



**INTERNATIONAL MANAGEMENT INSTITUTE, BHUBANESWAR**  
**POST GRADUATE DIPLOMA IN MANAGEMENT (PGDM)**  
**BUSINESS ANALYTICS (IS608)**  
**CREDIT: 2 CREDITS**  
**SESSION DURATION: 60 MINUTES**

**TERM: III**  
**ACADEMIC YEAR: 2020-2021**  
**BATCH: PGDM (2020-22)**

**FACULTY:** Prof. Ramesh Behl/Prof. Manit Mishra  
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**Office hours:** 9.30 AM – 5.30 PM

**Course Introduction:**

At the heart of analytics lies the belief, “The unexamined decision isn’t worth making,” as argued by Davenport *et. al* in their book “Analytics at work: Smarter decisions: better results.” The massive amount of data generated all around us has enabled an objective way of decision making. Leveraging this data to make sound business decisions for pricing products, maintaining inventory, recruiting talent and a multitude of other situations contributes towards improving efficiency, managing risk and enhancing profit. The course intends to enable students to rise above the functional silos and grasp the holistic relevance of analytics in competing for the future. A synergistic amalgamation of theoretical and hands-on approach would make you competent to use the tools to decipher big data. The underlying objective is to create managers who can utilize analytics to improve performance in key business domains by disseminating information and generating insight.

**Learning Outcomes (LO):**

The following are the learning outcomes of the course:

1. To enhance the theoretical understanding of students on various concepts of analytics (LO1).
2. To understand SAP Business Warehouse as the data staging for Business Analytics (LO2).
3. To enhance the efficiency of students in using software for extracting information and generating insight (LO3).
4. To familiarize students with data mining concepts and techniques (LO4).
5. To develop the competency of assessing a predicament and choosing the appropriate tool to arrive at a decision (LO5).
6. To expose students to a set of predictive tools (LO6).

**Course Pedagogy:**

The teaching methodology will be an optimum amalgamation of class-room teaching, hands-on experiments and case discussions. A theoretical understanding of the tools will be followed by data-based application of tools and lastly, case-based application.

**Reference books:**

1. George, D., & Mallery, P. (2019). *IBM SPSS statistics 26 step by step: A simple guide and reference*. Routledge [G&M].
2. Shmueli, G., Patel, N. R., & Bruce, P. C. (2011). *Data Mining for Business Intelligence: Concepts, Techniques, and Applications in Microsoft Office Excel with XL Miner*. John Wiley and Sons.
3. Linoff, G. S., & Berry, M. J. (2011). *Data Mining Techniques: For Marketing, Sales, And Customer Relationship Management*. John Wiley & Sons.
4. Davenport, T. H., & Harris, J. G. (2007). *Competing on Analytics: The New Science of Winning*. Harvard Business Press [D&H].

**Analytical tools:** SPSS and SAP-Predictive Analytics.

**Course Evaluation criteria:**

Component	Learning Outcomes	Weight
Class participation	LO-1, LO-3, LO-4, LO-5	10%
Quiz	LO-1, LO-4, LO-5, LO-6	20%
Project	LO-1, LO-2, LO-3, LO-4, LO-5, LO-6	30%
End-term	LO-1, LO-2, LO-3, LO-4, LO-5, LO-6	40%
<b>Total</b>		<b>100%</b>

**Plagiarism**

We are committed to upholding the highest standards of academic integrity and honesty. Plagiarism is the use of or presentation of ideas, works that are not one's own and which are not common knowledge, without granting credit to the originator. You may refer the already available content just for your reference and to get the basic ideas. Only 20% of such content is acceptable, above that comes under the definition of Plagiarism which is unacceptable in IMI and will be treated seriously. All such cases will be referred to the appropriate body of the Institute for suitable disciplinary action.

