Outcome Based Education

Master of Business Administration-Public Systems
(MBA-PS)
University of Calcutta

INDIAN INSTITUTE OF SOCIAL WELFARE AND BUSINESS MANAGEMENT
MANAGEMENT HOUSE, College Square West, Kolkata - 700 073, India
Phone : +91 (033) 2241 3756 / 5792 / 8694 / 8695, 4023 7474, Fax : +91 (033) 2241 3975
Website : www.iiswbm.edu

About the Institute: The **Indian Institute of Social Welfare and Business Management (IISWBM)** is the first business school of India and South East Asia. IISWBM is one of the premier educational institutions in India that has been serving the nation for 70 years. The precious journey of the Institute commenced on April 25th, 1953, when it was formed by a resolution of the Syndicate of the University of Calcutta.

The Postal Department of the Government of India released a commemorative postage stamp in the name of IISWBM on 25th April, 2004,to celebrate its 50 years of memorable service to the nation. Dr. Bidhan Chandra Roy, the then Chief Minister of West Bengal was the founder president along with several doyens of Indian Management that included illustrious names like Sir Jehangir Gandhi, Lala Laxmipat Singhania, Sir Biren Mookerjee among others. The foundation stone was laid by Pt. Jawaharlal Nehru, the contemporary Prime Minister of India.

IISWBM since inception has tried to blend the concept of social welfare and inclusivity into management education and has served the nation to create illustrious and socially responsible management professionals. Two former Presidents of the Republic of India, Dr. A.P.J.Abdul Kalam and Shri Pranab Mukherjee had visited the institute among other illustrious visitors. Shri Pranab Mukherjee in his address had stated that IISWBM should become an Institution of National Importances (INI).

IISWBM is supported by some of the most acclaimed organizations like the Ministry of Scientific and Cultural Affairs: Government of India, All India Board of Technical Studies in Management: Ministry of Education, Government of West Bengal, Bengal Chamber of Commerce and Industry, Indian Chamber of Commerce, Bharat Chamber of Commerce and Bengal National Chamber of Commerce and Industry.

Pandit Jawaharlal Nehru laying the Foundation
Stone of the Academic Block-1958

Dr. B. C. Roy,
Chief Minister of West Bengal (1948-1962) &
the Founder President Board of Governors

Prafulla Chandra Sen,
Chief Minister of West Bengal (1962-1967) &
President Board of Governors (1963-1990)

OUTCOME BASED EDUCATION (OBE)

Outcome-based education is a system where **all the aspects of education are focused on the outcomes of the course.** The students take up courses **with** a certain **goal of developing competencies** and they have to complete the goal by end of the course.OBE enhances the traditional methods and focuses on what the professional programme provides to the students. OBE provides clear standards for observable and measurable outcomes. The faculty members, moderators, and instructors should guide the students based on the target outcomes.

Principles of OBE:

1) Clarity of focus
2) Designing down
3) High expectations
4) Expanded opportunities.

Benefits of OBE:

Clarity: The focus on outcome creates a clear expectation of what needs to be accomplished by the end of the course. ·

Flexibility: With a clear sense of what needs to be accomplished, instructors will be able to structure their lessons around the students' needs. ·

Comparison: OBE can be compared across the individual, class, batch, program and institute levels. ·

Involvement: Students are expected to do their own learning. Increased student involvement allows them to feel responsible for their own learning, and they should learn more through this individual learning.

Program Educational Objectives (PEOs):

The program educational objectives (PEOs) are broad statements that describe the career and professional accomplishments that the program is preparing the students to achieve.

Program Educational Objectives essentially answer the question: Why does the Program exist in the first place?
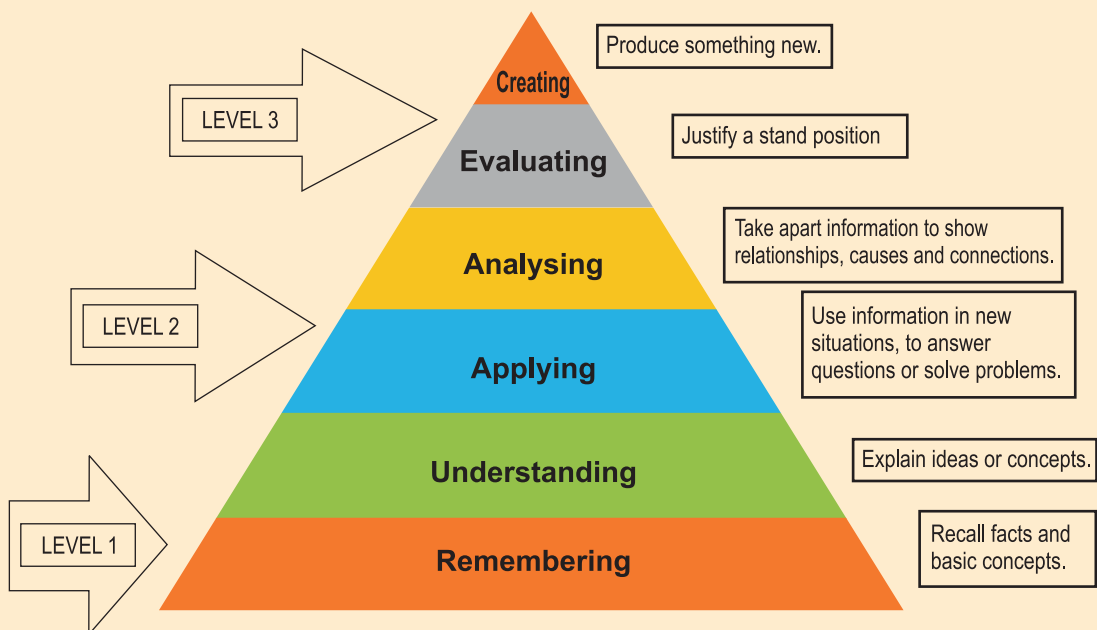
PEOs are:

- Statement of areas or fields where the graduates find employment.
- Statement of areas where graduates may to take up higher studies.

Programme Outcomes (POs)

POs are statements about the **knowledge, skills and attitudes** the graduate of a formal MBA program should have. POs deal with the **competencies** and expertise a graduating student will possess after completion of the program. POs are statements that describe what students are expected to know and be able to do upon graduating from the program. These relate to the skills, knowledge, analytical ability attitude and behaviour that students acquire through the program. The POs essentially indicate what the students can do from subject-wise knowledge acquired by them during the program.

Course Outcomes

Course Outcomes (COs): are narrower statements that describe what students are expected to know at the end of each subject learning. Every Course leads to some Course Outcomes. The CO statements are defined by considering the course content covered in each module of a course. For every course there may be 4 COs. The keywords used to define COs are based on Bloom's Taxonomy as follows:

LEVEL 3

Creating — Produce something new.

