sunday			
	2-7	6	Classes				
	8	-	-	Sunday			
	9-14	6	-	Classes			
	15	-	-	Sunday, Independence Day	Continuation of classes of even semesters		Classes in blended mode as suitable and as per Covid SOP
	16-21	6	Classes				
	22	-	-	Sunday			
	23-26	4	Classes				
	27	-	-	Tithi of Madhabdev	End semester Examinations for even semesters		
	28	1	Classes				
	29	-	-	Sunday			
	30	-	-	Janmastami			
	31	1	Classes				
Total 24							
September, 2021	1-4	4	Classes				
	5	-	-	Sunday			
	6-7	2	Classes				
	8	-	-	Tithi of Srimanta Sankardev	Admission to UG and HS courses , 21-22 completed		
	9-11	3	Classes				
	12	-	-	Sunday			
	13-18	6	Classes		Commencement of I, III and V semester classes and HS		Classes in blended mode as suitable and as per Covid SOP
	19	-	-	Sunday			
	20-25	6	Classes		HS 2 nd year issue of topics for project		
	26	-	-	Sunday			
	27-30	4	Classes				
Total 25							
October, 2021	1	1	Classes				
	2	-	-	Gandhi			

	3	-	-	Jayanti			
	4-9	6	Classes	Sunday	Bridge classes for III sem, HC 3036		
	10	-	-	Sunday	Bridge class to I st sem, 1016, 1026		
	11-20	-	-	Durga Puja, Kati Bihu, Lakshmi Puja and Janmotsav of Srimanta Sankardev			
	21-23	3	Classes				
	24	-	-	Sunday			
	25-30	6	Classes				
	31	-	-	Sunday			
	Total 14						
November, 2021	1-3	3	Classes		Issue of topic for SE3014 project		Election Procedure for LCBCSU
	4-5	-	-	Kali Puja and Dipawali	Learning ability test Group formation for all group activity		
	6	-	-	Bhai Dooj			
	7	-	-	Sunday			
	8-9	2	Classes				
	10	-	-	Chhaat Puja			
	11-13	3	Classes				
	14	-	-	Sunday			
	15-18	4	Classes				
	19	-	-	Guru Nanak Birthday			
	20	1	Classes				
	21	-	-	Sunday			
	22-23	2	Classes				
	24	-	-	Lachit Divas			
	25-27	3	Classes				
	28	-	-	Sunday			
	29-30	2	Classes				
	Total	17					
December, 2021	1	1	Classes				
	2	-	-	Asom Divas		Issue of Assignment topics for	

	3-4	2	Classes			evaluation	
	5	-	-	Sunday			
	6-11	6	Classes			Group discussion across all semesters	
	12	-	-	Sunday			
	13-18	6	Classes				
	19	-	-	Sunday			
	20-24	5	Classes		Review of project for 3 rd sem SEC		
	25	-	-	Christmas			
	26	-	-	Sunday			
	27-31	5	Classes				
	Total						
January, 2022	1	1	Classes				
	2	-	-	Sunday			
	3-8	6	Classes		Viva of SE 3014		
	9	-	-	Sunday			
	10-12	3	Classes			Assignment submission for evaluation of odd semester students	
	13-19	-	-	Winter Break			
	20-22	3	Classes			Group-wise Seminar presentation of odd semester students	
	23	-	-	Sunday			
	24	1	Classes				
	25	-	-	Gwther-Bathao San			
	26	-	-	Republic Day			
	27-29	3	Classes			Felicitation of Successful candidates in the last final exam	
	30	-	-	Sunday			
	31	-	-	Me-Dum-Me-Phi			
	Total 17						
February, 2022	1-4	4	Classes			Sessional exam for odd semester	
	5	-	-	Saraswati Puja			
	6	-	-	Sunday			
	7-12	6	Classes			Lecture program on	

