

MANDATORY COURSES

offered for

**B. Tech.
Programmes
(2018 – Scheme)**

*Approved by faculty (Engg & Tech) for
implementation w/e 2018
onwards batch*
Y.P.L.
18/7/19



GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY, HISAR
(Established by State Legislature Act 17 of 1995)
'A' Grade, NAAC Accredited State Govt. University

Acad./AC-III/Fac-1 Vol.3/2019/ 4199
Dated: 20/8/19

To

The Controller of Examinations
GJUS&T, Hisar.

Sub: Approval of scheme of examination & syllabi of various B.Tech. programme(s) being run in University Teaching Departments as well as affiliated Engineering College(s)/Institute(s).

AND

Recommendations of Faculty of Engineering & Technology regarding Open Elective, Format of Minor Question Paper, MOOC Courses, minimum strength for Programme Elective, Semester Registration etc.

Sir,

I am directed to inform you that the Vice-Chancellor, on the recommendations of the Faculty of Engineering & Technology, vide resolutions no. 2 to 13 in its meeting held on 18.07.2019, is pleased to approve the following scheme & syllabi of B.Tech. programme(s) w.e.f. the academic session / batch mentioned against each being run in University Teaching Departments as well as affiliated colleges/institutions and recommendations of Faculty of Engineering & Technology, regarding Open Elective, format of Minor Question Paper, MOOC Courses, minimum strength for Programme Elective, Semester Registration etc. under Section 11(5) in anticipation of approval of the Academic Council of the University Act, 1995:-

1. B.Tech. (Printing Technology), B.Tech (Packaging Technology) & B.Tech. (Printing & Packaging Technology)-4th year for University Teaching Departments and affiliated colleges for 2016-17 batch onwards.
2. B.Tech. (Printing & Packaging Technology) (Part-time)-3rd & 4th year for affiliated colleges for 2017-18 batch onwards.
3. B.Tech. (CSE) & B.Tech (IT) -2nd to 4th year for University Teaching Departments and affiliated colleges for 2018-19 onwards batch.
4. B.Tech. (ECE)- 2nd to 4th year for University Teaching Departments and affiliated colleges for 2018-19 onwards batch.
5. B.Tech. (EE)- 2nd to 4th year for University Teaching Departments and affiliated colleges for 2018-19 onwards batch.