Evaluating — Justify a stand position

Analysing — Take apart information to show relationships, causes and connections.

LEVEL 2

Applying — Use information in new situations, to answer questions or solve problems.

Understanding — Explain ideas or concepts.

LEVEL 1

Remembering — Recall facts and basic concepts.

VISION AND MISSION OF IISWBM

Vision of the Institution:

To link an intellectual experience with the sense of social responsibility with the purpose of marrying social welfare to business management.

Mission of the Institution:

1. Create managers for the borderless business world of tomorrow by imparting management education, developing managerial talent, and sharpening competitive managerial abilities.

2. Give students an inter-disciplinary training so that they may gain a holistic view of any organization.

3. To train students for activities relevant to the contemporary socio-economic activities of the country.

MBA-PS Program Educational Objectives

PEO1   To develop and enhance appropriate managerial skills and abilities to become global managers.

PEO2   To enable them to excel in the field of Public Systems Management viz. Energy, Environment, Health Care & Hospital and Transportation & Logistics, while staying updated with the latest advancement and thereby contributing to society's growth and development.

PEO3   To impart a comprehensive management training so that students are competent to face crisis and challenges in every managerial aspects of the organization, while also preparing them for future leadership roles and ethical behavior.

PEO4   To inculcate enthusiasm for activities relevant to the prevailing Socio-Economic condition of the country.

PEO5   To instil entrepreneurial skills in students.

MBA-PS Program Outcomes

To create competent managers who will emerge as -

PO1   Young professionals with appropriate managerial skills and abilities.

PO2   Budding managers with excellence in the field of Public Systems Management viz. Energy, Environment, Health Care & Hospital and Transportation & Logistics.

PO3   Down-to-earth professionals with strong leadership qualities and a high ethical standard for positions of responsibility in organizations.

PO4   Young professionals with strong analytical and decision making skills.

PO5   Diligent professionals with entrepreneurial qualities.

MBA-PS Course Outcomes
(Compulsory Subjects)

Pape101 Management Principles & Practice

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
101	CO 101-1	To develop basic knowledge on organization theory and overall management processes of planning, organizing, controlling etc.
	CO 101-2	Develop deep understanding on organization structure, functions, management control and decision making in all levels of management.
	CO 101-3	Applications of management tools such as TQM etc through development of case studies.
	CO 101-4	Application of the knowledge, evaluation & analysis.

Paper 102 Managerial Statistics

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
102	CO 102-1	To develop concept of data characteristics and the methods of their summarization.
	CO 102-2	Understand the relationship among variables under study for assessment and prediction purpose.
	CO 102-3	Analyse data to evaluate the changes of an event happening and variables taking certain values.
	CO 102-4	Application of the knowledge, evaluation & analysis.

Paper 103 Organizational Behaviour

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
103	CO 103-1	Form basic concepts of organisational behaviour, motivation, personality and group behaviour and basic attributes of attitude and leadership.
	CO 103-2	Form understanding of the theories of learning, OB model, behaviour modification, cooperation and conflict.
	CO 103-3	Applications such as managing innovation in workplace through games and case study.
	CO 103-4	Application of the knowledge, evaluation & analysis.

Paper 104 Management Information System

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
104	CO 104-1	Understanding the basic concepts and technologies used in the field of MIS, including role of the ethical, social and security issues of information systems.
	CO 104-2	Compared the process of developing and implementing systems and networking concepts and internet protocol.
	CO 104-3	Apply the understanding of how various information systems like DBMS worked together to accomplish the information objectives of an organisation.
	CO 104-4	Application of the knowledge, evaluation & analysis.

Paper 105 Business and Government

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
105	CO 105-1	Form basic concepts of business environment, five-year plans, legislative powers and government regulations.
	CO 105-2	Understanding business and economic loss.
	CO 105-3	Develop knowledge on privatization, disinvestment, taxation and budget and physical policy.
	CO 105-4	Application of the knowledge, evaluation & analysis.

Paper 106 Managerial Economics

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
106	CO 106-1	Form concepts on demand, supply and market equilibrium and theory of production.
	CO 106-2	Form understanding on business theory of firms, competition, monopoly and price and output decision.
	CO 106-3	Critically understanding macro-economic framework, effects of GATT and inflations.
	CO 106-4	Application of the knowledge, evaluation & analysis.

Paper 107 Management Science

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
107	CO 107-1	To develop concept of management science and operational research.
	CO 107-2	Understand the application of various tools such as linear programming, queuing, sequencing and network analysis.
	CO 107-3	Applications in transportation problems, LPP simulations.
	CO 107-4	Application of the knowledge, evaluation & analysis.

Paper 108 Management Skills and Ethos

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
108	CO 108-1	Understand the importance of business communication, effective communication skills, business writing, and legal aspects of business communication.
	CO 108-2	Gain knowledge on CSR, ethics, and managerial stress and human values.
	CO 108-3	Understand value based ethical decision making.
	CO 108-4	Application of the knowledge, evaluation & analysis.

Paper 201 Marketing Management

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
201	CO 201-1	Forming core concepts on marketing management, market segmentation and buying behaviour of consumers.
	CO 201-2	Developing knowledge on brand management, pricing strategies and channels of distribution.
	CO 201-3	Critically understand marketing research, trends in marketing, evaluation and controls of marketing efforts.
	CO 201-4	Application of the knowledge, evaluation & analysis.

Paper 202 Research Methodology

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
202	CO 202-1	Understand nature and scope of research methodology, different theories, objectives and different types of research design and layout of report writing.
	CO 202-2	Designing of questionnaire, application of rating scale and types of data collection.
	CO 202-3	Sampling and testing of hypothesis using sampling methods.
	CO 202-4	Application of the knowledge, evaluation & analysis.

Paper 203 Human Resource Management

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
203	CO 203-1	Basic understanding of human resources, planning, job analysis, recruitment and selection, career management.
	CO 203-2	Understanding techniques of induction, training and performance appraisal.
	CO 203-3	Human management practises using case study.
	CO 203-4	Application of the knowledge, evaluation & analysis.

Paper 204 Management Accounting and Finance

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
204	CO 204-1	Concept and scope of financial accountings, including GST, balance sheet, direct and indirect taxation, working capital.
	CO 204-2	Financial accounting statements, cost and management accounting.
	CO 204-3	Evaluation of cost and management accounting, start-up, project financing through problem solving and case study.
	CO 204-4	Application of the knowledge, evaluation & analysis.

