

# Savitribai Phule Pune University

(formerly University of Pune)

## Syllabus for Ph.D. (PET) Entrance Exam : Management

### Research Methodology

#### **1. Foundations of Research:**

**Research:** Definition, Objectives of Business Research, Characteristics of good research, Research applications in functional areas of Business.

**Concept of Scientific Enquiry:** - Formulation of Research Problem, Research Question, Investigation Question.

**Steps in Research Process.**

**Research Proposal:** Elements of a Research Proposal, Drafting a Research Proposal, Evaluating a research proposal.

#### **2. Research Design:**

Concept, Features of a good research design.

Qualitative research and Quantitative research approaches, Comparison of both approaches.

**Exploratory Research Design:** Concept, Types: Qualitative techniques -Projective Techniques, Depth Interview, Experience Survey, Focus Groups, Observation.

**Descriptive Research Designs:** Concept, types and uses. Concept of Cross-sectional and Longitudinal Research.

**Experimental Design:** Concept of Cause and effect, Causal relationships, Concept of Independent & Dependent variables, Concomitant variable, Extraneous variable, Treatment, Control group.

**Hypothesis:** Qualities of a good hypothesis, types of hypotheses, framing Null Hypothesis & Alternative Hypothesis. Concept of Hypothesis Testing.

#### **3. Measurement & Data:**

**Concept of Measurement:** Problems in measurement in research - Validity and Reliability. Levels of measurement - Nominal, Ordinal, Interval, Ratio.

**Attitude Scaling Techniques:** Concept of Scale, Rating Scales: Likert Scales, Semantic Differential Scales, Constant Sum Scales, Graphic Rating Scales. Ranking Scales: Paired Comparison & Forced Ranking.

**Types of Data - Secondary Data:** Definition, Sources, Characteristics, Issues to be considered for secondary data, sufficiency, adequacy, reliability, consistency; Data mining, Big data.

**Types of Data - Primary Data:** Definition, advantages and disadvantages over secondary data,

**Data collection Methods:** Questionnaire, Schedule, Personal Interviews, Telephonic survey, Email/Internet survey, Focus group study.

#### **4. Sampling:**

**Basic Concepts:** Defining the Universe, Concepts of Statistical Population, Sample, Characteristics of a good sample. Sampling Frame, Sampling errors, Non Sampling errors, Methods to reduce the errors.

**Probability Sample:** Simple Random Sample, Systematic Sample, Stratified Random Sample, Area Sampling & Cluster Sampling.

**Non Probability Sample:** Judgment Sampling, Convenience Sampling, Purposive Sampling, Quota Sampling & Snowballing Sampling methods. Determining size of the sample - considerations in sampling and sample size.

### **5. Data Analysis and Interpretation & Report Writing:**

**Data Analysis :** Editing, Coding, Univariate analysis – Tabular representation of data, frequency tables, Construction of frequency distributions and their analysis in the form of measures of central tendency ,Mean, Median and Mode; their relative merits and demerits.

**Graphical Representation of Data:** Appropriate Usage of Bar charts, Pie charts, Histogram, Leaf and stem, Candle stick, Box plots.

**Bivariate Analysis:** Cross tabulations, Use of percentages, Bivariate Correlation Analysis - meaning & types of correlation, .Karl Pearson’s coefficient of correlation and Spearman’s Rank Correlation: Scatter plots, Chi-square test including testing hypothesis of association, association of attributes.

**Linear Regression Analysis:** Meaning and two lines of regression; relationship between correlation and regression co-efficient.

**Test of Significance:** Small sample tests: t (Mean, proportion) and F tests, Z test, Non parametric tests: Binomial test of proportion, Randomness test; Analysis of Variance: One way and two□way Classifications.

**Research Report:** Research Ethics, Structure of Research report, Report writing and Presentation. Referencing styles and citation.

## **Subject Concerned Syllabus Management**

### **Unit-I : Managerial Economics**

Demand Analysis, Production Function and Production Theory, Cost-Output Relations, Market Structures, Pricing Techniques, Demand – Cost – Profit – Forecasting, Macro-Economics, National Income Concepts, Economic policy – Export import Policy, Business Environment

### **Unit-II : Principles and Practices of Management and Organizational Behavior**

Functions of Management, Concept and significance of organizational behavior, Theories of organizational behavior. Organizational Structure.

Individual behavior - Personality-Perception-Values-Attitudes; Group Behavior-Group dynamics, Teamwork.

