COURSE CURRICULUM AND LEARNING OUTCOMES

MODULE NO.	MODULE	LEARNING OUTCOMES	DURATION (IN WEEKS)
1a.	Problem Solving with Java Programming	1. To perform basic, common computation tasks easily and efficiently 2. Demonstrate the principles of object oriented programming 3. Associate the features and elements of the Java programming language with problems and solutions 4. Apply and analyze the concepts of program fundamentals, expressions, statements and control flow 5. Apply, explain, and compare the concepts of class, object and method	4 weeks
1b.	Problem Solving with EXCEL	1. Master Excel Functions and Formulas that saves time and increases productivity 2. Cut hours of labour by using Pivot tables to analyse data 3. Discover new tools to share your work 4. Find new and more efficient ways to analyse data 5. Add colour and images to improve readability and get messages across to the audience more effectively 6. Learn the tricks to produce professional charts and graphs 7. Include diagrams in marketing reports and sales presentations to boost sales and readability 8. Find new ways to visualize data 9. Reduce workload each month by automating repetitive tasks by using macros 10. Import data using Power Pivot	
2a.	Programming for Data Science with R	1. Describe software and operating system 2. Explain R programming language 3. Describe control structures such as loop, recursion, break statement, next statement, and so on 4. Explain functions on data structure, sorting, greedy algorithm, and so on 5. Describe common input output operation in R 6. Explain data manipulation and transformation in R	6 weeks
2b.	Introduction to Python with Data Science	1. Develop an application – A showcase project using Python 2. Write Python programs to interact with IO streams 3. Implement Dynamic programming 4. Write object oriented applications 5. Develop reliable application using Exception Handling 6. Develop reusable code using Modules and Packages	

3	Statistical Techniques for Data Science	1. Explain Descriptive statistics like measures of central tendency, variation and shapes 2. Explain the Probability and Bayes' theorem 3. Explain Sampling and Sampling techniques 4. Describe Non parametric testing of Hypothesis 5. Explain Correlations 6. Ability to build regression model	3 weeks
4	Exploratory Data Analysis	1. Ability to explain the importance of EDA as a first step before modelling 2. Describe datasets in terms of variables and their types 3. Identify the central tendency of data using visualizations 4. Identify and handle the missing values and outliers in datasets 5. Learn the need for different data transformations 6. Describe the need for dimensionality reduction and approaches to implement the algorithms of association and cluster analysis	4 weeks
5	Data Visualization	1. Describe the strategic importance of visualization in enterprises 2. Describe different types of graphs used in structured data visualization 3. Describe different types of graphs used in un-structured (Big Data) data visualization 4. Describe different types of graphs used in statistical data visualization 5. Describe the data story telling approach and power of Infographic 6. Create simple visualizations using Tableau and R	3 weeks
6	Big Data Technologies	1. Understand what is BIG DATA, identify the sources of Big Data and the characteristic properties of BIG DATA 2. Explore the technology solutions to solve the BIG DATA analytics problems (Hadoop and SPARK) 3. Gain insightful working knowledge of HDFS and MAP-REDUCE framework 4. Demonstrate the ability to perform data warehousing operations using the tools of Hadoop such as PIG, HIVE, SQOOP, FLUME, HBASE, and Oozie etc. 5. Understand the limitations of Hadoop eco-system 6. Introduction to SPARK architecture	5 weeks
7	Business Communication	1. Learn as you explore through the course, the importance of listening, and sharpen your verbal and written communication skills 2. Provide inputs to learners for communicating clearly, concisely and compellingly 3. Apply videoconferencing, telephone and meeting etiquette effectively 4. Manage customer relationships effectively, with relation to telephone etiquette 5. Present yourself effectively in email using verbal and non-verbal means of communication 6. Use different communication tools to improve your understanding and responding abilities for email 7. Express more confidently with one another and evoke desired response from the receiver of email	5 weeks

8	Machine Learning Foundations	1. Explain with clarity Supervised and Un-Supervised Algorithms and its types 2. Develop classification models using some of core Supervised Algorithms 3. Develop models using clustering techniques	6 weeks
9	Machine Learning Applications	4. Evaluate and assess the quality of developed models 5. Understand the concepts behind Recommender systems 6. Develop an understanding of advanced ML techniques	

10. ADD-ON SPECIALIZATION (SELECT ANY ONE)

10a	Web Analytics	1. Identify the need for Web analytics 2. Recognize the features of Google Analytics 3. Explain the key parts of Google Analytics Platform 4. Develop a blueprint for implementing Google Analytics 5. Implement Google Analytics on website 6. Use the Reporting Interface of Google Analytics 7. Use Google Analytic Reports 8. Set up Ecommerce Analytics for website 9. Collect data using Google Tag manager 10. Implement Google Analytics for Mobile Apps	6 weeks
10b	HR Analytics	1. Describe the key deliverables of the HR function 2. Describe the evolution stages of Analytics in Business and HR 3. Explain the types of data in HR - Primary, Secondary 4. Describe the sources of data and some common software's 5. Demonstrate the analysis of Attrition using Excel 6. Analyze the Prediction of HR cost for future planning 7. Create an effective Management Information System for Attrition Management. 8. Demonstrate Descriptive, Associative, Inferential, Differences, Time Series, Linear Regression, and Logistic Regression statistics in Excel	6 weeks

10c	Banking Analytics	1. Understanding the business cases in Banking and realize the benefits of using Banking Analytics
		2. Post this program, you will be able to reach out to the banking market as a strong and competent Banking Analyst
		3. Attain Manipal ProLearn certification after the successful completion of the course
		4. If you are an aspiring Banking analyst, this course will help you to establish a strong hold of Banking Analytics on the different knowledge areas, such as:
		  • Commercial Banking
		  • Investment Banking
		  • Non-banking Financial Company
		  • Insurance
		  • Brokerage/Trading
		  • Risk & Collection
			6 weeks