



IPU/USLA/2026/

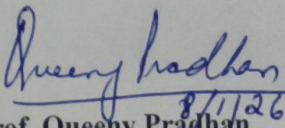
Date: 08.01.2026

Notice

Please find the Handbook with detailed syllabus of the MDCs offered in the 2nd Semester for 2025 Batch.

The List of MDC offered are:

S.No.	Title of MDC	USS
1.	Introduction To R Programming BSID102 [3Credits(UES)]	USBAS
2.	Finance for Non-Finance Students MS-MDC102 [3Credits(UES)]	USMS
3.	Introduction to Process Industry CT-104 [3Credits(UES)]	USCT
4.	Makers of Modern India BALAC110 [3Credits(UES)]	USLA
5.	The Idea of Power BALAC112 [3Credits(UES)]	USLA
6.	Social Interaction in Virtual Environment BALAC114 [3Credits(UES)]	USLA
7.	Introduction to Food Science and Nutrition BT-164 [3 Credits (UES)]	USBT
8.	Literary Appreciation BAENG110 [3Credits(UES)]	USHSS
9.	Introduction to Economics BAECO108 [3Credits(UES)]	USHSS
10.	Wildlife Management BSCES-110	USEM
11.	Concept of Disaster Management BSCES-108	USEM


Prof. Queeny Pradhan
NEP Coordinator

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**Detailed Syllabus for MDC offered in the 2nd
Semester (2025 Batch)**

List of MDC

S. No.	Title of MDC	USS
1.	Introduction To R Programming BSID102 [3 Credits (UES)]	USBAS
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UNIVERSITY SCHOOL OF BASIC AND APPLIED SCIENCES (USBAS)

Introduction To R Programming

USBAS Scheme & Syllabii

9/11

BSC/MSC 2025-26

Paper Code	SEMESTER	COURSE	L	P	Total credits
BSID102	2	INTRODUCTION TO R PROGRAMING	2	1	3

CO: Course Objective

CO1	To introduce various types of data and their sources
CO2	To analyse the data with models
CO3	To understand basic concepts of data sets for creation and rectification

COE: Course Expected Outcomes

COE1	Understand the basic concepts of data sciences
COE2	Enhance the mathematical logical skills by learning different techniques.
COE3	Understand the techniques in solving problems for regression
COE4	To provide reasoning and arguments to justify conclusions

Unit 1: Introduction: R interpreter, Introduction to major R data structures like vectors, matrices, arrays, list and data frames, Control Structures, vectorized if and multiple selection, functions.

UNIT 2: Installing, loading and using packages: Read/write data from/in files, extracting data from web-sites, Clean data, Transform data by sorting, adding/removing new/existing columns, centring, scaling and normalizing the data values, converting types of values, using string in-built functions, Statistical analysis of data for summarizing and understanding data, Visualizing data using scatter plot, line plot, bar chart, histogram and box plot

Unit 3: Designing GUI: Building interactive application and connecting it with database. Building Packages.

References

1. Cotton, R., *Learning R: a step by step function guide to data analysis*. 1st edition. O'reilly Media Inc.

Additional Resources:

2. Gardener, M.(2017). *Beginning R: The statistical programming language*, WILEY.

3. Lawrence, M., & Verzani, J. (2016). *Programming Graphical User Interfaces in R*. CRC press. (ebook)

Web Resources

<https://jrnold.github.io/r4ds-exercise-solutions/index.html>

<https://www.r-project.org/>

<https://cran.r-project.org/>

Guru Gobind Singh Indraprastha University, Sector 16-C, Dwarka, New Delhi-110078

approved in the meeting of the BOS held on ———and the 60th AC w.e.f academic session 2025-2026

Finance for Non-Finance

UNIVERSITY SCHOOL OF MANAGEMENT STUDIES (USMS)

Course Code: MS-MDC 102 Finance for Non-Finance Students L-3, T/P-0, Credits - 3

Objective: The course aims to provide non-finance students with a comprehensive understanding of financial principles, enabling them to comprehend financial statements, investments, and risk management for informed decision-making in both personal and professional contexts.

Course Outcomes

CO1: Understand the fundamentals of finance and understand the role of financial markets and institutions.

CO2: Effectively analyse key financial statements to evaluate a company's financial health.

CO3: Understand the concepts of risk and return, including systematic and unsystematic risk, and apply tools like standard deviation, beta, and CAPM to analyse risk-return trade-offs.

CO4: Develop investment strategies based on fundamental and technical analysis, assess risk tolerance, and apply diversification principles.

Course Contents

Unit I: (12 Hours)

Introduction to Finance and Financial Markets: Overview of Finance: Definition, importance, and role of finance in business; Financial terminology: Key terms and concepts; Overview of Financial Markets: Capital markets, Money markets; Financial Intermediaries; Market Instruments: Stocks, bonds, mutual funds, and ETFs; Understanding market indices (e.g., Sensex, Nifty 50).

Unit II: (11 Hours)

Financial Statements Analysis: Understanding Financial Statements: Income Statement, Balance Sheet, Cash Flow Statement; Financial Ratios: Liquidity ratios, Profitability ratios, Solvency ratios.

