Data Mining and Business Intelligence
Information Systems Area
PGP Term IV, 2015-16

Instructor
Prof. Srikumar Krishnamoorthy
Wing 4D, Extension 4834
E-mail: srikumark@iimahd.ernet.in

Course Objectives
Business Intelligence offers set of tools, techniques and methodologies for gathering, storing, analyzing, and presenting information to help decision makers at various levels in the organization. Today, with significant advancements in databases, web 2.0 and other data collection technologies, organizations are increasingly relying on BI and/or advanced analytic techniques for making effective decisions.

This course introduces the participants to the essentials of BI and data mining technologies. It will enable the participants to learn and apply analytical techniques for solving real-world business problems. The course will also help participants to understand various issues, challenges and best practices in implementing BI / analytical solutions in organizations.

Some of the key takeaways for the participants include: (1) Learn the fundamentals of BI, Data warehousing and On-Line analytical processing, (2) Understand key concepts and techniques in data mining / advanced analytics, and (3) Apply data mining techniques to solve business problems in retail, finance and telecom domains.

Session Plan

Session	Date	Topic	Case / Reading
1	06 Jul 2015	Introduction to the Course and Business Intelligence	*Case:* Diamonds in the Data mine (HBR) *Reading:* Competing on Analytics (HBR)
2-3	07 Jul 2015	Fundamentals of Data Warehousing	*Case:* Data Warehousing and Multi-dimensional Data Modeling (IIMA) *Reading:* Data Warehousing and OLAP (Text Book, Chapter 4)
4	13 Jul 2015	OLAP Cubes and Reporting	*Hands-on:* OLAP Cubes and Dashboards

5	13 Jul 2015	Introduction to Data mining	*Reading:* Getting to know your data (Text Book, Chapters 2 and 3)
6-7	14 Jul 2015	Market Basket Analysis: Association Rule Mining	*Reading:* Mining Frequent Patterns, Associations and Correlations: Concepts and Methods (Text Book, Chapter 6)
8-9	20 Jul 2015	Association Rule and Sequential Pattern Mining	*Case:* Using Association Rules for Product Assortment Decisions: A Case Study *Reading:* Mining Sequential Patterns *Hands-on:* Rapid Miner
10-11	21 Jul 2015	Clustering and Outlier Analysis	*Case:* Real-time Credit Card Fraud Detection using computational intelligence *Reading:* Cluster Analysis: Basic Concepts and Methods (Text Book, Chapter 10)
12-13	27 Jul 2015	Classification and Prediction	*Reading:* Classification: Basic Concepts (Text Book, Chapter 8)
14-15	28 Jul 2015	Building and Evaluating Classifier Models	*Case:* Applying Data mining to Telecom Churn Management
16-17	03 Aug 2015	Mining Data Streams	*Reading:* Mining Stream, Time-series and Sequence Data
18-19	04 Aug 2015	Fundamentals of Text Mining	*Case:* Opinion Observer: Analyzing and Comparing Opinions on the Web
20-21	10 Aug 2015	Sentiment Analysis	*Reading:* The dynamics of online word of mouth and product sales—An empirical investigation of the movie industry *Hands-on:* Rapid Miner
22-23	11 Aug 2015	BI Implementation in Organizations	*Case:* Managing with Analytics at Procter & Gamble (HBR)
24	18 Aug 2015	Course Summary	*Reading:* Analytics 3.0 (HBR)
25	18 Aug 2015	Student Project Presentations	

Pedagogy
This course will have a mix of lectures, cases, and hands-on sessions.

Preparation
Each student needs to spend about 100 hours for class preparation (cases and readings), quiz/assignment and group project.

Evaluation
The course grade will be based on the following weights:

Class Participation	20%
Quiz / Individual Assignments	40%
Group Project Report and Presentation (max 3 per group)	40%

Text Book

1. Jiawei Han, and Micheline Kamber, *Data mining: Concepts and Techniques*, Morgan Kaufmann (Harcourt India Private Ltd), 3rd Edition, 2011

Further Readings

1. Efraim Turban, Ramesh Sharda, Dursun Delen, *Decision Support and Business Intelligence Systems*, Pearson, 2011

2. D. Loshin, *Business Intelligence: The Savvy Manager's Guide*, Morgan Kaufmann, 2003

3. E. Siegel, *Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie or Die*, Wiley 2013

4. M.J.A. Berry, and G. Linoff, *Data Mining Techniques: For Marketing, Sales and Customer Support*, Wiley, 1997

5. David J. Hand, Heikki Mannila, Padhraic Smyth, *Principles of Data Mining*, Smyth Publisher: The MIT Press, 2001