Condt..p2/-

3. Dean, Faculty of Engg. & Technology, GJUS&T, Hisar (along with copy of scheme & syllabi of B.Tech. (Agricultural Engg.) & B.Tech. (Aeronautical Engineering) 2nd to 4th year) and other recommendations from sr. no. 11 to 15. Further, he is requested to get upload the syllabi of above said programme on the website of the University.
4. Chairperson, Department of CSE, GJUS&T, Hisar (alongwith copy of scheme & syllabi of B.Tech. (CSE) & B.Tech. (IT)-- 2nd to 4th year and other recommendations from sr. no. 11 to 15. Further, he is requested to get upload the syllabi of above said programme on the website of the University.
5. Chairperson, Department of Food Tech., GJUS&T, Hisar (alongwith copy of scheme & syllabi of B.Tech. (Food Technology) 2nd to 4th year and other recommendations from sr. no. 11 to 15. Further, she is requested to get upload the syllabi of above said programme on the website of the University.
6. Chairperson, Department of Mech. Engg., GJUS&T, Hisar (alongwith copy of scheme & syllabi of B.Tech. (Mechanical Engineering) 2nd to 4th year and other recommendations from sr. no. 11 to 15. Further, he is requested to get upload the syllabi of above said programme on the website of the University.
7. Chairperson, Department of Environmental Science & Engineering, GJUS&T, Hisar (alongwith copy of scheme & syllabi of B.Tech. (Civil Engg.) 2nd to 4th year and other recommendations from sr. no. 11 to 15. Further, he is requested to get upload the syllabi of above said programme on the website of the University.
8. Chairperson, Department of Electronics & Communication Engineering GJUS&T, Hisar (alongwith copy of scheme & syllabi of B.Tech. (ECE) 2nd to 4th year and B.Tech. (EE) 2nd to 4th year and other recommendations from sr. no. 11 to 15. Further, he is requested to get upload the syllabi of above said programme on the website of the University.
9. Chairperson, Department of Printing Tech., GJUS&T, Hisar (alongwith copy of scheme & syllabi of B.Tech. (Printing Technology), B.Tech. (Packaging Technology) & B.Tech. (Printing & Packaging Technology)- 4th year, B.Tech. (Printing & Packaging Technology) (Part-time) 3rd & 4th year and Scheme of examination -- 2nd to 4th year and syllabi -- 2nd year of B.Tech. (Printing Technology), B.Tech. (Packaging Technology) & B.Tech. (Printing & Packaging Technology) and other recommendations from sr. no. 11 to 15. Further, he is requested to get upload the syllabi of above said programme on the website of the University.
10. Director-Principal, Manav Institute of Tech. & Mgt., Village- Jevra, alongwith copy of scheme & syllabi of B.Tech. (CSE), (ECE), (ME), (Civil Engg.), (EE), (Aeronautical Engg.) and (Agriculture Engg.) programmes and other recommendations from sr. no. 11 to 15.
11. Director-Principal, Om Institute of Tech. & Mgt., Juglan alongwith copy of scheme & syllabi of B.Tech. (CSE), (IT), (ME), (ECE), (Civil Engg.), (Printing & Packaging Technology), (Printing & Packaging Technology) - Part Time (EE) programmes and other recommendations from sr. no. 11 to 15.


 Deputy Registrar (Academic)
 for Registrar

ESSENCE OF INDIAN TRADITIONAL KNOWLEDGE

Group A (ECE, EE, EEE, PT, PKG, P&P, ME, Agri, Aero, Auto) : 4th Semester

Group B (CSE, IT, BME, FT, Civil) : 5th Semester

General Course Information	
Course Code: MC301-T	Course Assessment Methods; Max. Marks: 100 (Internal: 30; External: 70) Two minor tests each of 20 marks, Class Performance measured through percentage of lectures attended (4 marks) Assignments (4 marks) and class performance (2 marks), and end semester examination of 70 marks. For the end semester examination, nine questions are to be set by the examiner. Question number one will be compulsory and based on the entire syllabus. It will contain seven short answers type questions. Rest of the eight questions is to be given by setting two questions from each of the four units of the syllabus. A candidate is required to attempt any other four questions selecting one from each of the remaining four units. All questions carry equal marks.
Course Credit: 0	
Contact Hours: 2/week, (L-T-P:2-0-0)	
Mode: Lectures	
Examination Duration: 3 Hours	

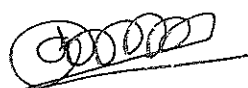
About the Course: This course is designed to acquaint students with Indian knowledge traditions. It introduces students to Vedic period, Post Vedic period, Sufi and Bhakti Movement in India, the ancient scientists of India and social reform movements of 19th century in India.

Course Outcomes: By the end of the course students will be able to:

- CO1. **Recognize** the forms and sources of Indian traditional knowledge. (LOTS: Level 1: Remember)
- CO2. **Identify** the contribution of the great ancient Indian scientists and spiritual leaders to the world of knowledge. (LOTS: Level 2: Understand)
- CO3. **Apply** the reasoning based on objectivity and contextual knowledge to address the social and cultural issues prevalent in Indian society. (LOTS: Level 3: Apply)
- CO4. **Differentiate** the myths, superstitions from reality in context of traditional knowledge to protect the physical and social environment. (LOTS: Level 4: Evaluate)
- CO5. **Suggest** means of creating a just and fair social environment that is free from any prejudices and intolerance for different opinions and cultures. (LOTS: Level 6: Create)