Unit III: (11 Hours)

Risk and Return: Concepts of Risk and Return; Definition of risk: Systematic vs. unsystematic risk; Measuring risk: Standard deviation and beta; Risk-Return Trade-Off; Capital Asset Pricing Model (CAPM); Efficient Frontier and portfolio theory.

Unit IV: (11 Hours)

Investment Decisions: Investment Strategies: Fundamental vs. technical analysis; Long-term vs. short-term investment strategies; Asset Allocation: Diversification principles; Risk tolerance assessment; Current trends in finance.

Suggested Readings (Latest Editions):

1. Jai Kumar Batra, "Accounting and Finance for Non-Finance Managers", SAGE Publications.
2. Sandeep Goel, "Finance for Non-Finance People", Routledge India.
3. Edward Fields, "The Essentials of Finance and Accounting for Nonfinancial Managers", AMACOM.
4. IM Pandey, "Financial Management", Vikas Publishing House.

UNIVERSITY SCHOOL OF CHEMICAL TECHNOLOGY

Introduction to Process Industry

CT-104	Introduction to Process Industries	L-T-P: 3-0-0	3 Credits	MDC-2
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Pre-requisites: None

COURSE OBJECTIVES

To learn about the industrial manufacturing of various inorganic and organic chemicals.

COURSE OUTCOMES

1. To understand the current scenario of Chemical & allied process industries.
2. Understand the process flow diagram, flow-sheeting and safety practices in chemical industries.
3. To understand the production processes of fertilizers, industrial acids, pulp and paper, soap, detergents, and polymers.
4. To learn about environmental and energy conservation measures and waste disposals.

COURSE CONTENT

UNIT 1: Introduction (12 Hrs)

National and International scenario of chemical and allied process industries; Classification of chemical process industries; Process symbols used for various equipment, flow diagrams and types of flow sheets; Overview of Good Manufacturing practices (GMP) and Good Laboratory Practices (GLP), safety and safe practices; Environmental and energy conservation measures; Waste disposal.

UNIT 2: Introduction to industrial acids and bases (10 Hrs)

Industrial production of sulphuric acid, nitric acid, hydrochloric acid, phosphoric acid. Manufacturing process of soda ash by Solvay process, dual salt process, natural soda ash process, manufacturing of caustic soda, chlorine.

UNIT 3: Fertilizers industries (10 Hrs)

Brief introduction and classification of fertilizers; industrial production of fertilizer in particular Ammonia and Urea.

UNIT 4: Introduction to organic chemicals industries (10 Hrs)

Brief idea about chemical industries which extensively use size reduction, size separation, filtration and solid handling particularly cement industries and coal beneficiation. Manufacturing of petrochemical derivatives like polyethylene, styrene nylon etc.

Note: The emphasis should be given on the unit operations involved in the chemical processes mentioned in the course.

TEXT AND REFERENCE BOOKS

1. Dryden, C. E., and Rao, M.G., *Outlines of Chemical Technology*, (Ed.), Affil. East West Press, 2009.

2. Austins, G.T., Sherve's, *Chemical Process Industries*, MGH 5th Ed. 2016.
3. S. K. Ghoshal, S. K. Sanyal, and S. Datta, *Introduction to Chemical Engineering*, Tata McGraw Hill, New Delhi, 2006.
4. Kirk & Othmer, *Encyclopaedia of Chemical Technology*, Wiley, 5th edition.

Course Outcome (CO) to Programme outcomes (PO) Mapping (Scale 1: Low; 2: Medium; 3: High)												
CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12
CO1	3	1	1	2	1	3	2	1	3	1	1	3
CO2	3	1	1	2	1	3	2	1	3	1	1	3
CO3	3	1	1	2	1	3	2	1	3	1	1	3
CO4	3	1	1	2	1	1	2	1	3	1	1	3

UNIVERSITY SCHOOL OF LIBERAL ARTS (USLA)

Makers of India

Name of the Course: MDC

Semester: II

Course Code: BALAC110

Credits: 4 (L3 P1)

Mode of Examination: UES

Course ID:

Marks: 100 (40+60)

Internal: 40

External: 60

Course Objective

This course introduces students to major thinkers and movements that shaped modern India. It examines how ideas about religion, caste, gender, nationalism, freedom, and development emerged in specific historical contexts and responded to social and political challenges. The course encourages students to read historical texts, understand ideas in context, and reflect on different visions of India.

Course Outcomes

CO1 (Knowledge): Students will identify major thinkers, movements, and ideas that shaped modern India.

CO2 (Understanding): Students will understand how ideas on reform, caste, gender, nationalism, and democracy emerged in specific historical contexts.

CO3 (Synthesis): Students will connect and compare different historical responses to shared social and political challenges in modern India.

CO4 (Application): Evaluate the continuing relevance of these debates in contemporary India.

