



Professional School

An ISO 9001 : 2000 Organisation

## Ivy's Business Analytics Foundation Certification Details (Module I + II+ III + IV + V)

Based on Industry Cases, Live Exercises, & Industry Executed Projects

### Module (I) - Analytics Essentials – 81 hrs

#### 1. Statistics Refresher Overview (6 Hrs)

- Population metrics: Mean, Median, Mode, Std Deviation, Variance, Co-variance
- Introduction to types of distributions – Normal, Poisson, Binomial, Gamma
- Hypothesis Testing – t Test, F Test etc
- Ordinary Least Squares method for regression

#### 2. Advanced Analysis & Reporting on Excel using VBA, Macros (45 hrs)

- Introduction to MS Excel, Basic Functions and Usage
- Sorting, Filtering, Advance Filtering, Subtotal
- Pivot Tables
- Data Entry Forms
- What-if-Analysis – Data Tables, Scenario Manager & Goal Seek
- Different Charts Graphs – Which one to use and when
- Vlookup, Hlookup, Match, Index
- Style & Number Formatting, Conditional Formatting
- Worksheet & Workbook Reference
- Smart Printing Options
- Logical Operators & Functions – IF and Nested IF
- Data Validation
- Text Functions
- Relative & Absolute Macro Recording
- VBA Programming
  - Making Macro do Automated Tasks for You
    - Record a Macro
    - Automate a Task using Macro
  - Analysis Using VBA
    - Objects
      - VBA Collection Objects
      - The Application Object
      - Workbook and Window Objects
      - The Range Objects
    - Variable, Data Types, and Constants
      - Types of Variables
      - Promoting for User Input
      - Arrays
      - Interacting with Users
    - VBA Sub, Event and Function Procedures
      - Create Sub Procedures, Event Procedures and Function Procedures

- Ways to Execute these Procedures
- How to Execute Function Procedures
- Control Logic and Loops
  - Conditional Logic
  - Conditional Statements and the If/Then/Else and Select/Case Code Structures
  - Looping
- VBA User Forms Overview
- Industry Projects using VBA

### 3. SQL based Relational Database Concepts using MS-Access (15 hrs)

- Relational Database Fundamentals
- Steps to Design Efficient Relational Database Models
- Case Studies on Designing Database Models
- Case Study Implementation on Handling Data in MS-Access 2007
- Importing / Exporting Large Amount of Data into/from MS-Access
- Intro to SQL Statements
- Writing Transactional SQL Queries, Merging, joining, sorting, indexing, etc.
- Hands-on Exercises on Manipulating Data Using SQL Queries
- Creating Database Models Using SQL Statements
- Individual Projects on Handling SQL Statements

### 4. Structured Thinking Workshops (9 Hrs)

- Analytical Problem Solving Skills, Creative Thinking, Root Cause Analysis, Decision Tree Analysis, Fish Bone Analysis, Mind Mapping, Minto Pyramid's Principle, etc.
- Techniques to Handle Case Based Interviews
- Group / Individual Exercises / Case Studies

### 5. Effective Interviewing Skills Workshop (3 Hrs)

- Myths about Interviews and Common Mistakes
- Convincing the Interviewer
- Correct Preparation for Interview and its Advantages
- The 4 Steps to Interview Success
- Components of Good Interview
- How to face common interview questions

### 6. Analytics Industry Resume Building Workshop (3 Hrs)

- What do Analytics Recruiters Look for in a Resume?
- Analytics Resume Best Practices
- Analytics Industry Keywords to Include in Resume
- How to Describe Relevant Analytics Projects in Resume?

- Effective Strategies to Get Your Resume Noticed

**7. Ivy's Career Center Workshops (These workshop hours are not counted towards the total duration)**

- Industry Networking Sessions with At Least Two Industry Guest Speakers
- Mock Interview Sessions with Industry Professionals
- Analytics Company-wise Interview Questions (Collected from our Alumni and Recruiters)
- Comprehensive Analytics Interview Question Banks (SAS, VBA, Behavioral, etc)



