

Appendix-I

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

NAME OF DEPTT. / CENTRE : DEPARTMENT OF MANAGEMENT STUDIES

1. Subject Code: IBM-311 Course Title : Operations and Supply Chain Management
2. Contact Hours: L: 3 T:0 P: 0
3. Examination Duration (Hrs.): Theory: 3 Practical: 0
4. Relative Weightage: CWS : 25 PRS : 0 MTE: 25 ETE: 50 PRE : 0
5. Credits: 3 6. Semester: Both 7. Subject Area: PEC
8. Pre-requisite: Nil
9. Objective: The course is designed to explain and evaluate the current thinking in operations and supply.
10. Details of the Course:

Sl.No.	Contents	Contact Hours
1	Introduction to the field, operations and supply chain strategy, project management, product and service design, case study	8
2	Strategic capacity management, process analysis, manufacturing process, facility layout, service process, waiting line analysis, six-sigma quality, case study	8
3	Logistics and facility location, designing the supply chain network, supply chain coordination, service supply chain, case study	8
4	Enterprise resource planning systems, demand management and forecasting, aggregate sales and operations planning, inventory control, material requirement planning, scheduling, simulation, constraints management, case study	10
5	Lean supply chain management, supply chain information systems and electronic commerce, supplier evaluation and selection, supply chain performance measurement, case study	8
Total		42

11. Suggested Books:

S. No.	Name of Authors/Book/Publisher	Year of Publication / Reprint
1.	Hull, John, C., "Risk Management & Financial Institutions", Wiley Finance	2012
2.	Neftci, Salih, N. "Principles of Financial Engineering", Academic Press	2008
3.	Saunders, Anthony & Cornett, Marcia Millon, "Financial Institutions Management: A Risk Management Approach" McGraw Hill/Irwin	2008
4.	Marshall, John, F & Bansal, Vipul, "Financial Engineering" PHI Learning	1992
5.	Cuthbertson, Keith & Nitzsche, Dirk, " Financial Engineering: Derivatives & Risk Management" John Wiley	2001

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INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

NAME OF DEPTT/CENTRE: **DEPARTMENT OF MANAGEMENT STUDIES**

1. Subject Code: **IBM- 312** Course Title: **Data Mining for Business Intelligence**
2. Contact Hours: **L: 2 T: 1 P: 0**
3. Examination Duration (Hrs.): **Theory: 2 Practical: 0**
4. Relative Weightage: **CWS: 25 PRS: 0 MTE : 25 ETE : 50 PRE: 0**
5. Credits: **3** 6. Semester: **Both** 7. Subject Area: **HSSMEC**
8. Pre-requisite: **Nil**
9. Objective: To impart knowledge on use of data mining techniques for deriving business intelligence to achieve organizational goals.
10. Details of Course:

S. No.	Contents	Contact hours
1.	General Overview of Data Mining and its Components Data Mining definitions, applications, origins, growth, terminology and notation. Data Mining Process: core ideas, overview of classification, prediction, association rules, predictive analytics, data reduction, data exploration, data visualization, supervised and unsupervised learning, and steps in data mining.	3
2.	Data Exploration and Preparation Data Visualization: basic charts, multidimensional visualization, and specialized visualizations. Dimension Reduction: Data summaries, correlation analysis, and principal component analysis	3
3.	Performance Evaluation Judging classification performance: naïve rule, class separation, classification matrix, accuracy measures, cutoff, unequal importance of classes, and asymmetric misclassification. Evaluating predictive performance: average, prediction accuracy measures	4
4.	Supervised Learning Methods: Model Based Methods Multiple Linear Regression, Logistic Regression: modeling, evaluation, and analysis.	4
5.	Supervised Learning Methods: Data-Driven Methods k-Nearest Neighbors (k-NN), Classification and Regression Trees: modeling, evaluation, and analysis. Neural Nets: concept and structure, fitting a network to data.	6

6.	Unsupervised Learning Association Rules: A priori algorithm, support and confidence. Cluster Analysis: distance measures, hierarchical clustering, and nonhierarchical clustering.	4
7.	Forecasting Time Series Handling Time Series: time series components, data partitioning. Regression-Based Forecasting: model with trend, model with seasonality, model with trend and seasonality. Smoothing Methods: moving average, simple exponential smoothing.	4
	Total	28