MBA-PS (Energy Management) Course Outcomes
(Specialization Subjects)

Paper ENGM-205 Energy Management, Audit & Measurement

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENGM-205	CO ENGM-205-1	Appreciate The Utility Of Energy Management And Its Social Implication.
	CO ENGM-205-2	Understand Energy Balance, Strategy, Audit And Measurement.
	CO ENGM-205-3	Understand And Calculate KPIs In Energy Audit & Management Issues.
	CO ENGM-205-4	Application Of The Knowledge, Audit Implementation, Evaluation & Analysis.

Paper ENGM-206 Renewable Energy Management: Solar and Wind

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENGM-206	CO ENGM-206-1	Understand the market trends, achievements, and growth of renewable energy sources.
	CO ENGM-206-2	Deeply comprehend solar energy, wind energy and solar thermal technologies.
	CO ENGM-206-3	Explore solar photovoltaic (PV) systems, including the principles of photovoltaic conversion and mathematical problems on photovoltaic applications.
	CO ENGM-206-4	Application of the knowledge, evaluation & analysis.

Paper ENGM-207 Energy Technology for Management

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENGM-207	CO ENGM-207-1	Appreciate The Utility Of Energy Technology For Management.
	CO ENGM-207-2	Understand Thermodynamics, Fluid Mechanics And Drawing For Energy Technology.
	CO ENGM-207-3	Understand Power System And Tariff For Energy Technology.
	CO ENGM-207-4	Application Of The Knowledge, Audit Implementation, Evaluation & Analysis.

Paper ENGM-208 Energy Efficiency in Electrical Utilities

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENGM-208	CO ENGM-208-1	Understand various types of electric motors.
	CO ENGM-208-2	Deeply comprehend diesel generating (DG) systems, compressors, fan etc.
	CO ENGM-208-3	Explore DG, compressors, their types, efficiency, and efficient operation. Understand the components and factors affecting the performance of compressed air systems.
	CO ENGM-208-4	Application of the knowledge, evaluation & analysis.

Paper ENGM-301 Energy Efficiency in Thermal Utilities

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENGM-301	CO ENGM-301-1	Appreciate The Utility of Thermal Utilities In Energy Management And Its Social Implication.
	CO ENGM-301-2	Understand And Calculate the Efficiency Of Thermal Energy Systems.
	CO ENGM-301-3	Understand And Assess the Performance Of Thermal Energy Systems & Management Issues.
	CO ENGM-301-4	Application of the knowledge, evaluation & analysis.

Paper ENGM-302 Climate Change Mitigation and Sustainability Services

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENGM-302	CO ENGM-302-1	Concept and understanding of Climate change, international treaties and conventions on climate change mitigation.
	CO ENGM-302-2	Understanding of different carbon emission projects, sustainability reporting, CDM, carbon footprint etc.
	CO ENGM-302-3	Critically understand Carbon market, industrial application taking care of six GHGs.
	CO ENGM-302-4	Application of the knowledge, evaluation & analysis.

Paper ENGM-303 Conventional Energy Resources and Systems

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENGM-303	CO ENGM-303-1	Understand the different types of conventional power plants and their roles in the energy sector.
	CO ENGM-303-2	Comprehend the components and operation of power generation systems, including their efficiency and performance factors.
	CO ENGM-303-3	Explore safety protocols and risk management practices specific to conventional power stations and mathematical problems.
	CO ENGM-303-4	Application of the knowledge, evaluation & analysis.

Paper ENGM-304 Demand Side Management (DSM) and Distributed Generation

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENGM-304	CO ENGM-304-1	Understand rural electrification, policies and schemes for DSM & Distributed Generation.
	CO ENGM-304-2	Comprehend the Indian power sector, investments in renewable energy, Electricity Act 2003 and use of SCADA and PLC in the operation of distributed generation.
	CO ENGM-304-3	Explore the concepts and methods of demand-side management (DSM), including load curves, load factor, demand factor, customer incentives, and program design & mathematical problems.
	CO ENGM-304-4	Application of the knowledge, evaluation & analysis.

Paper ENGM-305 Building Energy Management

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENGM-305	CO ENGM-305-1	Understand the energy-efficient buildings, lighting systems, HVAC etc.
	CO ENGM-305-2	Evaluate the thermal performance of building envelopes, comprehend HVAC, Lighting etc.
	CO ENGM-305-3	Explore building simulation software, analytical problems in Lighting, HVAC & cooling tower.
	CO ENGM-305-4	Application of the knowledge, evaluation & analysis.

Paper ENGM-306 Energy and Environment

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENGM-306	CO ENGM-306-1	Understand the environmental issues associated with energy projects and their impact on the environment.
	CO ENGM-306-2	Comprehend various forms of environmental pollution, such as air, water, noise, and soil pollution.
	CO ENGM-306-3	Gain knowledge of Environment Impact Assessment (EIA) and Environment Management Plan (EMP), including the relevant rules and regulations.
	CO ENGM-306-4	Application of the knowledge, evaluation & analysis.

Paper ENGM-307 Energy Audit and Sustainability in Larger Industries including DCs

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENGM-307	CO ENGM-307-1	Appreciate The Utility Of Audit And Study Sustainability Of Large Industries And Its Social Implication.
	CO ENGM-307-2	Understand Production Process, Energy Kpis And Audit Of Designated Consumers.
	CO ENGM-307-3	Understand And Assess Energy Performance, Techniques For Its Improvement.
	CO ENGM-307-4	Application of the knowledge, evaluation & analysis.

Paper ENGM-308 Energy Pricing and Economics

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENGM-308	CO ENGM-308-1	Understand the concepts of Availability Based Tariff (ABT), Aggregate Technical and Commercial (AT&C) losses, Accelerated Power Development and Reforms Programme (APDRP) etc.
	CO ENGM-308-2	Comprehend the structure of the Indian power market and compare traditional models with power trading concepts. Explore various technical standards for grid connectivity in the power sector.
	CO ENGM-308-3	Explore renewable energy forecasting techniques and the regulatory framework set by the Central Electricity Regulatory Commission (CERC) for forecasting, scheduling, and imbalance handling of renewable energy.
	CO ENGM-308-4	Application of the knowledge, evaluation & analysis.

Paper ENGM-401 Renewable Energy Management: Biomass, Small Hydro and Others

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..
ENGM-401	CO ENGM-401-1	Understand various renewable energy technologies such as small hydro, tidal energy, wave energy, ocean thermal, biomass, fuel cells, and hydrogen energy. Evaluate their present status in India, environmental impacts, and potential applications.
	CO ENGM-401-2	Comprehend the principles and working of different renewable energy technologies, including small hydro, tidal energy, wave energy, ocean thermal, biomass, fuel cells, biomass and hydrogen energy.
	CO ENGM-401-3	Analyse financial and economic aspects of non-renewable energy projects, including cash flow diagrams, interest types, inflation effects, payback period, net present value (NPV), and internal rate of return (IRR).
	CO ENGM-401-4	Application of the knowledge, evaluation & analysis.

