MCA201 Optimization Technique

Year: II

Semester:I

Teaching Schedule Hours/Week			Examination Scheme				
			Internal		Final		Total
Theory	Tutorial	Practical	Theory	Practical	Theory	Practical	
3	1		20		80	-	100

Course Objective:

After completing this subject, students will be able to apply the concept of linear programming, duality theo assignment method, queuing theory, etc. to solve real life business problems.

Course Contents:

1. **The Linear Programming Problem** **[7 Hrs]**

   Introduction; Formulation of linear programming problem; Benefits and limitations of linear programmi Graphical solutions to linear programming problem; Standard LP form and its basic solutions; Simplex meth Artificial variable techniques: Two-phase method, Big-M method.

2. **Duality in Linear Programming** **[6 Hrs]**

   Concept of duality; Fundamental properties of duality; duality and simplex method; Dual-simplex method.

3. **Transportation Problem** **[7 Hrs]**

   Introduction; Mathematical formulation of transportation model; Transportation problem as a lin programming problem; Finding initial basic feasible solutions: North-West corner, Least-cost method, Vogel's approximation methods; Moving towards optimality; Degeneracy.

4. **Assignment Problem** **[7 Hrs]**

   Introduction; Mathematical formulation of assignment model; Solution of assignment problem; Multi optimal solutions; Unbalanced assignment problem; Hungarian algorithm; Maximization in assignment mo Restrictions on assignment.

5. **Integer Linear Programming** **[7 Hrs]**

   Introduction; Gomory's All - I P P. method; Construction of Gomory's constraints; Fractional Cut method - integer; Fractional Cut method - Mixed integer; Branch and Bound method.

6. **Queuing Theory** **[6 Hrs]**

   Introduction; Definition of terms in queuing model; Single infinite channels; Production model: Multi-cha service infinite queue, Finite population model.

7. **Project Management** **[5 Hrs]**

   Introduction to CPM and PERT; Basic differences between CPM and PERT; CPM/PERT network compon and precedence relationship; Critical path analysis: Forward pass method, Backward pass method.

Rathaur

MCA 202 DataMining&DataWarehousing

Year: II

Semester: I

Teaching Schedule Hours/Week			Examination Scheme				
			Internal		Final		Total
Theory	Tutorial	Practical	Theory	Practical	Theory	Practical	100
3	1	2	20	20	60	-	

Course Objectives:

The main objective of this course is to provide concepts of Data Warehousing and Data Mining. It also introduces various techniques and tasks involved in Data Mining.

CourseContents:

Unit 1: Introduction to Data Warehousing and Data Mining [3 Hrs]

Definition of Data Warehousing, Data Warehouse versus Operational Database syatems,Definition of Data Mining, Data mining versus Traditional Data Analysis, Data mining techniques, Data Mining Tasks, Data Mining Applications, Future of Data mining

Unit 2: DataWarehouseandOLAP TechnologyforDataMining [3 Hrs]

Data warehouse, Multidimensional data model, Data warehouse Architecture andImplementation,Data CubeTechnology,FromDataWarehousetoDataMining

Unit 3: DataPreprocessing [3Hrs]

DataCleaning,DataIntegrationandTransformation,DataReduction,DiscretizationandConceptHierarchyGenera on

Unit 4: DataMiningPrimitives,LanguagesandSystemArchitectures [3 Hrs]

WhatdefinesDataMiningTask?DataMiningQueryLanguage,ArchitectureofDataMiningSystems.

Unit 5: Mining AssociationRulesinLargeDatabases [5Hrs]

Association Rule Mining, Mining single-Dimensional Boolean Association Rules fromTransactionalDatabases,MiningMultilevelAssociationRulesfromTransactionalDatabases,MiningMul levelAssociationRulesfromRelationalDatabasesandDataWarehouse,FromAssociationMiningto CorrelationAnalysis.ConstraintBased Mining.