UNIT-I

Introduction to Indian Tradition Knowledge: Defining traditional knowledge, forms, sources and dissemination of traditional knowledge. **Vedic Period:** Vedas and Upanishads, Yogsutras of Patanjali **Post Vedic Period:** Buddhism, Janism and Indian Materialism: Bhartiya Darshan




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UNIT-II

Sufi and Bhakti Movement (14th to 17th century): सगुण-निर्गुण भक्ति, Sufism and Sufi saints, Kabir, Dadu, Soordas, Tulsidas, Nanak and Guru Jambheshwar ji Maharaj etc., Composite Culture of Indian sub-continent.

UNIT-III

Jyotirao Phule, Savitri Bai Phule, Arvind, Vivekanand and other 18th & 19th Century Social Reform Movements; India's cultural heritage.

UNIT-IV

India's Contribution to the world of knowledge: प्राचीन भारत के महान वैज्ञानिक: बौधायन, चरक, कौमारभृत्यजीवन, सुश्रुत, आर्यभट, बराहमिहिर, ब्रह्मगुप्त, नागार्जुन, वाग्भट; Astrology and Astronomy, Myths and Reality

Text and Reference Books:

1. A. L. Bhansam, *The Wonder That was India, A Survey of the Culture of the, Indian Sub-Continent before, the Coming of the Muslims*, Vol 1, Groove Press, New York, 1959.
2. S. A. A. Rizvi, *Wonder That was India, A Survey of the History and Culture of the Indian Sub-Continent from the Coming of the Muslims to the British Conquest 1200-1700*, Vol 2, Rupa and Co. 2001.
3. Jambhvani Mool Sanjivini Vyakhya
4. *प्रतियोगितादर्पणअतिरिक्तांकस्रीज-5* भारतीयकलाएवंसंस्कृति,
5. गुणाकरमूले, *प्राचीनभारतकेमहानवैज्ञानिक*, ज्ञानविज्ञानप्रकाशन, नईदिल्ली, 1990.
6. B. V. Subbarayappa, *A Historical Perspective of Science in India*, Rupa Publications, New Delhi, 2013.
7. KR Bishnoi, NR Bishnoi, *Religion and Environment*, Vol 1,2 & 3
8. ThichNhat Hanh, Nguyen Thi Hop, MobiHo, *Old Path White Clouds: Walking in the Footsteps of the Buddha*, Parallax Press, 1991.
9. Hermann Hesse, *Siddhartha*, Simon & Brown, 2017.
10. सावित्रीचंद्रशोभा, *हिन्दीभक्तिसाहित्यमेंसामाजिकमूल्यएवंसहिष्णुतावाद*, नेशनलबुकट्रस्ट, इंडिया, 2007.
11. Rosalind O' Hanlon, *Caste Conflict and Ideology, Mahatma JyotiraoPhule and low caste protest in nineteen century*, Western India, Cambridge University Press, 2009.
12. Melanie P. Kumar, *SavitribaiPhule: Forgotten liberator*, Infochange, 2009.
13. Leah Verghese, Ranjna, and MedhaSundar, *Savitribai, Journey of a Trailblazer*, Azim Prem Ji University, 2014.

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CO-PO Articulation Matrix Essence of Indian Traditional Knowledge (MC301-T)

List of Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO13	PSO14	PSO15
CO1. Recognise the forms and sources of Indian traditional knowledge. (LOTS: Level 1: Remember)	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-
CO2. Identify the contribution of the great ancient Indian scientists and spiritual leaders to the world of knowledge. (LOTS: Level 2: Understand)	-	2	1	-	-	3	-	-	-	-	-	1	-	-	-
CO3. Apply the reasoning based on objectivity and contextual knowledge to address the social and cultural issues prevalent in Indian society. (LOTS: Level 3: Apply)	-	3	3	2	-	3	-	-	-	-	-	3	-	-	-
CO4. Differentiate the myths, superstitions from reality in context of traditional knowledge to protect the physical and social environment. (LOTS: Level 4: Evaluate)	-	2	3	3	-	3	1	-	-	-	-	3	-	-	-
CO5. Suggest means of creating a just and fair social environment that is free from any prejudices and intolerance for different opinions and cultures. (LOTS: Level 6: Create)	-	3	3	3	-	3	-	-	-	-	-	3	-	-	-
Level of Attainments MC301-T															