	13	-	-		Central Budget		
	14-15	2	Classes	Sunday		End semester examinations for odd semester	
	16	-	-	Ali-Aye-Ligang/ Bir Chilarai Divas			
	17-19	3	Classes				
	20	-	-	Sunday			
	21-26	6	Classes			Viva of IIS project	
	27	-	-	Sunday			
	28	1	Classes				
	Total 22						
March, 2022	1	-	-	Sivaratri		End semester examinations for odd semester continues	
	2-5	4	Classes				
	6	-	-	Sunday			
	7-12	6	Classes				
	13	-	-	Sunday			
	14-17	4	Classes				
	18	-	-	Dol Jatra			
	19	1	Classes				
	20	-	-	Sunday			
	21-26	6	Classes				
	27	-	-	Sunday			
	28-31	4	Classes				
	Total 25						
April, 2022	1-2		Classes		Course File Preparation		
	3	-	-	Sunday	Even semester classes to start from later part of April		
	4-9		Classes				
	10	-	-	Sunday			
	11-13		Classes		Issue of theme for write-up change of departmental wall magazine, Ankuran		
	14-16	-	-	Bohag Bihu/Good Friday			
	17	-	-	Sunday			
	18-23		Classes		Finalisation of theme for students inter departmental exhibition		
	24	-	-	Sunday			
25-		Classes		Write-up			

	30				change of departmental wall magazine, Ankuran		
	Total 23						
May, 2022	1	-	-	Sunday			
	2	1	Classes				
	3-4	-	-				
	5-7	3	Classes	Id-ul-Fitr			
	8	-	-				Golden Jubilee Closing Ceremony and students exhibition
	9-14	6	Classes	Sunday			
	15	-	-				
	16	-	-	Sunday	Buddha Purnima		
	17-21	6	Classes				College Week during 1 st
	22	-	-				
	23-28	6	Classes	Sunday			Issue of Assignment and group wise seminar
	29	-	-				
	30-31	2	Classes	Sunday			
	Total 24						
June, 2022	1-4	4	Classes				Sessional Examination in first week for even semester
	5	-	-	Sunday			
	6-11	6	Classes				Submission of Assignment for evaluation
	12	-	-	Sunday			
	13-18	6	Classes				
	19	-	-	Sunday			
	20-25	6	Classes				
	26	-	-	Sunday			
	27-30	4	Classes			End semester exam of 6 th semester in last week	
		Total Working days, June 26					
July, 2022	1-2	2	Classes				
	3	-	-	Sunday			
	4-9	6	Classes				
	10-31			Summer Vacation			Admission to HS and Odd semester batches
		Total Working days, July 8					

Routine Department: Economics

Days/Time	8:30-9:30	9:30-10:30	10:30-11:30	11:30-12:30	12:30-1:30	1:30-2:30	2:30-3:30	3:30-4:30
Mon	III(R/G)PM	I(H)PM V(H)JH	III(M)JH V(H)JG	I(H)JG SEC VPM	<u>III(M)DD</u> V(H) DJH	HSIIDD I(R/G)PM V(R)JG V(H) DJH	<u>HSIDD</u>	<u>GEV TDD</u> V(H)T JG
Tue		I(H)JG III(R/G)JH <u>V(H)DD</u>	III(M)JG V(R)PM <u>V(H) DD</u>	I(H)JG SEC III PM	III(M)JG HSIIPM <u>V(H)DDD</u>	V(H) DJH	I(R/G)JH	GEVPM <u>V(H)TDD</u>
Wed	I(R/G)JG	<u>I(H)DD</u> V(H) JG	<u>III(M) DD</u> V(H)PM	I(H) JH HSI PM SEC VJG	III(M)JH V(H) DJG	III(R/G)JG V(H) DPM	V(R)JH	GEVJH V(H)T PM
Thr		I(H) PM <u>V(R)DD</u> V(H)JH	<u>III(M)DD</u> HSIJH V(H) PM	I(H) JGHSIJH	<u>III(M)DD</u> V(H) DPM	<u>III(R/G)DDV(H)</u> DJG	SEC IIIJG	I(R/G)TPM GEVTJH V(H)TJG
Fri	<u>HSIIDD</u> V(R)JH	I(H)PM <u>V(H)DD</u>	III(M)PM HS IJH <u>I(R/G)DD</u> V(H)JG	I(H)JH SECVJG	III(M)PM V(H) DJH	V(H) DJG	III(R/G)PM	SECIIIJG GEV PM <u>I(H)T DD</u> V(H)T JH
Sat		<u>I(H)DD</u> V(H)JH	III(M)JG V(H)PM	I(H)JH SECVPM	III(M)PM <u>V(H) DDD</u>	HSIJH <u>V(H) DDD</u>	<u>HS I DD</u> I(R/G)PM III(R/G)TJG V(R)TJH	GEVJG V(H)T PM