Course Content

Unit I - Religion and Social Reform

- a. Raja Rammohan Roy - Reason and Reform.
- b. Swami Dayanand Saraswati - Religious reform and Arya Samaj.
- c. Swami Vivekananda - Religion and nationalism.
- d. Pandita Ramabai - Women's education and social reform.

Unit II - Caste, Gender, and Social Justice

- a. Jyotiba Phule and Savitribai Phule - Caste and education.
- b. B. R. Ambedkar - The caste question and the Ambedkar-Gandhi debate.
- c. Periyar E. V. Ramasamy - Anti-caste politics and rationalism.
- d. Begum Rokeya Sakhawat Hossain - Feminism, and critique of patriarchy.

Unit III - Nation and Nationalism

- a. Mahatma Gandhi - Non-violence and mass politics.

- b. Sri Aurobindo and Bhagat Singh - Revolutionary nationalism.
- c. Subhash Chandra Bose and Maulana Abul Kalam Azad - Competing ideas of the Indian nation.
- d. Rabindranath Tagore - Critique of nationalism.

Unit IV - Visions of Independent India

- a. Jawaharlal Nehru - Democracy and secularism.
- b. Jaipal Singh Munda - Tribal rights and constitutional inclusion.
- c. V. D. Savarkar and Deendayal Upadhyaya - Cultural Nationalism and Integral Humanism.
- d. Jayaprakash Narayan - Democracy and Total Revolution.

Pedagogy

- Lectures
- Class discussions
- Short assignments and presentations
- Audio-visual material

Textbooks

1. Guha, Ramachandra. *Makers of Modern India*. Penguin. 2010.
(Selected chapters on Rammohan Roy, Vivekananda, Gandhi, Ambedkar, Nehru, Tagore, Savarkar, Azad.)
2. Metcalf, Barbara D. and Metcalf, Thomas R. *A Concise History of Modern India*. Cambridge University Press. 2012.
(Chapters 4-8.)
3. Sarkar, Sumit. *Modern India: 1885-1947*. Macmillan. 1983.
(Chapters on social reform, revolutionary nationalism, Gandhian movements.)
4. Khilnani, Sunil. *The Idea of India*. Farrar, Straus and Giroux. 1997.
(Introduction; Chapters 1-3.)

Recommended Readings

1. Roy, Raja Rammohan. *Selections from the English Works of Raja Rammohun Roy*, ed. Jogendra Chunder Ghose. Oxford University Press. 2004.
(Essays on sati, monotheism, and education.)
2. Saraswati, Dayanand. *The Light of Truth (Satyarth Prakash)*, trans. Chiranjiva Bharadwaja. Sarvadeshik Arya Pratinidhi Sabha. 2003 (reprint).
(Introduction; Chapters II and IV.)
(“Speech at the Parliament of Religions”; “Practical Vedanta”; “The Future of India”.)
3. Ramabai, Pandita. *The High Caste Hindu Woman*. Oxford University Press. 2003.
(Chapters I-III; Conclusion.)
4. Phule, Jotirao. *Gulamgiri (Slavery)*. Oxford University Press. 2002.
(Preface; Chapters I-V.)
5. Ramasamy, E. V. (Periyar). *The Periyar Reader*. Navayana. 2019.
(“Self-Respect”; “No God, No Religion”; “Why Were Women Enslaved?”.)

6. Phule, Savitribai. *Letters of Savitribai Phule*, in Phule, Jotirao and Savitribai. Collected Writings, edited by G. P. Deshpande. Oxford University Press. 2002. (Letters on education, resistance, and everyday struggles of reform.)
7. Hossain, Rokeya Sakhawat. *Motichur: Sultana's Dream and Other Writings*. Oxford University Press. 2015. ("Sultana's Dream"; selections from Motichur essays.)
8. Gandhi, M. K. *Hind Swaraj and Other Writings*. Cambridge University Press. 1997. (Chapters VI-XIII; XVII.)
9. Singh, Bhagat. *Why I Am an Atheist and Other Writings*. LeftWord Books. 2004. ("Why I Am an Atheist"; "Letter to Young Political Workers".)
10. Aurobindo, Sri. *Bande Mataram: Political Writings 1906-1908*. Sri Aurobindo Ashram Trust. 1997. ("The Doctrine of Passive Resistance"; "Politics and Religion"; "The National Value of Art"; "The Meaning of Nationalism".)
11. Savarkar, V. D. *Hindutva: Who Is a Hindu?*. Veer Savarkar Prakashan. 1923. (Chapters I and IV.)
12. Azad, Maulana Abul Kalam. *India Wins Freedom*. Orient Blackswan. 1988. (Chapters XIII-XV.)
13. Tagore, Rabindranath. *Nationalism*. Macmillan. 1917. ("Nationalism in India".)
14. Nehru, Jawaharlal. *The Discovery of India*. Oxford University Press. 1946. (Chapters on nationalism, unity, and democracy.)
15. Singh, Jaipal. *Adivasidom: Selected Writings & Speeches of Jaipal Singh Munda* (ed. Ashwini Kumar Pankaj). Pyara Kerketta Foundation. 2017. (Introduction and Speeches from Constituent Assembly debates.)
16. Upadhyaya, Deendayal. *There Is an Alternative: Integral Humanism*. Deendayal Research Institute. 1965.
17. Narayan, Jayaprakash. *Towards Total Revolution* (Vol. 4). Richmond Publishing Co. 1978. (Selections on "Total Revolution".)
18. Chakravarti, Uma. *Rewriting History: The Life and Times of Pandita Ramabai*_. Zubaan. 1998.
19. Chakravarti, Uma. "Gender, Caste and Labour: Ideological and Material Structures of Widowhood"_. Economic and Political Weekly. 1996.