Paper ENGM-402 Energy Audit and Sustainability Issues in SMEs

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENGM-402	CO ENGM-402-1	Appreciate The Need Of SMEs And Its Social Implication.
	CO ENGM-402-2	Understand And Calculate The Energy KPIs Of Storage Systems, Particularly In SMEs.
	CO ENGM-402-3	Understand And Assess The Performance Of Energy Storage Systems & Management Issues.
	CO ENGM-402-4	Application of the knowledge, evaluation & analysis.

Paper ENGM-403 Energy Regulation, Schemes and Action Planning

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENGM-403	CO ENGM-403-1	Concept and understanding of energy policy, location of energy managers, energy acts.
	CO ENGM-403-2	Understanding of forced field analysis, PAT and other national schemes, smart metering, national schemes.
	CO ENGM-403-3	Critically understand ISO 50001, Smart cities, case study and other related energy policy.
	CO ENGM-403-4	Application of the knowledge, evaluation & analysis.

Paper ENGM-404 Energy Business Models & Processes

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENGM-404	CO ENGM-404-1	Understand the concept of energy monitoring and targeting, including the elements and analysis of data and information for energy management.
	CO ENGM-404-2	Analyse energy consumption, production, and the application of Cumulative Sum of Difference (CUSUM) for performance monitoring in energy systems, business models.
	CO ENGM-404-3	Gain an overview of ISO 50001, the international standard for energy management systems, and its significance in energy business processes.
	CO ENGM-404-4	Application of the knowledge, evaluation & analysis.

Paper ENGM-405 Project Work/internship in the area of specialization

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENGM-405	CO ENGM-405-1	To relate the subject of study to the field of application.
	CO ENGM-405-2	To identify the problem in the field of application and explore possible solution.
	CO ENGM-405-3	To communicate with the stake holder to create and optimize professional industrial report.
	CO ENGM-405-4	Application of the knowledge, evaluation & analysis.

Paper ENGM-406 Dissertation paper in the area of specialization

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENGM-406	CO ENGM-406-1	Relate the subject of study to the real life applications and research.
	CO ENGM-406-2	Identify the problem in real life application and explore possible solutions.
	CO ENGM-406-3	Develop skills to prepare a professional grade report on real case study.
	CO ENGM-406-4	Excel in the field of Energy Management, updated with state of the art knowledge and skills to contribute to progress and development of society.

Paper ENGM-407 Viva voce (theory paper/project/dissertation) on subject of specialization

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENGM-407	CO ENGM-407-1	To Comprehend the understanding of the courses.
	CO ENGM-407-2	To enable the student to relate the acquired knowledge to the real world problems.
	CO ENGM-407-3	To develop skills to prepare a professional grade report on real case study.
	CO ENGM-407-4	To develop communication skill for professional success.

MBA-PS (Environment Management) Course Outcomes

(Specialization Subjects)

Paper ENVM-205 Natural Resource Management

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENVM-205	CO ENVM-205-1	Develop knowledge of natural resources including earth system, earth process, and environmental resources.
	CO ENVM-205-2	Develop an understanding of land resources, land use, land degradation and concepts of coastal dynamics.
	CO ENVM-205-3	Application of techniques and strategies to critically understand the ecosystem.
	CO ENVM-205-4	Develop communication skill for professional success.

Paper ENVM-206 Water Resource Management

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENVM-206	CO ENVM-206-1	Develop a knowledge of origin of groundwater, catchment management, geologic control of groundwater and characteristics of aquifer.
	CO ENVM-206-2	Develop a deep understanding of recharge and discharge areas, rain water harvesting, watershed management and water resource management.
	CO ENVM-206-3	Applying techniques of groundwater abstraction and laws groundwater movements (Laplace, Bernoulli's equation etc.)
	CO ENVM-206-4	Application of the knowledge, evaluation & analysis.

Paper ENVM-207 Management of Ecology, Forest & Wildlife

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENVM-207	CO ENVM-207-1	Develop knowledge on ecosystem classification, ecological pyramids, bio-geo-cycle and ecological monitoring.
	CO ENVM-207-2	Develop deep understanding of wetland conservation, forest management, wildlife conservation and management.
	CO ENVM-207-3	Critically assess principal and strategies on population ecology and protection of forests, wetland and wildlife.
	CO ENVM-207-4	Application of the knowledge, evaluation & analysis.

Paper ENVM-208 Management of Socio-Economic Environment

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENVM-208	CO ENVM-208-1	To develop knowledge on types and stages of socio-economic impact assessment (SIA) and selection of parameters and procedures for conduction SIA.
	CO ENVM-208-2	Develop deep understanding on socio-economic feasibility study and processes of sampling, data processing, trend analysis and forecasting.
	CO ENVM-208-3	Applications on models for socio economic impact assessment and developing strategies for improvement of socio-economic conditions.
	CO ENVM-208-4	Application of the knowledge, evaluation & analysis.

Paper ENVM-301 Air Pollution - Monitoring & Control

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENVM-301	CO ENVM-301-1	Develop concepts of sources and classification of air pollutants and their impacts including understanding of air pollution metrology.
	CO ENVM-301-2	Develop understanding of principle of ambient air quality monitoring, stack and fugitive monitoring such as sampling techniques, selection of sampling locations etc.
	CO ENVM-301-3	Application of air quality modelling approaches, and air pollution control strategies to assess and control air pollution
	CO ENVM-301-4	Application of the knowledge, evaluation & analysis.

Paper ENVM-302 Water Pollution - Monitoring & Control

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENVM-302	CO ENVM-302-1	Develop knowledge on sources and impact of water pollutants including water quality standards.
	CO ENVM-302-2	Develop understanding of physical, chemical and biological parameters and their monitoring techniques.
	CO ENVM-302-3	Critically assess strategies for water pollution management through water quality modelling, and techniques of physical, chemical biological treatment of water and waste water including problem analysis.
	CO ENVM-302-4	Application of the knowledge, evaluation & analysis.

Paper ENVM-303 Management of Soil, Noise & Odour Pollution

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENVM-303	CO ENVM-303-1	Form basic concepts of soil classification, noise pollution, sources of noise pollution and their impacts on human health.
	CO ENVM-303-2	Soil sampling and analysis, noise pollution monitoring including noise pollution indices.
	CO ENVM-303-3	Form basic concepts of soil classification, noise pollution, sources of noise pollution and their impacts on human health.
	CO ENVM-303-4	Application of the knowledge, evaluation & analysis.