Motivation- Types and Theories of Motivation. Leadership – Types and Theories. Learning – Types and Barriers. Conflict Management – Types. Change Management. Communication - Types and Barriers.

Organizational Development – Theories, Intervention and Models.

### **Unit-III : Human Resource Management**

Concepts and Perspectives in HRM- Human Resource Planning- Objectives, Process and Techniques. Job analysis-Job Description- Job Evaluation. Recruitment and Selection and Exit Policy. Training and Development- Types, Training Need Analysis and methods. Performance Appraisal and Evaluation Types and Methods. Compensation Management and Wage Determination. Industrial Relations and Trade Unions. Dispute Resolution and Grievance Management. Labour Welfare

### **Unit-IV : Financial Management**

Financial Management-Nature and Scope. Long Term and Short Term financing instruments. Time Value of Money and cost of Capital. Capital Structure. Capital Budgeting and Risk analysis. Working Capital Management. Dividend policy, determinants. Financial analysis, Ratio analysis and Cash flow statements.

### **Unit-V : Marketing Management**

Marketing Orientation, Core Concepts in Marketing-Value, Satisfaction, Marketing Mix. Marketing Environment and Environment Scanning; Marketing Information Systems and Marketing Research; Understanding Consumer and Industrial Markets; Demand Measurement and Forecasting; Market Segmentation-Targeting and Positioning; Product Decisions, Product mix. Product Life Cycle; New Product Development; Branding and Packaging; Pricing Methods and Strategies. Promotion Decisions-Promotion mix; Advertising; Personal Selling; Channel Management; Vertical Marketing Systems; Evaluation and Control of Marketing Effort; Marketing of Services; Customer Relation Management Digital Marketing, e-commerce-B2B, B2C.

### **Unit-VI : Production Operations Management**

Role and Scope of Production Management; Facility Location; Layout Planning and Analysis; Production Planning and Control-Production Process Analysis; Demand Forecasting for Operations; Determinants of Product mix; Production Scheduling; Work measurement; Time and Motion Study; Statistical Quality Control. Role and Scope of Operations Research; Linear Programming; Transportation Model; Inventory Control; PERT/CPM. Concept of Supply Chains, Responsive and Efficient Supply Chains, Retail Supply Chain, Industrial Supply Chain and Digital Supply Chain Management, Services Supply Chain.

### **Unit-VII : IT in Management**

Use of Computers in Managerial applications; Technology issues and Data processing in organizations; Information systems; MIS and Decision making; System analysis and design; Internet and Internet-based applications;

## **Unit-VIII : Corporate Strategy and Business Ethics**

Concept of Corporate Strategy; Components of Strategy Formulation; Ansoff's Growth Vector; BCG Model; Porter's Generic Strategies; Competitor Analysis; Strategic Dimensions and Group Mapping; Industry Analysis; Strategies in Industry Evolution, Fragmentation, Maturity, and decline. Competitive strategy and Corporate Strategy; Managing Cultural Diversity; Global Entry Strategies; Globalization of Financial System and Services.

Ethical issues in Management; Corporate Social Responsibility; Corporate governance and ethics.

## **Unit-IX Innovation and Entrepreneurship**

Concepts-Types, Characteristics; Motivation; Competencies and its development; Innovation and Entrepreneurship; Small business-Concepts Government policy for promotion of small and tiny enterprises; Process of Business Opportunity Identification Detailed business plan preparation; Managing small enterprises; Planning for growth; Sickness in Small Enterprises; Rehabilitation of Sick Enterprises; Entrepreneurship (Organizational Entrepreneurship)  
Start-up Ventures

## **Subject Concerned Syllabus Management Sciences : Computer Applications**

**Programming concepts:** introductions, Programming language syntax, Name, scope binding, Semantic analysis, Data types, Subroutine & control abstraction, Data abstraction & object oriented concepts, Concurrency.

### **Relational Database Design and SQL**

E R diagrams and their transformation to relational design, normalization-1NF, 2NF, 3NF, BCNF and 4NF. Limitations of 4NF and BCNF.

*SQL* : Data Definition language (DDL), Data Manipulation Language (DML), Data Control language (DCL) commands. Database objects like-Views, indexes, sequences, synonyms, data dictionary.

### **Computer Networks**

*Network fundamentals* : Local Area Networks (LAN), Metropolitan Area Networks (MAN), Wide Area Networks (WAN), Wireless Networks, Inter Networks.

*Reference Models* : The OSI model, TCP/IP model.