The Idea of Power

Nature of the Course: MDC

Course Code:

Credits: 3 (L2 T1)

Mode of Examination: UES

Course ID:

Marks: 100 (40+60)

Internal Evaluation: 40

External Evaluation: 60

Course Objective:

The course would help Students to understand the concept of Power in a very intricate manner moving beyond the general Understanding. The focus will be on how different thinkers have understood power. Students will also understand how people and groups respond.

Course Outcomes:

CO1 (Knowledge): Analyse various conceptualizations of power.

CO2 (Understanding): Comprehend how mechanisms of power function, extending beyond traditional interpretations.

CO3 (Synthesis): Examine the intersectionality of power with the present state systems and institutions.

CO4 (Application): How power affects everyday lives, social groups, communities, and individuals.

Course Content

Unit I: Different Thinkers on the Idea of Power

- a. Concept of Power
- b. George Orwell: Reading Power in Animal Farm
- c. Thomas Hobbes: Leviathan
- d. Michel Foucault: Power/Knowledge
- e. Giorgio Agamben: State of Exception

Unit II: Power and Resistance

- a. Gender
- b. Caste
- c. Race
- d. Disability

Unit III: Politics and Power

- a. Political Power: Authority, Legitimacy, Sovereignty

- b. Power and Capabilities: Dynamics of Power in relation to other states
- c. Three Dimensions of Power
- d. Coercive Power and Hegemony

Unit IV: Power and Change

- a. Change through power
- b. How the powerless bring about change
- c. Power and Leadership

Pedagogy:

- Lectures
- Class discussions/Interactions
- Films/Documentaries
- Games play to understand the way power works

Text Books:

1. Bhargava, Rajeev, and Ashok Acharya, eds. *Political Theory: An Introduction*. New Delhi: Pearson Longman, 2008.
2. John, Mary E. "Women in Power? Gender, Caste and the Politics of Local Urban Governance." *Economic and Political Weekly* 42, no. 39 (September 29-October 5, 2007), pp. 3986-3993.
3. Kannabiran, Vasanth, and Kalpana Kannabiran. "Caste and Gender: Understanding Dynamics of Power and Violence." *Economic and Political Weekly* 26, no. 37 (September 14, 1991), pp. 2130-2133.
4. Mehrotra, Nilika. "Disability Rights Movements in India: Politics and Practice." *Economic and Political Weekly* 46, no. 6 (February 5-11, 2011), pp. 65-72.

Recommended Readings:

1. Agamben, Giorgio. *State of Exception*. Chicago: University of Chicago Press, 2005.
2. Beteille, Andre. *Caste, Class and Power: Changing Patterns of Stratification in a Tanjore Village*. 3rd ed. New Delhi: Oxford University Press, 2012.
3. Bourdieu, Pierre. "The Forms of Capital." In *Handbook of Theory and Research for the Sociology of Education*, edited by J. G. Richardson, 241-258. New York: Greenwood Press, 1986.
4. Bourdieu, Pierre. *Language and Symbolic Power*. Translated by Gino Raymond. Cambridge: Polity, 1991.
5. Fanon, Frantz. *Black Skin, White Masks*. New York: Perseus Books Group, 2008.
6. Goodley, Dan. "Dis/entangling Critical Disability Studies." In *Culture-Theory-Disability: Encounters between Disability Studies and Cultural Studies*, edited by

- Anne Waldschmidt, Hanjo Berressem, and Moritz Ingwersen, 81-98. Bielefeld: Transcript Verlag, 2017.
7. Gramsci, Antonio. *Prison Notebooks*. New York: Columbia University Press, 1992.
 8. Lukes, Steven. *Power: A Radical View*. 2nd ed. London: Palgrave Macmillan, 2004.
 9. Russell, Bertrand. *Power: A New Social Analysis*. London: Allen & Unwin, 1938.
 10. Said, Edward. *Orientalism*. New York: Vintage, 1979.
 11. Shirky, Clay. "The Political Power of Social Media: Technology, the Public Sphere, and Political Change." *Foreign Affairs* 90, no. 1 (January/February 2011), pp. 28-41.
 12. Wilkerson, Isabel. *Caste: The Origins of Our Discontents*. New York: Random House, 2020.