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FUNDAMENTALS OF MANAGEMENT FOR ENGINEERS

Group A (ECE, EE, EEE, PT, PKG, P&P, ME, Agri, Aero, Auto) : 5th Semester

Group B (CSE, IT, BME, FT, Civil) : 6th Semester

General Course Information	
Course Code: HSMC302-T	Course Assessment Methods; Max. Marks: 100 (Internal: 30; External: 70) Two minor tests each of 20 marks, Class Performance measured through percentage of lectures attended (4 marks) Assignments (4 marks) and class performance (2 marks), and end semester examination of 70 marks.
Course Credit: 2	
Contact Hours: 2/week, (L-T-P:2-0-0)	For the end semester examination, nine questions are to be set by the examiner. Question number one will be compulsory and based on the entire syllabus. It will contain seven short answers type questions. Rest of the eight questions is to be given by setting two questions from each of the four units of the syllabus. A candidate is required to attempt any other four questions selecting one from each of the remaining four units. All questions carry equal marks.
Mode: Lectures	
Examination Duration: 3 Hours	

Course Outcomes: By the end of the course students will be able to:

- CO1. Define fundamental concepts of management (LOTS: Level 1: Remember)
- CO2. Explain the basic principles of management related to planning and decision making, HRM and motivation, and leadership. (LOTS: Level 2: Understand)
- CO3. Apply the managerial skills to solve real world management problems. (LOTS: Level 3: Apply)
- CO4. Identify leadership roles in various scenarios. (HOTS: Level 4: Analyse)
- CO5. Evaluate a business model based on principles of management. (HOTS: Level 5: Evaluate)
- CO6. Prepare a plan for a start up in IT sector. (HOTS: Level 6: Create)

Course Content

UNIT-I

Management Definition: Scope and process of management, Managerial Roles, Levels of Management, Managerial Skills, Challenges of Management, Evolution of Management, Scientific and Administrative Management, The Behavioural approach, The Quantitative approach, The Systems Approach, Contingency Approach, IT Approach.

UNIT-II

Planning and Decision Making: General Framework for Planning, Planning Process, Types of plans, Management by objectives, Development of business strategy.



Decision making and Problem Solving: Programmed and Non-Programmed Decisions, Steps in Problem Solving and Decision Making, Bounded Rationality and Influences on Decision Making, Group Problem Solving and Decision Making, Creativity and Innovation in Managerial Work.

UNIT-III

OrganizationHRM and Controls: Organizational Design & Organizational Structures, Delegation, Empowerment, Centralization, Decentralization, Organizational culture, Organizational climate and Organizational change, Talent management, Talent management Models and strategic human Resource planning; Recruitment and selection; Training and development, Performance Appraisal. Types of controls and controlling Techniques.

UNIT-IV

Leading and Motivation: Leadership, Power and authority, Leadership styles; Behavioural leadership, Situational leadership, Leadership skills, Leader as mentor and coach, Leadership during adversity and crisis; Handling employee and customer complaints, Team leadership. Motivation: Types of motivation, Relationship between motivation, performance and engagement, Content motivational theories.