*Data Communication* : Channel capacity, Transmission Media-twisted pair, coaxial cables, fiber-optic cables, wireless transmission-radio, microwave infrared and millimeter waves. Light wave transmission, Telephones-local loop, trunks, multiplexing, switching, narrowband ISDN, broadband ISDN, ATM, High speed LANS, Cellular Radio. Communication satellites-geosynchronous and low-orbit.

*Internetworking*: Switch/Hub, Bridge, Router, Gateways, Concatenated virtual circuits, Tunneling, Fragmentation, Firewalls.

*Routing* : Virtual circuits and datagrams, Routing algorithms, Congestion control.

Network Security -Threat: Active attack, Passive Attack, Cryptography: Symmetric and Asymmetric key cryptography, Security services : SSL, VPN and VPN protocols, Firewall: Packet filter, application gateway .

**Advance Network Technologies** 802.4, Wi-Max, LTE, Cloud Computing , Grid computing, HSPA, IPTV, FTTH,

**IP Addressing & Routing** IP addresses – Network part and Host Part ,Network Masks, Network addresses and Broadcast addresses, Address Classes, Loop back address, IP routing concepts, Routing Tables, Stream & Packets ,Sliding Windows , Role and Features of IP, TCP ,TCP Connections types and working. IPV6: The next generation Protocol.

### **Content Management And Disseminations**

E-learning – Models WBT, CBT, Virtual Campus, LMS & LCMS, Video Conferencing, Chatting Bulletin, Building Online Community, asynchronous/ Synchronous Learning, Case Study

**Object Oriented Analysis & Design** -Introduction , The Object Paradigm , Introduction to UML & Modeling , Object-Oriented Systems Development Process , Structural Modeling , Behavioral Modeling , Architectural Modeling , Persistent Object and Database Issues , Testing of Object oriented applications , Patterns

### **Advanced Internet Technologies –**

HTML5 ,XML , JQuery , AJAX , PHP

**IT Infrastructure Management** - IT Infrastructure , Service Delivery Process , Service Support Process , Storage Management , Security Management

### **Information Security -**

Information Systems , Cryptographic Tools ,Models , Frameworks , Standards & Legal Framework, Controls , Viruses & Malware , Security Issues

**Data Ware housing , Mining, BI-** Data Warehousing , Knowledge Base Systems & Expert Systems , Association ,Classification & Clustering , Data mining problems & approaches , BI Architecture , BI Applications ,BI Analytics

**Information Security Architecture** - Information System , Information Security Management in Organizations , Models, Frameworks , Standard s & Legal Framework , Controls , Auditing for Security , Security issues.

**Cloud Computing-** Introduction to Cloud Computing , Virtualization , Infrastructure as a service , Platform as a service , Cloud Security , Issues in Cloud computing

**E-Commerce** - Introduction to e-commerce , Mobile Commerce , Electronic Payment Systems , Security issues in e-commerce ,

**Knowledge Management** - Introduction to Knowledge Management , Knowledge Management Technologies and Systems , Knowledge Management Tools , Knowledge Management Team

**Intellectual property Rights** - Intellectual Property law basics ,Types of Intellectual Property Agencies responsible for Intellectual Property registration ,International organizations, Agencies and Treaties, Increasing importance of Intellectual Property Law

**Software Quality Assurance & Infrastructure** - Fundamentals , Software Reliability , Software Verification & Activities , Software Quality Assurance Plan , Metrics , Metrics Methodologies , Software Quality Infrastructure components

**Internet of Things** - Introduction , Model , Connectivity Methods & Protocols ( Technologies) , IOT Platforms , Security , Privacy , IOT Applications

**Service Oriented Architecture (SOA)** - Introduction , Web Services and contemporary SOA , SOA and Service Orientation , Building SOA, SOA Service Design

**BIG DATA Analytics** - “Big Data” in the Enterprise , Big Data Implications for Industries , Application Architectures For Big Data And Analytics , Data Modeling Approaches for Big data And Analytics Solution , NOSQL , Extracting Value From Big Data

**Software Testing Tools** - Software Testing Fundamentals , Review of software development models , Approaches for testing , Black Box & White Box Testing , Different types of Testing, Static & Dynamic Testing

**Cloud computing fundamentals** - Cloud computing definition, Private, public and hybrid cloud , Cloud types; IaaS, PaaS, SaaS. ,Cloud architecture ,Benefits and challenges of cloud computing, Role of virtualization in enabling the cloud; Benefits and challenges to Cloud architecture , Cloud security and disaster recovery; Next generation Cloud Applications. Advantages and disadvantages of cloud