Social Interactions in Virtual Environment

Nature of the Course: MDC

Semester: Second (II)

Course Code:

Credits: 3 (L2 T1)

Mode of Examination: UES

Course ID:

Marks: 100 (40+60)

Internal Evaluation: 40

External Evaluation: 60

Course Objective:

The course aims to provide an in-depth understanding of social interactions across both physical and virtual environments. Students will explore foundational concepts and definitions, the various types and components of social interactions, and the contexts in which these interactions occur. By examining the empirical studies of social interaction, the course will highlight its significance in social development and well-being. Additionally, the course will delve into symbolic interactionism through the works of George Herbert Mead, Erving Goffman, and Herbert Blumer, and assess the impact of social interactions on the human mind and individual behavior. The exploration extends to virtual worlds, where concepts such as virtual reality, immersive experiences, and the role of virtual humans in shaping social experiences will be critically analyzed.

Course Outcome:

CO1 (Knowledge): Students will gain a comprehensive understanding of the fundamental concepts, definitions, and types of social interactions, both in physical and virtual environments.

CO2 (Understanding): Students will develop a deeper understanding of how social interactions influence social development and well-being. They will be able to differentiate between social interactions in the physical world and those in virtual environments, understanding the unique contexts and components that define each.

CO3 (Synthesis): Students will be able to integrate and synthesize knowledge from empirical studies and theoretical frameworks to evaluate the impact of social interactions on individual behavior and cognition.

CO4 (Application): Students will apply their acquired knowledge and understanding to practical scenarios, such as enhancing interaction skills within virtual environments and using virtual techniques to study human behavior and cognition.

Course Content

Unit I: Social Interaction: Unboxing the Concepts

- a. Concept and definition; its types and components; contexts of interactions
- b. Empirical study of social interaction; social interaction, social development, and social well-being
- c. Symbolic interactionism –George Herbert Mead, Erving Goffman, and Herbert Blumer
- d. Impact of social interaction on the human mind and individual behavior

Unit II: Virtual World

- a. Virtual reality – Concepts of immersion, presence and social presence.
- b. Virtual techniques and social implications; advantages and disadvantages of VT

- c. Immersive virtual reality- social experiences of IVR; used in studying human behavior and cognition
- d. Presentation of ‘Self’ in VW: Identity

Unit III: Virtual Environment (VE)

- a. Concept; Comparison of VE with physical environment; Digital/Virtual Spaces
- b. Social experiences in VE
- c. Interplay between social systems and technology in the network world
- d. Virtual humans (VH)- avatars and agents; comparison between the two

Unit IV: Social interactions within the virtual world (VW)

- a. Human behavior and relationship formation in virtual spaces; Fundamental processes underlying social interactions
- b. Social norms governing human interactions in the real world and in VW- similarities and differences
- c. Factor affecting social interaction between VH within IVR; effectiveness of VE in improving interaction skills
- d. Social interactions in gaming; virtual pilgrimages

Pedagogy:

- Lectures
- Discussions and presentations
- Project Work

Textbooks

1. Narula, Herman. 2023. Virtual Society: The Metaverse and the New Frontiers of Human Experiences. Penguin Books, Limited
2. Hohstadt, Thomas. 2013. The Age of Virtual Reality. Lulu.com
3. Crang, Mike, Phil Crang, Jon May. 1999. Virtual Geographies: Bodies, Space and Relations. London, Routledge
4. Jerald, Jason, 2015. The VR Book: Human–Centered Design for Virtual Reality. Association for Computing Machinery and Morgan and Claypool.

Recommended Readings:

1. Bailenson, Jeremy. 2018. Experience on Demand: What Virtual Reality is, How it Works and What it can Do. W. W. Norton and Company
2. Jones, Phil and Tess Osborne, 2022. Virtual Reality Methods: A Guide for Researchers in the Social Sciences and Humanities. Bristol University Press
3. Johnson, Steven. 1997. Interface Culture: How New Technology Transforms the Way We Create and Communicate. New York: Basic Books
4. Shayo, Conard et al. 2007. The Virtual Society: Its Driving Forces, Arrangements, Practices and Implications. In Jayne Gackenbach (ed) Psychology and the Internet: Intrapersonal, Interpersonal and Transpersonal Implications. Pp187- 219. DOI:[10.1016/B978-012369425-6/50027-8](https://doi.org/10.1016/B978-012369425-6/50027-8)

5. Schroeder, Ralph, 1996. Cyberculture, Cyborg Post- Moderism and the Sociology of Virtual Reality Technologies: Surfing the Soul in the Information Age. *Futures*. 26 (5): 519-528. <https://cuttlefish.org/seanclark2020/uploads/schroeder-sociology-of-virtual-reality.pdf>
6. Schroeder, R. 1997. Networked Worlds: Social Aspects of Multi- User Virtual Reality Technology. *Sociological Research Online*. 2 (4)Pp. 89-99. <https://doi.org/10.5153/sro.291>
7. Opperman, Daniel. 2022. Virtual Reality in the social Sciences. <https://www.danieloppermann.com/virtual-reality-in-the-social-sciences/>
8. Bradley, Omar. 2021. Virtual Worlds: Social Interactions Among Online Gamers Through Voice Chat. LSU Doctoral dissertations. https://repository.lsu.edu/gradschool_dissertations/5538/
9. Lakkaraju, Kiran, Gita Suthankar, Rolf T. Wigand. 2018. *Social Interactions in Virtual World: An Interdisciplinary Perspective*. Cambridge University Press.
10. Mantymaki, Matti and Kai Riemer 2014. Digital Natives in Social Virtual Worlds: A Multi-Methods Study of Gratifications and Social Influences in Habbo Hotel. *International Journal of Information Management*. 34(2): 210-220. <https://www.sciencedirect.com/science/article/pii/S0268401213001679>
11. Bujic, Mila et al. 2022. Playing with Embodies Social Interaction: A thematic Review of Experiments on Social Aspects in Gameful Virtual World. *Interaction with Computers*. 33 (6): 583-595. <https://doi.org/10.1093/iwc/iwac012>