Paper ENVM-304 Solid and Hazardous Waste Management

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENVM-304	CO ENVM-304-1	Provide knowledge on types of solid waste, hazardous waste, their sources and classification and characteristics and site assessment.
	CO ENVM-304-2	Develop understanding of waste minimisation, storage, collection, transport and disposal techniques.
	CO ENVM-304-3	Critically appraise various waste management strategies including waste treatment and biomedical waste management.
	CO ENVM-304-4	Application of the knowledge, evaluation & analysis.

Paper ENVM-305 Environmental Impact Assessment

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENVM-305	CO ENVM-305-1	Acquire knowledge on basic concepts of EIA, selection criteria for developmental projects and basic steps for environmental clearance of projects.
	CO ENVM-305-2	Understand the steps of EIA, such as scoring, identification of impacts and base line assessment etc.
	CO ENVM-305-3	Using models for prediction of impacts, techniques to evaluate environmental impact and formulate environmental impact statement and form environmental management plan.
	CO ENVM-305-4	Application of the knowledge, evaluation & analysis.

Paper ENVM-306 Risk Analysis & Disaster Management

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENVM-306	CO ENVM-306-1	Acquire knowledge on concepts of risk analysis and disaster management principles.
	CO ENVM-306-2	Develop a deep understanding of hazard identification, risk and disaster mitigation strategies, disaster preparedness and recovery policies for industrial and natural hazards on different spatio temporal space
	CO ENVM-306-3	Develop ability to critically assess principles of risk assessment techniques and disaster management practices
	CO ENVM-306-4	Application of the knowledge, evaluation & analysis.

Paper ENVM-307 Industrial Safety & Occupational Health

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENVM-307	CO ENVM-307-1	Obtain knowledge on safety awareness and develop concepts of hazard and risk, theories of incident and accident prevention and fire and industrial safety and their legal aspects.
	CO ENVM-307-2	Forming a deep understanding, safety audit and safety policies for controlling accidents and formulating training principles for organisation regarding health and safety.
	CO ENVM-307-3	Critically appraising techniques on assessment of occupational health hazards, occupational diseases and develop strategies such as safety audits for their prevention.
	CO ENVM-307-4	Application of the knowledge, evaluation & analysis.

Paper ENVM-308 Environmental Economics

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENVM-308	CO ENVM-308-1	Develop a basic understanding of environmental valuation, economic efficiency and resource allocation.
	CO ENVM-308-2	Develop a deep understanding of environmental valuation methodologies such as productivity approach, pricing methods etc.
	CO ENVM-308-3	Critically use techniques to perform cost benefit analysis, understand market failure cause by environmental problems and formulate decision rules to assess a project worth.
	CO ENVM-308-4	Application of the knowledge, evaluation & analysis.

Paper ENVM-401 Remote Sensing & GIS

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENVM-401	CO ENVM-401-1	Develop knowledge on basic concepts of remote sensing technology, procedures for obtaining maps and satellites data and understanding concepts of signal and disturbance in force fields.
	CO ENVM-401-2	Develop deep understanding of modern tools of remote sensing, digital data processing, radar remote sensing and principles of GIS and GPS.
	CO ENVM-401-3	Applying GIS and remote sensing in different applications, such as agriculture, water resources mapping and land use and land cover mapping, weather and climate related application.
	CO ENVM-401-4	Application of the knowledge, evaluation & analysis.

Paper ENVM-402 Environmental Legislation

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENVM-402	CO ENVM-402-1	Developing knowledge on environmental policies and convention, and environmental acts and rules such as forest and wildlife acts etc.
	CO ENVM-402-2	Developing deep understanding on national environmental movements and national and international standards for major industries such as emission standards, air quality standards etc.
	CO ENVM-402-3	Critically understand environmental litigations for environmental protection in development new projects and current industries.
	CO ENVM-402-4	Application of the knowledge, evaluation & analysis.

Paper ENVM-403 Environmental Management Systems

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENVM-403	CO ENVM-403-1	Develop concepts on ISO 140001 standards, environmental policy, environmental management planning and life cycle assessment.
	CO ENVM-403-2	Develop deep understanding of process of environmental audit, its benefit and types of audit.
	CO ENVM-403-3	Develop ability to critically evaluate non conformities in meeting of ISO standards by industries and suggest corrective actions.
	CO ENVM-403-4	Application of the knowledge, evaluation & analysis.

Paper ENVM-404 Climate Change and Trade & Environment

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENVM-404	CO ENVM-404-1	Acquire knowledge on concepts of climate change, climate change mitigation, climate change protocols and SDG Goals, ESG.
	CO ENVM-404-2	Form a deep understanding for corporate environmental management, such as ecological marketing, total quality management, sustainability indicators and Scope 1,2,3 GHG emissions.
	CO ENVM-404-3	Applying tools for incorporation of environmental issues in business strategy and marketing.
	CO ENVM-404-4	Application of the knowledge, evaluation & analysis.

Paper ENVM-405 Project Work/internship in the area of specialization

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENVM-405	CO ENVM-405-1	To relate the subject of study to the field of application
	CO ENVM-405-2	To identify the problem in the field of application and explore possible solution.
	CO ENVM-405-3	To communicate with the stake holder to create and optimize professional industrial report.
	CO ENVM-405-4	Application of the knowledge, evaluation & analysis.

Paper ENVM-406 Dissertation paper in the area of specialization

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENVM-406	CO ENVM-406-1	Relate the subject of study to the real-life applications and research
	CO ENVM-406-2	Identify the problem in real life application and explore possible solutions
	CO ENVM-406-3	Develop skills to prepare a professional grade report on real case study
	CO ENVM-406-4	Excel in the field of Energy Management, updated with state of the art knowledge and skills to contribute to progress and development of society.

Paper ENVM-407 Viva voce (theory paper/project/dissertation) on subject of specialization

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
ENVM-407	CO ENVM-407-1	Comprehend the understanding of the courses
	CO ENVM-407-2	Enable the student to relate the acquired knowledge to the real world problems
	CO ENVM-407-3	Develop skills to prepare a professional grade report on real case study
	CO ENVM-407-4	Develop communication skill for professional success

MBA-PS (Health Care & Hospital Management) Course Outcomes
(Specialization Subjects)

Paper HHM-205 Concept of Health and Diseases

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
HHM-205	CO HHM-205-1	Developing the understanding of research (GRIPP) in health care, modifiable diseases, comparative studies in health administration with foreign countries & NGOs & voluntary organizations & health systems.
	CO HHM-205-2	Understanding Health Project need assessment and developing knowledge of social mobilization, data analysis, and report work.
	CO HHM-205-3	Critically understanding project sustainability, project monitoring & evaluation along with project need assessment for the community.
	CO HHM-205-4	Application of the knowledge, evaluation & analysis.