Unit 6: ClassificationandPrediction [10Hrs]

IntroductiontoClassificationandPrediction,DecisionTrees,BayesianClassification,Classification Backpropagation, Classification based on Concept from Associatio RuleMining,OtherClassificationmethods,Prediction,ClassifierAccuracy.

Unit 7: ClusterAnalysis [4Hrs]

Introduction–ClusterAnalysis,PartitioningMethods,Hierarchicalmethods,Density-BasedMethods, Gr BasedMethods,ModelBasedClusteringmethods,outlierAnalysis.

Unit 8: MiningComplexTypesofData [8Hrs]

Multidimensional Analysis and DescriptiveMiningof Complex Data objects, MiningSpatialDatabases, Minin Multimedia Databases, Mining Time-Series and Sequence Data, Minin TextDatabase,MiningtheWorldWideWeb.

Unit 9: ApplicationandTrendsinDataMining **[6 Hrs]**

DataMiningApplications,DataMiningSystemProductsandResearchPrototypes,AdditionalThemes onDataMining.SocialImpactsofDataMining,Trends onDataMining.

Laboratory Works:

The following experiments are to be performed in the laboratory.

1. Create an Employee Table with training data set which includes attributes like name,id,salary,experience,gender and phone number with the help of Data Mining Tool WEKA.
2. Create a weather table with training data set which includes attributes like outlook, temperature, humidity, windy, play with the help of Data Mining Tool WEKA.
3. Apply Pre-Processing techniques to the training data set of Weather Table.
4. Apply Pre-Processing techniques to the training data set of Employee Table
5. Normalize Weather Table data using Knowledge Flow.
6. Normalize Employee Table data using Knowledge Flow.
7. Finding Association Rules for Buying data.
   Use the following training data set for Buying Table.
   @relation buying
   @attribute age {L20,20-40,G40}
   @attribute income {high,medium,low}
   @attribute stud {yes,no}
   @attribute creditrate {fair,excellent}
   @attribute buyscomp {yes,no}
8. Finding Association Rules for Banking data.
   Use the following training data set for Banking Table.
   @relation bank
   @attribute cust {male,female}
   @attribute accno {0101,0102,0103,0104,0105,0106,0107,0108,0109,0110,0111,0112,0113,0114,0115}
   @attribute bankname {sbi,hdfc,sbh,ab,rbi}
   @attribute location {hyd,jmd,antp,pdtr,kdp}
   @attribute deposit {yes,no}
9. Finding Association Rules for Employee data.
   Use the following training data set for Employee Table.
   @relation employee-1
   @attribute age {youth, middle, senior}
   @attribute income {high, medium, low}
   @attribute class {A, B, C}
10. To Construct Decision Tree for Weather data and classify it.
    Use the following training data set for Weather Table.
    @relation weather
    @attribute outlook {sunny, rainy, overcast}
    @attribute temperature numeric
    @attribute humidity numeric
    @attribute windy {TRUE, FALSE}
    @attribute play {yes, no}
11. To Construct Decision Tree for Customer data and classify it.
    Use the following training data set for Customer Table.
    @relation customer
    @attribute name {x,y,z,u,v,l,w,q,r,n}
    @attribute age {youth,middle,senior}
    @attribute income {high,medium,low}
    @attribute class {A,B}
12. To Construct Decision Tree for Location data and classify it.
    Use the following training data set for Location Table.
    @relation location

MCA 203 Digital Marketing and Marketing Management

Year: II

Semester:I

Teaching Schedule Hours/Week			Examination Scheme				
			Internal		Final		Total
Theory	Tutorial	Practical	Theory	Practical	Theory	Practical	
3	1		20		80	-	100

arse Objective:

e objective of the course is to familiarize students with the concepts and techniques of digital marketingand rketing management.