University School of Bio-Technology (USBT)

Paper code:	Paper Title	L	T	P	C	Hrs
BT-164 (MDC)	INTRODUCTION TO FOOD SCIENCE AND NUTRITION	2	1	0	3	30

Course Objectives:

1. To understand how importance of nutrition.
2. To appreciate the role of nutrition in cellular and physical growth and assess nutritional status.
3. To understand the basis of derivation of Dietary Reference Intakes for micronutrients and how requirements change under special conditions.

Course Outcomes:

Students will be able to understand:

1. Critically evaluate and derive requirements for specific macronutrients
2. Assess the nutritional status, Appreciate implications of poor dietary and lifestyle practices.
3. Critically evaluate the methodology and derivation of requirements for micronutrients.
4. Track emerging concepts in the field of nutrition. Understand nutritional management in special conditions.

UNIT I

Introduction to food & nutrition- Definition and types, nutrients: macro and micronutrients, functions of foods, Food groups, food pyramids, food sources, storage in body relation between food and nutrition, health and diseases (4)

UNIT II

Foods, Nutrients and Cooking of food: Nutrients present in cereals and millets, pulses, nuts and oil seeds, fruits and vegetables, milk and milk products, flesh food, eggs, Condiment and spices, salt. Non- nutrient components of foods, Different methods of cooking, advantage, disadvantage and the effect of various methods of cooking on foods. (8)

UNIT III

Food energy and energy requirements: The energy value of foods, bomb calorimeter energy requirement of an individual, SDA of foods. Nutritional requirements and recommended dietary allowances (RDA), concept of community nutrition, food fortification and enrichment, nutritional intervention programs. (6)

UNIT IV

Nutrition and related Terms: Diet and balanced diet, nutrition bioavailability, functional foods, prebiotics, probiotics, phytochemicals, nutraceuticals. (6)

UNIT V

Nutrition in Special Condition such as sports person nutrition, nutritional requirement in pregnant and lactating women, diabetic diet, post and preoperative diet, food for infants and adolescence. (6)

Recommended Readings:

1. Mudambi S.R, M.V Rajgopal Fundamentals of Foods and Nutrition(2nded)Wiley Eastern Ltd,1990.
 2. Willson, EVAD Principles of Nutrition, 4thed. New York John Willey and Sons, 1979.
 3. Srilakshmi B.(2018).Nutrition Science. New Delhi: New Age International.
 4. Swaminathan M. (1991):Advanced Text Book on Food & Nutrition, Vol. I & II (2nd Edition, Revised), Bangalore printing & Publishing Ltd.
 5. Michael J. Gibney, Hester V Vorster and Frans J Kok (2003) Introduction to Human Nutrition. Blackwell publishing Oxford, U.K.
 6. Bamji, M.S., Krishnaswamy K. Brahman G.N.V. (Eds.) (2017). Textbook of Human Nutrition. 4th Edition. New Delhi : Oxford and IBH Publishing Co. Pvt. Ltd.
 7. Chadha R., Mathur P. (Eds.) (2015). Nutrition: A Lifecycle Approach. New Delhi: Orient Blackswan
 8. Simopoulos A.P., Ordovas J.M. (Eds.) (2004). Nutrigenetics and Nutrigenomics. USA: Karger
 9. ILSI, NIN &SAI. (2017) Nutritional recommendations for high performance athletes2nded.
 10. Mahan, L. K. and Escott Stump S. (2016) Krause's Food & Nutrition Therapy. 14th ed. Saunders-Elsevier.
 11. Hickson JF and Wolinsky I. (1997) Nutrition for exercise and Sport. 2nd ed.CRC Press,
 12. Burke LM and Deakin V. (2002) Clinical Sports Nutrition, 2nd edition, Publishers McGraw Hill
 13. Dan Benardot. (2011) Advanced Sports Nutrition-2nd Edition.
 14. Fink H H and Mikesky A E. (2017) Practical Applications in Sports Nutrition 5th Edition.
 15. Bushman B. (2017) ACSM's Complete Guide to Fitness & Health 2nd Edition Published by ACSM.
 16. Vasuja, M (2017). Health Education and Sports Nutrition. New Delhi, Friend's Publication (India)
 17. Bamji, M.S., Krishnaswamy K. Brahman G.N.V. (Eds.) (2017). Textbook of Human Nutrition. 4th Edition. New Delhi : Oxford and IBH Publishing Co. Pvt. Ltd.
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12. Kyriltsias and Despina Michael Grigoriou. 2022. Social Interaction with Agents and Avatars in Immersive Virtual Environments: A Survey. Frontiers in Virtual Reality. Social Interaction With Agents and Avatars in Immersive Virtual Environments: A Survey | Semantic Scholar