Paper HHM-206 Planning and Organizing of Hospitals

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
HHM-206	CO HHM-206-1	Develop an understanding of the support services of a health institution or hospital, without which the hospital technical and medical services cannot function eg CSSD, HAI, Biomed waste etc.
	CO HHM-206-2	Introducing the concept of philosophy and history of hospitals, worldwide, giving rise to the multi-speciality, super-speciality hospitals.
	CO HHM-206-3	Introduce the practice of medical vocabulary into the students so that they can converse and understand the technical medical language. The whole operations of the hospital is dependent on co-ordination of support services and medical services.
	CO HHM-206-4	Application of the knowledge, evaluation & analysis.

Paper HHM-207 Development of Hospitals and Hospital Support Systems

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
HHM-207	CO HHM-207-1	Develop an understanding of the support services of a health institution or hospital, without which the hospital technical and medical services cannot function eg CSSD, HAI, Biomed waste etc.
	CO HHM-207-2	Introducing the concept of philosophy and history of hospitals, worldwide, giving rise to the multi-speciality, super-speciality hospitals.
	CO HHM-207-3	Introduce the practice of medical vocabulary into the students so that they can converse and understand the technical medical language. The whole operations of the hospital is dependent on co-ordination of support services and medical services.
	CO HHM-207-4	Application of the knowledge, evaluation & analysis.

Paper HHM-208 Healthcare and Hospital Logistics and Stores

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
HHM-208	CO HHM-208-1	Develop an understanding of the logistics services of a hospital, with its core components. Principles of production management & stores accounting are also incorporated into the course.
	CO HHM-208-2	Develop an understanding of inventory control & management of the hospital stores with concept of purchasing and procurement. In the hospital cost and quality control methods are also inculcated into the course.
	CO HHM-208-3	Teaching of the methods of logistics with exceptional management needs, methods of strategic forecasting of materials in health care and cost quality control of medical equipments in the hospital.
	CO HHM-208-4	Application of the knowledge, evaluation & analysis.

Paper HHM-301 Concept of Community Health and Epidemiology

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
HHM-301	CO HHM-301-1	Develop an understanding of School Health Services and Occupational Health in health care services. The concept of Information Education & Communication are inculcated into the course.
	CO HHM-301-2	Development of the concept of management of handicapped persons , disaster management and epidemiology with its measurements in health care management.
	CO HHM-301-3	In the development of the concept of epidemiology, an in-depth study of its infectivity, pathogenecity, immunogenicity, sensitivity and frequency of diseases is carried out. Development of the strategic management of preventive measures for disease outbreak is present.
	CO HHM-301-4	Application of the knowledge, evaluation & analysis.

Paper HHM-302 Healthcare Delivery System

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
HHM-302	CO HHM-302-1	Develop an understanding of the Health Scenario in India in the form of the National Health Policy and the Health Care Delivery System in India.
	CO HHM-302-2	Understanding of the different health care systems in India eg. The primary, secondary & tertiary health care system. Dev elop the concept of National Health Programs in India and their evaluation and monitoring
	CO HHM-302-3	Understanding of the concept of the National Rural Health Mission & National Health Mission in India. The correct placement of these health programs so that strategically can be reached by majority of population in India, along with PPP or Private Public Partnership.
	CO HHM-302-4	Application of the knowledge, evaluation & analysis.

Paper HHM-303 Hospital Management Information System

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
HHM-303	CO HHM-303-1	Develop knowledge of the different components of hospital information system including patient care applications.
	CO HHM-303-2	Develop an understanding and knowledge of Relational Database Management System, Decision Support System, Inventory and Human resource information system.
	CO HHM-303-3	Develop ability to critically analyse applications of HMIS in hospitals, use decision tables and tools like entity relationships to make decisions for hospitals.
	CO HHM-303-4	Application of the knowledge, evaluation & analysis.

Paper HHM-304 Quality Assurance in Hospitals

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
HHM-304	CO HHM-304-1	Develop the concept of Quality Control in Hospitals with knowledge of NABH & NABL Accreditation, JCI standardization. The knowledge of Performance Appraisal of the health care employees is also inculcated into the course.
	CO HHM-304-2	Understanding the concept of Green hospital with GRIHA & LEED rating along with case studies to create an area of imagination for the student to apply ones own managerial acumen.
	CO HHM-304-3	Impart the knowledge of urban & rural corporate social responsibility and Lean management in Hospitals, while critically analysing the application of Artificial Intelligence in Health Care.
	CO HHM-304-4	Application of the knowledge, evaluation & analysis.

Paper HHM-305 Legal aspects in Healthcare Administration

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
HHM-305	CO HHM-305-1	Develop the concept of the Legal Framework in hospitals , including Labor Legislation and Medical Ethics.
	CO HHM-305-2	Understanding and enforcement of health related Acts eg. Cosumer protection act in the Healt care scenario, Clinical Establishment act, PNDT Act, MTP Act etc.
	CO HHM-305-3	Understanding and critical placement of these health related acts along with health care Licenses and Permits.
	CO HHM-305-4	Application of the knowledge, evaluation & analysis.

Paper HHM-306 Financial Management in Healthcare Sectors and Health Economics

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
HHM-306	CO HHM-306-1	Developing the concept of Financial Management in the health care sector along with the fundamentals of health Economics.
	CO HHM-306-2	Building up of the concept of Health Financial Rate setting, Hospital & Health Care Budget, Working Capital Management in relation to hospital's operating cycle. Developing the concept of cost benefit and input output analysis.
	CO HHM-306-3	Developing the understanding and critically analyse the marginal costing and costing for strategic decisions. Building up the scope for coverage of health economics, role of government and analyse the outcome of privatization of Health care in India.
	CO HHM-306-4	Application of the knowledge, evaluation & analysis.

Paper HHM-307 Understanding Hospital Services-Group A

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
HHM-307	CO HHM-307-1	Understanding the service in the hospital eg. Hospital laundry , ambulance and communication system, house keeping.
	CO HHM-307-2	Concept of the kitchen and dietry services and the very controversial critical care services are critically analysed.
	CO HHM-307-3	Understanding the in-patient and out-patient departments are of immense importance, particularly the registration & billing. Strategic operations in the imaging & diagnostic departments are also inculcated in the course.
	CO HHM-307-4	Application of the knowledge, evaluation & analysis.

Paper HHM-308 Understanding Hospital services-Group B

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
HHM-308	CO HHM-308-1	Understand the importance of water supply and electrical power in hospitals, including the need for alternate power backup systems. Analyse the need for ensuring uninterrupted water/power supply.
	CO HHM-308-2	Explore fire control systems in hospitals & fire safety measures & the role of health care workers in preventing accidents. Evaluate the role of biomedical engineering services including maintenance of medical equipment.
	CO HHM-308-3	Explore the heating , ventilation and AC (HVAC) & medical gas pipeline (MGPS) in hospitals. Critically analyse the requirements / standards for HVAC and MGPS in health care.
	CO HHM-308-4	Application of the knowledge, evaluation & analysis.