11. Suggested Books:

S. No.	Name of Authors/Book/Publisher	Year of Publication / Reprint
1.	Galit Shmueli, Nitin Patel, and Peter Bruce, Data Mining for Business Intelligence: Concepts, Techniques, and Applications in Microsoft Office Excel with XLMiner, Second Edition	2015
2.	Ian H. Witten, Eibe Frank, and Mark A. Hall, Data Mining: Practical Machine Learning Tools and Techniques, Third Edition	2011
3.	Anand Rajaraman, and Jeffrey David Ullman, Mining of Massive Datasets, First Edition	2011
4.	Jiawei Han, Micheline Kamber, and Jian Pei, Data Mining: Concepts and Techniques, Third Revised Edition	2011
5.	Foster Provost, and Tom Fawcett, Data Science for Business: What you need to know about data mining and data-analytic thinking, First Edition	2013

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INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

NAME OF DEPTT. / CENTRE : DEPARTMENT OF MANAGEMENT STUDIES

1. Subject Code : IBM-08 Course Title : FUNDAMENTALS OF INNOVATIONS, AND BUSINESS MODELS

2. Contact Hours: L: 2 T: 1 P: 0

3. Examination Duration (Hrs.): Theory: 2 Practical: 0

4. Relative Weightage: CWS 25 PRS 0 MTE 25 ETE 50 PRE 0

5. Credits: 3 6. Semester: Both

7. Pre-requisite: Nil 8. Subject Area: HSSMEC

9. Objective: To acquaint students with fundamentals of innovation, entrepreneurship and new business models.

10. Details of the Course:

S.No.	Contents	Contact Hours
1	Introduction to innovation, process of innovation, nature of innovation within firms and their motives for innovation, collaboration with other firms in networks and strategies to protect own position	6
2	Harnessing innovation for businesses : opening of new markets and developing new ways to serve existing customers, threats of rapid pace of technological change to established businesses and existing business models, opportunities for new entrants to markets, response of established businesses	7
3	Innovation and entrepreneurship, managing innovation and entrepreneurship, challenges of innovation strategy, social entrepreneurship and innovation	5
4	Globalization of innovation, open system of innovation, recognising the opportunity, sources of innovation	5
5	Designing business models from entry into incubation, development of business models for your own innovation, analysis of business models of competitors and incumbents.	5
	Total	28

11. Suggested Books:

S. No.	Name of Authors/Book/Publisher	Year of Publication / Reprint
1	Bessant J. and Tidd J., Innovation and Entrepreneurship, John Wiley & Sons, 2 nd Edition	2011
2	Drucker P.F., Innovation and Entrepreneurship, Harper Business	1993
3	Chanal V., Rethinking Business Models for Innovation lessons from entrepreneurial projects, (e book) halshs-00566298, version 2	2011
4	George G. and Bock A.J., Models of opportunity how entrepreneurs design firms to achieve the unexpected, Cambridge University Press	2012
5	Manmohan R. and Aseem K., Managing Innovations and New Product development: Concepts and Cases, PHI Learning	2009

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

NAME OF DEPARTMENT/CENTRE: Department of Management Studies

1. **Subject Code:** IBM-321 **Course Title:** Behavioral Economics
2. **Contact Hours:** **L:** 3 **T:** 0 **P:** 0
3. **Examination Duration (Hrs.):** **Theory:** 3 **Practical:** 0
4. **Relative Weightage:** **CWS:** 20-35 **PRS:** 0 **MTE:** 20-30 **ETE:** 40-50 **PRE:** 0
1. **Credits:** 3 6. **Semester:** Both 7. **Subject Area:** HSSMEC
8. **Pre-requisite:** Nil
9. **Objective:** To acquaint students with various aspects of behavioral issues in economics.

10. Details of the Course

S.No.	Contents	Contact hours
1.	Introduction; Nature of Behavioral Economics; Relationship with other disciplines; Scope and structure	3
2.	Methodology: Theories, evidence & consilience	5
3.	Values, preferences and choices	5
4.	Beliefs, heuristics & biases: The standard model, probability estimation, magical beliefs	5
5.	Decision making under risk & uncertainty: Prospect Theory, loss aversion, Decision weighting; Recent theories	6
6.	Mental accounting: Framing & editing; Budgeting & fungibility; Choice bracketing & dynamics	6
7.	The discounted utility models, present –focus, present-bias and alternative intertemporal choice models	6
8.	Behavioural game theory; Social preferences: Types of games and strategies; Models of social preferences.	6
Total		42

11. Suggested Books:

S.No.	Name of Authors/Book/Publisher	Year of Publication / Reprint
1.	Wilkinson, N. and Kleas, M. An Introduction to Behavioral Economics (3rd Edition), Palgrave McMillan	2017
2.	Forbes, W. Behavioral Finance, Wiley	2015
3.	Diamond, Peter, and Vartiainen, H., (ed.) Behavioral Economics and Its Applications, Princeton	2007
4.	Cartwright, E., Behavioral Economics, 3 rd Edition, Routledge	2018