University School of Humanities and Social Sciences (USHSS)

Nature of the Course: MDC

Mode of Exam: UES

Course Title: Literary Appreciation

Course Code: BAENG110

Credits: 3 (L3)

Total Marks: 100 (40 + 60)

Course Objectives:

To prepare the foundation for the study of literature, to help students understand basic methods of literary studies, to introduce them to forms of English literature

Course Outcomes (COs):

After the completion of the programme, students will

CO1 (Knowledge): gain knowledge of the basic forms of literature and literary devices;

CO2 (Understanding): have an understanding of all basic forms of literature –Poetry, Drama, Novel, and major literary movements;

CO3 (Research): have the capability to prepare himself/herself to carry out the analysis of literary texts;

CO4 (Synthesis): have the capability to use the knowledge of literary studies while studying different courses of the programme.

Course Content:

Unit I

a. What is Literature; Functions of Literature; Literature and Society; Literature and Author; Literature and Reader

b. Poetic Forms; Diction; Figurative Language; Rhythm; Blank Verse; Free Verse; Poetic Devices - Personification; Metaphor; Simile; Paradox; Metonymy; Synecdoche

Unit II Types of Novel- Allegory, Realism, Stream of Consciousness; Story; Plot Construction; Characterisation; Point of View

Unit III Types of Drama – Tragedy, Comedy, Tragic-comedy, Melodrama, Satire; Plot and Action; Characters; Soliloquy, Monologue and Aside; Dialogue; Stage Direction

Unit IV A brief introduction to basic approaches to study literature – Sociological Approach, Historical Approach, Biographical Criticism, and Psychological Criticism

Works for Reference:

William Shakespeare: “Sonnet 18”

John Milton: “On His Twenty-Third Birthday”

William Wordsworth: “Upon Westminster Bridge”

P.B. Shelley: “England 1819”, “Song to the Men of England”

Robert Bridges: "Nightingales"

Anton Chekhov: "The Lament"

James Joyce: "Eveline"

H.H. Munro (Saki): "The Storyteller"

Ernest Hemingway: The Old Man and the Sea

Sophocles: Oedipus Rex

Recommended Readings:

1. Abrams, M.H., and Geoffrey Galt Harpham. A Glossary of Literary Terms. Cengage India Private Limited, 2015.
2. Boulton, Marjorie. The Anatomy of the Drama (Routledge Revivals). Taylor & Francis, 2014.
3. ---. The Anatomy of the Literary Studies (Routledge Revivals). Taylor & Francis, 2014.
4. ---. The Anatomy of the Novel (Routledge Revivals). Taylor & Francis, 2014.
5. ---. The Anatomy of the Poetry (Routledge Revivals). Taylor & Francis, 2014.
6. Forster, E.M. Aspects of the Novel. Penguin, 1927.

Examination Scheme:

1. There will be five questions in total with internal choice.
2. Question no. 1 will carry 20 marks.
3. In question no. 1, there will be 4 questions, with internal choice, based on Reference to the Context from all four units. Each question will carry 5 marks.
4. Question no. 2 to 9 will be essay-type questions testing students' understanding of the prescribed texts.
5. Question no. 2 to 9, there will be two questions from each unit. Students will be required to attempt at least one question from each unit. Each question will carry 10 marks.

Introduction to Economics

Paper Code: BAECO108

Paper: Introduction to Economics

Internal Marks: 40

Mode of Exam: UES

Lectures - 2, Tutorial – 1

Total Credit – 3

External Marks:60

Course Objectives: The course aims to introduce the students to the basic concepts of economics and its applications.

Course Outcomes

CO1: To impart the knowledge on basic concepts of economics.

CO2: To ensure that the students understand the application of basic concepts to the real world.

CO3: To enable students to comprehend the various economic parameters and policies

CO4: To enable students write short term assignments and seminar papers on economic concepts and applications

Unit – I: Introduction

Positive and Normative Economics – Problem of Scarcity – Production Possibility Frontier – Role of Government – Adam Smith: Income Distribution – Karl Marx: Accumulation and Distribution – Keynes’: Employment

Unit – II: Introduction to Microeconomics

Demand and Supply – Law of demand – Law of supply – Market Equilibrium – Price Elasticity of Demand – Consumer Equilibrium – Introduction to Market structures: Perfect Competition, Monopoly, Oligopoly

Unit – III: Introduction to Macroeconomics

Circular flow of Income – Gross Domestic Product: Definition and Calculation – Introduction to Monetary and Fiscal Policy

Unit – IV: Assignments and Discussions

Students would be required to write a case study/brief project/assignment applying the economic theories and concepts taught in the class

Recommended Readings:

1. Case, Karl E., Ray C. Fair, & Sharon M. Oster. (2025) Principles of Economics (14th ed.). Boston, MA: Pearson Education.
2. Barber, William J. (2009) A History of Economic Thought. Middletown, CT: Wesleyan University Press.
3. Lipsey, Richard G., & K. Alec Chrystal, (2007) Principles of Economics (11th ed.). Oxford: Oxford University Press, 2007.