**Session Plan:**

Session	Topic	Learning Outcomes	Reading
1 – 3	Introduction to Business Analytics – Concepts & Applications  Type of Business Analytics Tools for Business Analytics	LO-1	<ul style="list-style-type: none"> <li>• Ch. 1 -2 of Shmueli et al.</li> <li>• Ch. 17, 1, 3 &amp; 5 of Linoff &amp; Berry</li> <li>• Business Intelligence: Definitions &amp; Solutions</li> <li>• Introduction to BI</li> <li>• Exercise-1: Multidimensional Analysis using Excel</li> </ul>
4 – 6	Multidimensional Reporting using SAP Big Data Warehouse  Application: Building & Accessing Data Warehouse	LO-2	<ul style="list-style-type: none"> <li>• Big Data Meets Big Data Analytics</li> <li>• Exercise-2: Building Data Warehouse and Creating Views (Query)</li> <li>• Exercise-3: Analyzing Data in</li> </ul>

			Data Warehouse
7	Introduction to data analytics and SPSS <ul style="list-style-type: none"> <li>• DELTA</li> </ul>	LO-1 LO-3 LO-5	<ul style="list-style-type: none"> <li>• Ch. 1 and 2 of Shmueli et al.</li> <li>• Ch 1 to Ch 7 of G&amp;M</li> <li>• Ch 1 (pp. 1-22) D&amp;H</li> </ul> <p><u>Reading:</u> IDC White Paper: The Business Value of Predictive Analytics</p>
8-10	Multiple Regression Analysis <ul style="list-style-type: none"> <li>• Estimating regression model &amp; assessing fit (<math>R^2</math> &amp; adjusted <math>R^2</math>)</li> <li>• Interpretation (Regression coefficient; Multicollinearity)</li> </ul> <p>Application:</p> <ul style="list-style-type: none"> <li>• Modeling automobile price</li> <li>• Modeling property price</li> </ul>	LO-1 LO-3 LO-4 LO-5 LO-6	<ul style="list-style-type: none"> <li>• Ch. 1, 2, and 5 of Shmueli et al.</li> <li>• Ch. 10, 15, and 16 of G&amp;M</li> </ul> <p><u>Reading:</u> Big Data, Analytics, and the Path from Insights to Value.</p> <p>Data:</p> <ul style="list-style-type: none"> <li>• Toyota Corolla</li> <li>• Boston Housing</li> </ul>
11-13	Binary Logistic Regression <p>Application:</p> <p>Classifying products into good and poor quality</p>	LO-1 LO-3 LO-4 LO-5 LO-6	Study material – SHMUELI Data: <ul style="list-style-type: none"> <li>• Iris</li> <li>• Charles Book Club</li> <li>• Universal Bank</li> <li>• Bank</li> </ul>
14-16	Classification & Regression Tree (CART) <ul style="list-style-type: none"> <li>• Classification tree</li> <li>• Regression tree</li> </ul> <p>Application:</p> <p>Predicting factors influencing</p> <ul style="list-style-type: none"> <li>• Acceptance of personal loan</li> <li>• Automobile pricing</li> <li>• Property pricing</li> </ul>	LO-1 LO-3 LO-4 LO-5 LO-6	<ul style="list-style-type: none"> <li>• Ch. 7 of Shmueli <i>et al.</i></li> <li>• Ch. 7 of Linoff &amp; Berry.</li> </ul> <p><u>Reading:</u> Business Intelligence and Analytics: From Big Data to Big Impact</p> <p><u>Data:</u></p> <ul style="list-style-type: none"> <li>• Universal Bank</li> <li>• Toyota Corolla</li> <li>• Boston Housing</li> </ul>
17 – 18	Market basket analysis <p>Applications:</p> <ul style="list-style-type: none"> <li>• What goes with what: Purchase of cell phone accessories. Purchase of books</li> <li>• Housing prices.</li> </ul>	LO-3 LO-4 LO-6	Exercise-4: Association Analysis using Titanic Data
19 - 20	Machine Learning with Predictive Analytics & Expert Analytics	LO-6	Exercise – 5: Segmentation Analysis