urse Contents:

it 1:Introduction to Digital marketing [2 Hrs]
efinition of Digital Marketing, Differences between traditional and Digital Marketing, Digital Marketing as a tool success for companies, Importance of Digital marketing, Differences among Blog, Portal and Websites

it 2:Search Engine Optimization(SEO) [2 Hrs]
page optimization techniques , Off page Optimization techniques , Reports

it 3:Social Media Optimization (SMO) [6 Hrs]
roduction to social Media Marketing ,Facebook Marketing, Twitter Marketing, Linkedln Marketing, Google Plus rketing

it 4:Search Engine Marketing [5 Hrs]
roduction to Search Engine Marketing, Tools used for Search engine Marketing,Display advertising techniques

it 5:Marketing in Changing World Environment [3Hrs]
aning of marketing; marketing tasks; marketing management; marketing management philosophies, dynamism business and marketing; marketing mix components and decision areas in marketing; marketing environment

it 6:Marketing Research and Marketing Information System [3 Hrs]
keting research; marketing research process and areas; components of marketing information system; database rketing.

it 7:Market Segmentation, Targeting and Positioning Strategy for Competitive Advantages [4 Hrs]
ves and patterns of market segmentation; segmentation of consumer and business markets; evaluation and ection of market segments; product positioning strategies, concept and application of unique selling proposition.

it 8: Consumer Market Behavior and Customer Analysis [3 Hrs]
nsumer buying behavior; buyer decision process; business market and business buyer behavior; customer value, sts and satisfaction; cost of lost customer and customer retention; customer relationship management; roduction to government marketing and service marketing.

Unit 9: Market Analysis [3 Hrs]

Market size; growth; profitability; cost structures; identification of key success factors.

Unit 10: Product Policy and New Product Development [5 Hrs]

Concept of product, classification of products, major product decisions; product line and product mix; brandi packaging and labeling; product life cycle strategies; new product development process; consumer adoption diffusion of innovation processes; product line and mix strategies; brand building and brand equity, service prod management.

Unit 11: Pricing Strategies [2Hrs]

Pricing policies and strategies; new product pricing; product mix pricing; price adjustment strategies; initiating responding to price changes in the market.

Unit 12: Distribution Channels and Physical Distribution Decisions [3 Hrs]

Marketing channel decisions; channel designs and selection; distribution nature and trends; channel role, power, conflicts.

Unit 13: Marketing Planning and Control [4Hrs]

Strategic and tactical marketing plans; planning tools: BCG and GE matrix and portfolio models; the plann process; feedback and control.

Reference Books:

1. "Marketing Management", Philip Kotler, Pearson Education
2. "Strategic Market Management", David A. Aaker, John Wiley & Sons
3. "The Oxford Textbook of Marketing", Ketith Blois, Oxford University Press

PURBANCHAL UNIVERSITY

Rathaur

MCA262Supply Chain Analytics

Year: II Semester: I

Teaching Schedule Hours/Week			Examination Scheme				
			Internal		Final		Total
Theory	Tutorial	Practical	Theory	Practical	Theory	Practical	
3	1	2	20	20	60	-	100

Course Objective:

The main objective of course is to introduce how data analytics and machine learning can be applied in the supply chain management field to provide meaningful insights in decision making.

Course Contents:

Unit 1: Introduction [3Hrs]

Definition of Supply chain, Need of Supply Chain, Structure of Supply Chain, Supply Chain Process, Supply Chain Flows, Supply Chain Management, Business Analytics, Supply Chain Analytics, SMART Goals of Supply Chain Analytics

Unit 2:Data driven Supply Chain [7 Hrs]

Data and its value in supply Chain Management, Data Source in supply chains, Big Data, Introduction to Python

Unit 3: Data Manupulation [5 Hrs]

Data loading and writing,Data Indexing and selection, data Merging and Combination, Data Cleaning and Preparation, Data Computation and aggregation

Unit 4: Data Visualization [8Hrs]

Data Visualization in Python, Creating a figure in Python, Formatting a figure, Plotting simple charts, Plotting with Seaborn, Geographic mapping with Basemap, Visualizing wStarbucks Location

Unit 5: Customer Management [4 Hrs]

Customers in Supply Chain, Benefits of Customer-Centric Supply Chain, Building Customer Centric Supply chain, Cohort Analysis, RFM Analysis, Clustering Algorithms