4. Stiglitz, Joseph E., & Carl E. Walsh, (2005) Economics (4th ed.). New York, NY: W. W. Norton & Company.

University School of Environment Management (USEM)

Bachelor of Science in Environmental Science

Theory

Concept of Disaster Management

Paper Code -BSCES – 108 (MDC)

L -03

Credits-03

Course Objectives

CO₁	To impart basic knowledge of natural and manmade hazard and disaster.
CO₂	To provide acquaintance of various disasters and their management
CO₃	To inculcate the disaster management and reduction aspects in relation to the government and institutional framework of the country.

Unit – I

Concept of disaster, classification of disasters. Concepts and definitions of hazard, disaster, vulnerability, resilience, and risks; relationship between hazard, vulnerability and disaster risk, Factors affecting vulnerabilities; hazard profile of India.

Unit – II

Basics and types, causes of landslides, floods: earthquakes: volcano: cyclone: building & forest fire: cold waves: heatwaves: drought: chemical and biological disasters: nuclear disaster. Mitigation of various disaster.

Unit – III,

Role and responsibilities of government organization in disaster management: National Disaster Management Authority: National Institute of Disaster Management: State Disaster Management Authority: National Disaster Response Force: State Disaster Response Force: National disaster relief fund,

Unit – IV

Disaster management cycle: Early warning system: disaster risk reduction: Issues and impact of climate change on disasters: disaster relief and rehabilitation: Indian policies and legislations in disaster management:

Suggested Readings and References:

1. Sulphery, M. M. (2016). Disaster Management. India: Prentice Hall India Pvt., Limited.
2. Disaster Management by Mirinalini Panday, (2014). Wiley India, ISBN:9788126549245.
3. Disaster Education and Management – R.K. Bhandari (2014). Springer, New Delhi.
4. Disaster Management: Future Challenges and Opportunities. (2013). India: I.K. International Publishing House Pvt. Limited.
5. Kapoor, M. (2010). Disaster Management. India: Lotus Press.
6. Disaster Management. (2003). India: Universities Press.
7. BA Bolt, WL Horn, GA Macdonald, RF Scott (1997) Geological Hazards, revised, second edition, by Springer-Verlag, New York Inc.
8. Singh, P. (2013). A Textbook of Engineering and General Geology. India: S.K. Kataria & Sons.

Bachelor of Science in Environmental Science

Theory

Wildlife Management

Paper Code -BSCES – 110 (MDC)

L -03

Credits-03

COURSE OBJECTIVES:

CO ₁	The course aims to impart knowledge of wildlife and interactions with human.
CO ₂	To understand the concept of culture and conservation in wildlife management.
CO ₃	To learn about human wildlife interface at landscape level.

Course Contents

Unit I – Introduction and History of Wildlife Conservation in India

Perspectives and philosophical perspective; Cultural foundation; Protected Area Network (PAN), Values and Ethics in Wildlife Conservation; Eco-centrism, Religious traditions and conservation; Concept of Biodiversity Hotspots and Mega-diversity Country.

Unit-II - Human-Wildlife interface/Conflict

Wildlife & habitat relationship; rehabilitation and reintroduction; Alien & Invasive Species; Overabundant Species; Identification of drivers in human-wildlife interface/conflict, Contributing factors and possible solutions; Importance of wildlife corridors in minimizing the conflicts and conservation; Concept of ex-gratia compensation and settlement of stakeholder resentments; Concept of co-existence. Indian Wildlife (Protection) Act, 1972, Concept of different Schedules in Wildlife Protection Act.

Unit-III – Wildlife Photography and Eco-Tourism

Basic Principles; Fundamentals of camera lenses and accessories; Learning to see, Finding the best subject, Positioning the subject, Utilizing colour, lines, shapes, patterns and texture; Techniques for photographing wildlife (mammals, birds, fish, insects, reptiles, and amphibians); Composition on landscape photography; Ethics; Legalities.

Sustainable eco-tourism, Concept of co-existence, Community conservation concept and wildlife tourism in India

Suggested Readings and References:

1. Conover, M.R. and Conover, D.O., 2022. Human-Wildlife Interactions: From Conflict to Coexistence. CRC Press.
2. Hill, C.M., Webber, A.D. and Priston, N.E. eds., 2017. Understanding conflicts about wildlife: A Biosocial Approach (Vol. 9). Berghahn Books.
3. Manfred, M.J., 2008. Who Cares About Wildlife? Social Science Concepts for Exploring Human-wildlife Relationships and Conservation Issues.
4. Woodroffe, R. 2005. People and Wildlife: Conflict and Coexistence. Cambridge.