JG – Jublee Goswami, PM – Pulak Mili, DD – Dulumoni Das, JH – Jyotika Hazarika

Jublee 2/11/21
Jublee Goswami


HOD, Economics
Head
Department of Economics
L.C. Bharali College
Guwahati-11

CLASS ROUTINE

DEPARTMENT OF ECONOMICS: L.C. BHARALI COLLEGE, MALIGAON, GHY-II

Days	Class	9:30-10:30	10:30-11:30	11:30-12:30	12:30-01:30	01:30-02:30	02:30-03:30	03:30-04:30	04:30-05:30
Mon	I	H/T PM	ECO(R) PM			H JG/ICT			
	II		H JG		H JG		H/T PM	SEC JG/ICT	ECO(R) DDT, SEC PM
	III	H JH DSE(ECO/T) DD	H JH/ICT	DSE1H PM	SEC PM	DSE2H/T PM			
Tue	I	H JG				H DD		ECOR/T DD	
	II	ECO(R) PM	H PM/ICT		H JG				H DD
	III	H JH	H DD	DSE2H JG	DSE(ECO) JH	DSE1H/T JH		SEC JG	
Wed	I	H/T JG	ECO(R) JH			H JH/ICT			
	II		H PM		H DD		ECO(R/T) JH	H DD/ICT	
	III	H JH DSE(ECO) PM	H JG	DSE1H JG		DSE2H PM	SEC PM		
Thr	I	H JG		ECO(R) JG				H DD/ICT	
	II	ECO(R) DD	H JG		H PM/ICT			H/T PM	
	III	H/T PM	H PM/ICT	DSE2H JH		DSE2H PM DSE(ECO) JG		SEC DD/ICT	
Fri	I	H PM/ICT				HDD		ECO(R) JG VAC	
	II		H JG	ECO(R) JG	H JH/ICT		H/T DD	SEC PM/ICT VAC	SEC JG
	III	H/T DD	H PM	DSE2H JH	DSE(ECO) DD	DSE1H JH DSE ECO PM		SEC JH VAC	
Sat	I	H PM		ECO(R) PM				H JH VAC	
	II		H JH		H DD		ECO(R) JH	SEC DD/VAC	H DD
	III	H JG DSE(ECO) JH	H DD	DSE1H DD		DSE2H JG/ICT	SEC PM	VAC	

Teacher	II Sem. (Honours)		II Sem. (Regular)		VAC	IV Sem. (Honours)		IV Sem. (Regular)		SEC	VAC	VI Sem. (Honours)		VI Sem. (Regular)		Total
	R	T	R	T		R	T	R	T			R	T	R	T	
JG	4	-	2			5		1		2		5		1		21
PM	2	1	2			2	2	1		2		5	2	2		21
DD	3			1		3	1	1	1	1		3	1	1	1	17
JH	2		1			2		1	1	-		7	1	2		17
Total	11	1	5	1		12	3	4	2	5		20	4	6	1	76



 Head
 Department of Economics
 L.C. Bharali College
 1.16/22

Detailed Teaching and Evaluation Plan: HC 1026

Session: 2021-22

This is a detailed plan of teaching along with course distribution, teaching plan, mode of teaching and evaluation mode

Units	Faculty	Teaching Plan	Mode of Teaching	Evaluation Mode	Remarks
Unit 1	JG	Sep-Oct 5 classes, sets 3 classes Relation and function 2 classes Number system 1 class	Blackboard and chalk, Use of PPT, videos of sets usage Notes on Number system	*Sessional Exam- 8 marks	
Unit 2	JG	Oct-5 classes Function-2 classes Limit 3 classes Continuity concept-1 class	Blackboard and chalk, discussion on problems available on the net	*Class test on limit *Sessional Exam- 4 marks	
Unit 3	JH	November-Dec Theory -2 classes practise problems 3 classes Applications with problems- 5classes	Blackboard and chalk	*Sessional Exam- 5 marks	
Unit 4	JG	Nov-Dec-january Concept of derivatives, First order derivatives with problems-5 classes, with discussion on first principle Economic applications-5 classes with problems Partial Derivatives-2classes Economic application-1 class Concept of second order derivatives, total differential -2 classes Rest revision and discussion on question paper problems	Blackboard and chalk, Use of PPT, videos of usage	*Class test on first order derivatives, *Problems solving on partial derivatives, *Group Discussion *Sessional Exam- 8 marks	
Unit 5	JG	January-February Concept and formulae with problems-5 By parts-2 classes By substitution-2 classes Applications 3 classes Revision	Blackboard and chalk, videos of usage	*Class test *Assignment	


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