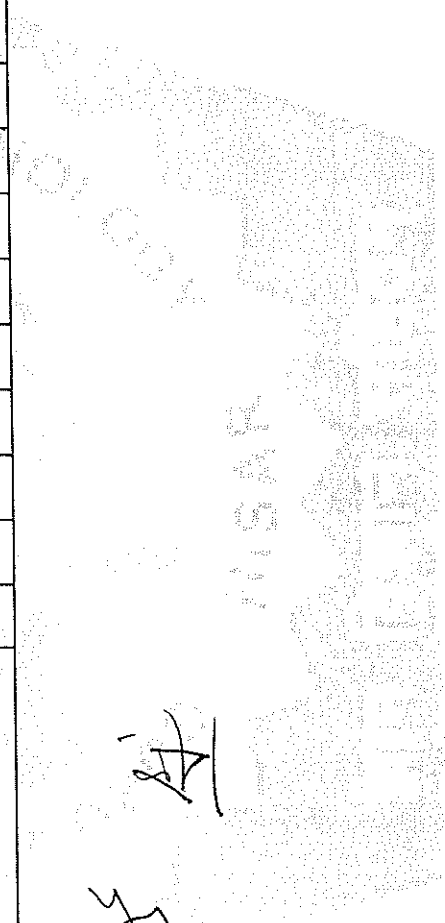
Text and Reference Books:

1. Robert N Lussier, *Management Fundamentals*, 5th edition, Cengage Learning, 2013.
2. Stephen P. Robbins, *Fundamentals of Management*, Pearson Education, 2009.
3. WehrichKoontz, *Essentials of Management*, fifth edition, Tata Mc Graw Hill, 1990.
4. DubrinAndrew, *Management Essentials*, 9th edition, Cengage Learning, 2012.

CO-PO Articulation Matrix Fundamentals of Management for Engineers Course (HSMC302-T)

List of Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO13	PSO14	PSO15
CO1. Define fundamental concepts of management (LOTS: Level 1: Remember)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2. Explain the basic principles of management related to planning and decision making, HRM and motivation, and leadership. (LOTS: Level 2: Understand)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3. Apply the managerial skills to solve real world management problems. (LOTS: Level 3: Apply)	2	-	1	-	-	-	-	-	-	-	-	-	-	-	-
CO4. Identify leadership roles in various scenarios. (HOTS: Level 4: Analyse).	-	-	-	-	-	-	-	3	3	-	-	-	-	-	-
CO5. Evaluate business model based on principles of management.	2	3	2	-	-	-	-	-	-	-	-	2	-	-	-
CO6. Prepare a plan for start-up in IT sector	3	3	3	2	-	3	-	-	-	3	3	-	-	-	-

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ECONOMICS FOR ENGINEERS

Group A (ECE, EE, EEE, PT, PKG, P&P, ME, Agri, Aero, Auto) : 6th Semester

Group B (CSE, IT, BME, FT, Civil) : 5th Semester

General Course Information	
Course Code: HSMC301-T	Course Assessment Methods; Max. Marks: 100 (Internal: 30; External: 70) Two minor tests each of 20 marks, Class Performance measured through percentage of lectures attended (4 marks) Assignments (4 marks) and class performance (2 marks), and end semester examination of 70 marks. For the end semester examination, nine questions are to be set by the examiner. Question number one will be compulsory and based on the entire syllabus. It will contain seven short answers type questions. Rest of the eight questions is to be given by setting two questions from each of the four units of the syllabus. A candidate is required to attempt any other four questions selecting one from each of the remaining four units. All questions carry equal marks.
Course Credit: 2	
Contact Hours: 2/week, (L-T-P:2-0-0)	
Mode: Lectures	
Examination Duration: 3 Hours	

About the Course: This course is designed to provide the elementary and essential knowledge of economics relevant to their profession as engineers. The graduating engineers will learn about the basic principles of economics and cost benefit analysis for various economic alternatives. The course also gives an initial exposure to issues and challenges for sustainable development.