## (Module II)- Industry Applicable Core Analytics with Case Studies (21 Hrs)

1. Importance of Data for Management Decisions
  - Data Types
  - Classifying Data to Convey Meaning
  - Diagrammatic and Graphic Representation
  - Measures of Central Tendency and Dispersion
  - Data Modeling
  - Ratios and Index Numbers
  - Discussion with cases and examples
2. Time Series Analysis
  - Mathematical Models for Time Series
  - Measurement of Seasonal, Cyclical and Irregular Variations
  - Discussion with cases and examples
3. Probability Concepts and Applications
  - Bayesian Theory
  - Probability Distributions and Mathematical Expectation
  - Discussion with cases and examples
4. Basics of Sampling and Sampling Distribution
5. Theory of Estimation and Testing of Hypothesis
  - Discussion with cases and examples
6. Correlation and Regression Models
7. Forecasting
  - Discussion with cases and examples
8. Theory of Attributes
  - Discussion with cases and examples
9. Statistical Decision Analysis
  - Discussion with cases and examples
10. Analysis of Variance
  - Discussion with cases and examples
11. Multivariate Analysis
  - Discussion with cases and examples



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## Module (III) - Advanced Analytics using SAS 9 (Base, Advance and Stats Modeling) – 62 hrs

### 1. SAS Analytics

- Introduction to SAS & Data Processing, SAS Data steps
- SAS Functions
- Types of variables, Variable Formats
- SAS procedures including Proc SQL
- SAS Macros
- Statistical Modelling Concepts and Practical Assignments-
  - Regression
  - ARIMA
  - Clustering
  - Logistic
  - Time Series Analysis
- Handling Data in SAS – Case Studies I, II, and III
- Assignments / Exercises

### 2. Industry Executed Analytics Projects on SAS

- Dedicated Practice Sessions on Industry Scenarios in SAS
- Industry Executed **Predictive Modeling** Projects in SAS (5 Projects from Retail, Healthcare, Finance, Education, Aviation industries)

**Please Note:** For minute details on any of the above modules, please reach out to us through phone (+91 9748 441111 / +91 33 40011221) or email ([info@ivyproschoool.com](mailto:info@ivyproschoool.com)).

## Module (IV): Data Management & Analysis using “R” – 25 hrs

### 1. Data Handling, Visualization & Statistical Programming in R

- Introduction & Overview of R Package (day 1)
- **Data Cleaning and Management in R** (day 1, day 2)
  - Data Types, Simple Operation and Subsetting
  - Data Reading and Writing to and fro from External Files
  - R Editor and Console
  - **Case Study** – Data Cleaning and Management
- **Logic Building in R** (day 3, day 4)
  - Control Structures
  - Commonly Used Functions
  - Loop Functions
  - Error Finding & Debugging
  - **Case Study** – Logic Building
- **Data Visualization in R** (day 5)
  - Data Simulation in R
  - Plotting and Visualizing Data
  - Principles of Data Graphics
  - **Case Study** – Data Visualization
- **Statistical Research in R** (day 6, day 7)
  - Reproducible Research
  - Literate Statistical Programming
  - **Case Study** – Statistical Programming
- **Object Oriented Programming in R** (day 8)
  - Data Abstraction
  - Regular Expression
  - **Case Study** – Object Oriented Programming

### 2. Projects (day 9, day 10)

- Dedicated Practice Sessions on Industry Scenarios in R
- Industry Executed Projects in R

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## Module (V) – Statistical Package for Social Sciences (SPSS) – 24 Hrs (Optional)

### Introduction to SPSS Software

- Windows, Menu, Status bar
- Dialogue box, sub-dialogue box
- Variable names, variable labels
- Basic steps in data analysis

### Data files and Editor in SPSS

- Opening a SPSS and external data file and options
- Saving a files and options
- Data view, Variable view, entering data, editing data
- Go to case, Case selection,
- Working with multiple data sources

### Working with command syntax

- Syntax rules
- Editing syntax
- Multiple execute commands

### Frequencies, descriptive, Explore, Crosstabs

- Frequencies statistics, charts and formats
- Descriptive and options
- Explore statistics, plots and options
- Crosstabs layers, statistics and format
- Summarize options and statistics

### Statistical analysis in SPSS

- Means and its options 10

### Data preparation and transformations

- Defining variables and its properties
- Computing variables, functions, missing values, random number generators
- Rank cases, recoding values
- Date and time wizard, time series data transformations, scoring data and predictive models

### File handling, transformations and output

- Sort, transport, merge, aggregate data, split file, select cases, weight cases
- Output viewer, output export, saving output
- T tests, paired t-tests, one sample t
- Bivariate and partial correlations
- Linear regression (simple and multiple)
- ANOVA 1 way, N way
- Binary Logistics Regression
- Curve estimation
- Factor analysis
- Cluster analysis