Unit 6: Supply Management [4 Hrs]

Procurement in Supply Chains, Supplier Selection, Supplier Evaluation, Supplier Relationship Management, Supplier Risk Management, Supplier Selection Examples, Regression Algorithms

Unit 7: Warehouse and inventory Management [4 Hrs]

Warehouse Management, Inventory Management, Warehousing Optimization, Classification Algorithms

Unit 8: Demand Management [5 Hrs]

Demand Management, Demand Forecasting, Time Series Forecasting, Machine lEarning Methods

Unit 9: Logistics Management [5 Hrs]

Definition of Logistics Management, Mode of Transports in Logistics, Logistics Service providers, Global Logistics Management, Logistics Network design, Route Optimization

Reference books:

1. Kurt Y. Liu, "Supply Chain Analytics : Concepts, Techniques and Applications", Palgrave macmillan

Rathaur

पूर्वाञ्चल विश्वविद्यालय PURBANCHAL UNIVERSITY Gothgaun, Morang, Nepal 1995 विज्ञान तथा प्रविधि संकाय

MCA244 Internet and Social MediaMarketing

Year :II Semester: I

Teaching Schedule Hours/Week			Examination Scheme				
			Internal		Final		Total
Theory	Tutorial	Practical	Theory	Practical	Theory	Practical	
3	1		20		80	-	100

Course Objective:

The main aim of the course is to provide students with a comprehensive understanding of how digital technologies and the rise of social media are changing marketing strategies and tactics across different industries. This includes learning about marketing concepts that are relevant in the digital environment, analyzing best practice examples, and developing skills for creating, delivering and communicating value by using digital marketing tools and social media platforms

Course Contents:

Unit 1:Introduction to Digital Marketing: [5 Hrs]

The new digital world - trends that are driving shifts from traditional marketing practices to digital marketing practices, the modern digital consumer and new consumer's digital journey. Marketing strategies for the digital world-latestpractices.

Unit 2:Social Media Marketing [8 Hrs]

Introduction to Blogging, Create a blog post for your project. Include headline, imagery, links and post, Content Planning and writing. Introduction to Face book, Twitter, Google +, LinkedIn. YouTube, Instagram and Pinterest; their channel advertising andcampaigns.

Unit 3:Acquiring & Engaging Users through Digital Channels [10 Hrs]

Understanding the relationship between content and branding and its impact on sales, search engine marketing, mobile marketing, video marketing, and social-media marketing. Marketing gamification, Online campaign management; using marketing analytic tools to segment, target and position; overview of search engine optimization(SEO).

Unit 4:Designing Organization for Digital Success [10 Hrs]

Digital transformation, digital leadership principles, online P.R. and reputation management.ROI of digital strategies, how digital marketing is adding value to business, and evaluating cost effectiveness of digital strategies.

Unit 5:Digital Innovation and Trends [9 Hrs]

The contemporary digital revolution, digital transformation framework; security and privatization issues with digital marketing Understanding trends in digital marketing – Nepal,India and global context, online communities andco-creation

Unit 6:Mobile Marketing [3 Hrs]

Mobile platforms; Mobile web and applications; Mobile commerce and show rooming; Location-based services

References Books:

1. MoutsyMaiti: Internet Mareting, Oxford University PressIndia
2. Vandana, Ahuja; Digital Marketing, Oxford University Press India (November,2015).
3. Eric Greenberg, and Kates, Alexander; Strategic Digital Marketing: Top Digital Experts Share the Formula for Tangible Returns on Your Marketing Investment; McGraw-Hill Professional (October,2013).
4. Ryan, Damian; Understanding Digital Marketing: marketing strategies for engaging the digital generation; Kogan Page (3rd Edition,2014).

Tracy L. Tuten& Michael R. Solomon: Social Media Marketing (SagePublication)

PURBANCHAL UNIVERSITY Gothgaun, Morang, Nepal 1995

Rathaur