Course Outcomes: By the end of the course students will be able to:

- C01. Outline the principles of economics in general and economics in Indian context. (LOTS: Level 1: Remember)
- C02. Discuss concepts related to economics in general and particularly relevant to Indian scenario. (LOTS: Level 2: Understand)
- C03. Apply the principles of economics for solving problems related to Engineering sector. (LOTS: Level 3: Apply)
- C04. Carry out cost/benefit/, life cycle and breakeven analyses on one or more economic alternatives. (HOTS: Level 4: Analyse)
- C05. Judge the issues and challenges of sustainable development. (HOTS: Level 5: Evaluate)

UNIT-I

Definition of Economics- various definitions, Nature of economic problem, Production possibility curve, Economics laws and their nature. Relation between Science, Engineering, Technology and Economics. Concepts and measurement of utility, Law of Diminishing Marginal Utility, Law of equi-marginal utility - its practical applications and importance.



UNIT-II

Meaning of Demand, Individual and Market demand schedules, Law of demand, shape of demand curve, Elasticity of Demand, measurement of elasticity of demand, factors affecting elasticity of demand, practical importance and applications of the concept of elasticity of demand.

Meaning of production and factors of production; Law of variable proportions, Returns to scale, Internal and External economics and diseconomies of scale.

UNIT-III

Various concepts of cost- Fixed cost, variable cost, average cost, marginal cost, money cost, real cost, opportunity cost. Shape of average cost, marginal cost, total cost etc. in short run and long run both.

Meaning of Market, Types of Market - Perfect Competition, Monopoly, Oligopoly, Monopolistic Competition (Main features of these markets) Issues, Strategies and challenges for sustainable development for developing economies

UNIT-IV

Elements of Business/Managerial Economics and forms of organizations, Cost & Cost Control Techniques, Types of Costs, Lifecycle Costs, Budgets, Break Even Analysis, Capital Budgeting, Application of linear Programming. Investment Analysis- NPV, ROI, IRR, Payback Period, Depreciation, Time Value of Money (present and future worth of cash flows).

Business Forecasting- Elementary techniques. Statements- Cash Flows, Financial. Case Study Method. Nature and Characteristics of Indian Economy (brief and elementary introduction). Privatization - meaning, merits, and demerits. Globalisation of Indian economy- merits and demerits. WTO and TRIPs agreements.

Text and Reference Books:

1. Alfred William Stonier, D. C. Hague, *A text book of Economic Theory*, 5th edition, Longman Higher Education, 1980.
2. K. K. Dewett, M. H. Navalur, *Modern Economic Theory*, S. Chand, 2006.
3. H. L. Ahuja, *Modern Microeconomic: Theory and Applications*, S. Chand, 2017.
4. N. Gregory Mankiw, *Principles of Economics*, 7th edition, South-Western College Publishing, 2013.
5. Ruddar Dutt & K.P.M. Sundhram, *Indian Economy*, S. Chand, 2004.
6. V. Mote, S. Paul, G. Gupta, *Managerial Economics*, McGraw Hill Education, 2017.
7. Saroj Pareek, *Textbook of Business Economics*, Neha Publishers and Distributors, 2013.
8. William McDonough and Michael Braungart, *Cradle to Cradle Remaking the Way We Make Things*, North Point Press, New York, 2002.
9. Sustainable Development Challenges, World Economic and Social Survey, United Nations Publication, 2013.



CO-PO Articulation Matrix Economics for Engineers (HSMC301-T)

List of Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
CO1. Outline the principles of economics in general and economics in Indian context particularly for public sector agencies and private sector businesses. (LOTS: Level 1: Remember)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2. Discuss concepts related to economics in general and particularly relevant to Indian scenario. (LOTS: Level 2: Understand)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3. Apply the principles of economics for solving problems related to Engineering sector. (LOTS: Level 3: Apply)	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-
CO4. carry out benefit/cost, life cycle and breakeven analyses on one or more economic alternatives. (HOTS: Level 4: Analyse)	3	2	2	3	3	-	-	-	2	-	-	3	-	-	-
CO5. Judge the issues and challenges of sustainable development. (HOIS: Level 4: Evaluate)	3	-	3	3	-	-	3	-	-	3	3	3	-	-	-

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