Paper HHM-401 Marketing in Hospitals and Healthcare Organizations

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
HHM-401	CO HHM-401-1	Develop the concept of marketing of hospitals with its broad overview . The study is related to product and service marketing.
	CO HHM-401-2	Understanding the basic frame work of Corporate Health Services and how the relevance of Medical Tourism functions in the Indian Medical Healthcare scenario.
	CO HHM-401-3	Understanding the concept of strategic planning of pricing, internal & international marketing, and also emphasising of Branding and Media relationships in the Health Care sector.
	CO HHM-401-4	Application of the knowledge, evaluation & analysis.

Paper HHM-402 Effective Communication in Health Sector

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
HHM-402	CO HHM-402-1	Understanding the concept of health communication and its relation with the healthcare sector and various communication variables eg. Professional patient family relationship, empathy, selt control, barriers to communication, trust etc.
	CO HHM-402-2	Develop the concept of verbal & non-verbal communication with emphasis on conflict, grievance handling, resolution. These factors will resonate the mindset of worker and the patient in the delivery of health care.
	CO HHM-402-3	Strategically developing knowledge for ethics in health communication and inter cultural communication with special reference to dimentions of biomedical ethics, informed consent and honesty.
	CO HHM-402-4	Application of the knowledge, evaluation & analysis.

Paper HHM-403 Health Insurance

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
HHM-403	CO HHM-403-1	Developing the understanding of the evolution of health insurance, principles, types of health insurance, its policies and business opportunities.
	CO HHM-403-2	Exploring health insurance for the economically challenged sector is very difficult. Understanding the concept of different aspects of health insurance eg. TPA, Mediclaim etc.
	CO HHM-403-3	Strategically analysing the comparison of the health insurance policies in the other countries gives the students the way to explore insurance oppotunities on a wider platform.
	CO HHM-403-4	Application of the knowledge, evaluation & analysis.

Paper HHM-404 Health System Research and Health Project Management

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
HHM-404	CO HHM-404-1	Developing the understanding of research (GRIPP)in health care, modifiable diseases, comparative studies in health administration with foreign countries & NGOs & voluntary organizations & health systems.
	CO HHM-404-2	Understanding Health Project need assessment and developing knowledge of social mobilization, data analysis, and report work.
	CO HHM-404-3	Critically understanding project sustainability , project monitoring & evaluation along with project need assessment for the community.
	CO HHM-404-4	Application of the knowledge, evaluation & analysis.

Paper HHM-405 Project Work/internship in the area of specialization

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
HHM-405	CO HHM-405-1	Relate the subject of study to the field of application
	CO HHM-405-2	identify the problem in the field of application and explore possible solution
	CO HHM-405-3	Communicate with the stake holder to create and optimize professional industrial report.
	CO HHM-405-4	Application of the knowledge, evaluation & analysis.

Paper HHM-406 Dissertation paper in the area of specialization

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
HHM-406	CO HHM-406-1	Relate the subject of study to the real life applications and research
	CO HHM-406-2	Identify the problem in real life application and explore possible solutions
	CO HHM-406-3	Develop skills to prepare a professional grade report on real case study
	CO HHM-406-4	Excel in the field of Energy Management, updated with state of the art knowledge and skills to contribute to progress and development of society

Paper HHM-407 Viva voce (theory paper/project/dissertation) on subject of specialization

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
HHM-407	CO HHM-407-1	Comprehend the understanding of the courses.
	CO HHM-407-2	Enable the student to relate the acquired knowledge to the real world problems.
	CO HHM-407-3	Develop skills to prepare a professional grade report on real case study.
	CO HHM-407-4	Develop communication skill for professional success

MBA-PS (Transportation & Logistics Management) Course Outcomes
(Specialization Subjects)

Paper TLM-205 Logistics and its Integrated Approach in Industry

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
TLM-205	CO TLM-205-1	Understand the basic concepts of logistics and supply chain management, the principles of logistics management, concept of warehousing.
	CO TLM-205-2	Describe the flow charts of order processing, way to conduct smooth logistics functions, inventory planning, price optimisations.
	CO TLM-205-3	Know about the emerging technologies in logistics management, preparing logistics plan, logistics performance measurement.
	CO TLM-205-4	Application of the knowledge, evaluation & analysis.

Paper TLM-206 Road Transport Management

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
TLM-206	CO TLM-206-1	Understand the principal elements and evolution of freight and passenger transportation by road.
	CO TLM-206-2	Describe the operational aspects of road freight and bus transport, the commercial management of road transport and legal aspects of road transportation.
	CO TLM-206-3	Know about the application of e-tracking systems in freight movement by road.
	CO TLM-206-4	Application of the knowledge, evaluation & analysis.

Paper TLM-207 Water Transport Management

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
TLM-207	CO TLM-207-1	Understand the basic concepts of Deep Sea Transport, Coastal Shipping and Inland Water Transport.
	CO TLM-207-2	Describe the agencies involved in cargo handling at ports, designing of berths, role of major and minor ports, the relevant acts and Govt. policies in water transportation.
	CO TLM-207-3	Know the ways of port performance measurement calculation of berth throughput.
	CO TLM-207-4	Application of the knowledge, evaluation & analysis.

Paper TLM-208 Rail Transport Management

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
TLM-208	CO TLM-208-1	Understand the principal elements and evolution of freight and passenger transportation by rail.
	CO TLM-208-2	Describe the operational aspects of rail transport for freight and passengers, the commercial management of rail traffic movement and legal aspects of rail transportation.
	CO TLM-208-3	Know about the various incentive schemes of Indian Railways, current steps taken for up gradation of locomotives and wagons, resource mobilisation, documentation for freight movement.
	CO TLM-208-4	Application of the knowledge, evaluation & analysis.

Paper TLM-301 Air & Pipeline Transport Management

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
TLM-301	CO TLM-301-1	Understand the principal elements and evolution of freight and passenger transportation by Air, Air Traffic Characteristics, nature and suitability of Pipe Line Transportation.
	CO TLM-301-2	Learn the operational aspects of Air freight and passenger transportation, the commercial management of Air transportation and legal aspects of Air transportation.
	CO TLM-301-3	Rules & Regulations, relating to different types of cargo movement, cost calculation for cargo movement by air and by pipelines.
	CO TLM-301-4	Application of the knowledge, evaluation & analysis.

Paper TLM-302 Urban Transport Management

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
TLM-302	CO TLM-302-1	Understand the basic principles of urban mobility, the various traffic terminologies, various concepts of accessibility to transportation system.
	CO TLM-302-2	Learn to describe the demand and supply match/mismatches of mobility, and traffic management techniques in national and international contexts, operations of rapid transit systems.
	CO TLM-302-3	The upcoming concepts of solving traffic problems in cities with different types of mobility problems, application of their knowledge acquired in conducting studies on urban transport surveys.
	CO TLM-302-4	Application of the knowledge, evaluation & analysis.

Paper TLM-303 Operations Management

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
TLM-303	CO TLM-303-1	Understand the operations management policy and management objectives, nature and scope, cost, flexibility, and efficiency, Operations Management for services.
	CO TLM-303-2	Learn to do work design, the relevant models, technology for competitive advantage.
	CO TLM-303-3	Learn the Decision theory and its Applications, Demand Forecasting, Resource Planning, Master production schedule, Capacity planning under uncertain environment, Quality Control and total productivity maintenance.
	CO TLM-303-4	Application of the knowledge, evaluation & analysis.

Paper TLM-304 Information Technology in Transport Management

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
TLM-304	CO TLM-304-1	Develop understanding and knowledge of IT applications in smart transportation, management information systems, networking and internet and ecommerce.
	CO TLM-304-2	Develop an understanding and knowledge of Relational Database Management System, Enterprise Resource Planning, Decision Support System.
	CO TLM-304-3	Develop ability to use data analytics and understanding of information technology for decision optimization in supply chain organizations.
	CO TLM-304-4	Application of the knowledge, evaluation & analysis.

Paper TLM-305 Warehousing and Materials Management

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
TLM-305	CO TLM-305-1	Understand the basic Principles of Materials Management and warehousing.
	CO TLM-305-2	Learn to identify proper location for warehousing and techniques to establish warehouse, inventory management, warehouse operation jobs, handling operations flow, Health, Safety and Legal issues of warehouse management.
	CO TLM-305-3	Learn the methods of Order receiving, processing and picking, Warehouse Management Systems (WMS).
	CO TLM-305-4	Application of the knowledge, evaluation & analysis.

Paper TLM-306 Supply Chain Management

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
TLM-306	CO TLM-306-1	Understand the concept of supply chain management and risks and uncertainties in supply chain management, Procurement strategies and vendor management.
	CO TLM-306-2	Learn to know Information sharing in supply chain, supply chain coordination and integration.
	CO TLM-306-3	Application of knowledge for designing supply chain system for e-business and cold-chain management.
	CO TLM-306-4	Application of the knowledge, evaluation & analysis.

Paper TLM-307 Multimodal Transport System

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
TLM-307	CO TLM-307-1	Learn the characteristics of various modes of transportation and their limitations, features of container transportation, multi-modalism in transportation and usage of containers.
	CO TLM-307-2	Learning Multimodal Transportation using Rail, Road and Water transportation modes and relevant national and international regulations.
	CO TLM-307-3	Learn the Global scenario of multimodal transportation supplemented with case studies.
	CO TLM-307-4	Application of the knowledge, evaluation & analysis.

Paper TLM-308 Export-Import and Risk Management

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
TLM-308	CO TLM-308-1	Learn the EXIM Policy of the country, several Export promotional measures, basic concepts of export-import financing
	CO TLM-308-2	Learn the Pre and Post shipment documentation, import documentation, rules and regulations of various authorities at different stages of export and import, financial aspects and the Evaluation Tools of mitigation of financial risks in international trade.
	CO TLM-308-3	Learn how to link the concerned operations and activity chains being perused by the Exporters and Importers at different stages of the Trade and Commerce flow.
	CO TLM-308-4	Application of the knowledge, evaluation & analysis.

Paper TLM-401 Transport Economics

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
TLM-401	CO TLM-401-1	Learn the role of transportation in economic development, characteristics of transportation service demand and supply, the nature of mode specific costs.
	CO TLM-401-2	Learn the principles of pricing of transportation service, fixation of rate structure based on distance travelled, volume of goods and demand for transportation service.
	CO TLM-401-3	Understand and apply the methods of Benefit-Cost Analysis of Projects in various sectors including transport sector.
	CO TLM-401-4	Application of the knowledge, evaluation & analysis.

Paper TLM-402 Supply Chain Analytics

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
TLM-402	CO TLM-402-1	Understand the concepts of Demand Planning, Various Inventory Models and Green Supply Chain.
	CO TLM-402-2	Understand the Transhipment Problems, Dynamic Programming, Various types Supply Chain Designing, measuring performance and risks.
	CO TLM-402-3	Learn to do Big Data Analytics.
	CO TLM-402-4	Application of the knowledge, evaluation & analysis.

Paper TLM-403 Sustainable Transportation

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
TLM-403	CO TLM-403-1	Learn about transport planning objectives and performances in India, energy use in transport sector, effects of transportation on environment.
	CO TLM-403-2	Learn the scope of use of non-conventional energy in transport sector, energy conservation, automobile emissions, noise pollution, statutory requirements of EIA studies
	CO TLM-403-3	Learn to do Energy Audit and environmental audit, base-line data collection and evaluation of impacts for transport projects.
	CO TLM-403-4	Application of the knowledge, evaluation & analysis.

Paper TLM-404 Corporate and Strategic Planning in Transport Management

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
TLM-404	CO TLM-404-1	Learn the basic principles of Corporate Management, concept of strategy and competitive advantage.
	CO TLM-404-2	Learn the strategic models and policy designing.
	CO TLM-404-3	Learn to do strategy monitoring and apply evaluation tools and techniques.
	CO TLM-404-4	Application of the knowledge, evaluation & analysis.

Paper TLM-405 Project Work/internship in the area of specialization

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
TLM-405	CO TLM-405-1	Relate the subject of study to the field of application.
	CO TLM-405-2	Identify the problem in the field of application and explore possible solution.
	CO TLM-405-3	Communicate with the stake holder to create and optimize professional industrial report.
	CO TLM-405-4	Application of the knowledge, evaluation & analysis.

Paper TLM-406 Dissertation paper in the area of specialization

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
TLM-406	CO TLM-406-1	relate the subject of study to the real life applications and research.
	CO TLM-406-2	identify the problem in real life application and explore possible solutions.
	CO TLM-406-3	develop skills to prepare a professional grade report on real case study.
	CO TLM-406-4	excel in the field of Energy Management, updated with state of the art knowledge and skills to contribute to progress and development of society.

Paper TLM-407 Viva voce (theory paper/project/dissertation) on subject of specialization

Course	Course Outcome ID	Description (At the end of the course the student should be able to ..)
TLM-407	CO TLM-407-1	Comprehend the understanding of the courses.
	CO TLM-407-2	enable the student to relate the acquired knowledge to the real-world problems.
	CO TLM-407-3	develop skills to prepare a professional grade report on real case study.
	CO TLM-407-4	develop communication skill for professional success.