Department of Banking Technology

School of Management

Ph.D Programme: Banking Technology

Regulations

Course Structure & Syllabus

(as per New Ph.D guidelines)

Submitted to School Board

2011-12 onwards

Ph.D in Banking Technology

Regulations

Genesis

Department of Banking Technology was established in 2005 to offer a specialized MBA Programme funded by UGC under its innovative/ inter disciplinary funding schemes. This department is admitted for full funding by UGC from the Financial Year 2009-10. The Ph.D Programme in Banking Technology is launched in the Academic year 2009-10. Course structure and syllabus are new revised as per the new Ph.D guidelines.

Intake and Eligibility

The annual intake into this Ph.D programme depends on vacancies with eligible guides. Every teacher can admit a total of 8 candidates over 3 years.

The eligibility criteria are as follows:

> - ***MBA: Banking Technology***
> - ***MBA (Finance/ Systems) (or) Equivalent Management Programmes like IIM – PG Diploma in Management***
> - ***M.Com (Business Finance) (or) Professional degrees like CA, ICWA, ACS, CFA, Any PG degree with CAIIB***
>   ***(or)***
> - ***ME/ M.Tech (CS/ IT)***
> - ***MCA/ M.Sc (Comp. Sci.)***
>
>   (Any of the above Degrees with 55% Marks)

Faculty and Eligible Guides

Professor:

    1. **Dr. K. Chandra Sekhara Rao**, Ph.D@   Corporate Finance
       Professor & Head   International Financial Mgt
                                           Investment & Portfolio Mgt

Associate Professor:

    2**. Dr. V. Prasanna Venkatesan,** M.Tech., Ph.D@   Software Architecture
                                         Banking Technology Mgt
                                       Object Oriented Systems

*Readers***:**

    3. **Dr**. **T. Chithralekha**, M Tech, Ph.D@   Information Security
                                           Data warehousing

	Agent Technology
4. **Dr. R. Sankaranarayanan**, Ph.D@ *(Formerly AGM, IOB, Chennai)*	Banking & Finance Bank Management Forex Management
5. **Dr. S. Sudalaimuthu**	Corporate Finance, Financial Services, Financial Information Systems, Logistics Management
6. **Dr. V. Marriappan**	Banking, Strategic Finance, Managerial Economics, Cyber Crimes, Financial Reporting

Assistant Professors:

7. **Shri. A. Balakrishnan**	Finance &Accounting, Security Analysis & Port Folio Management, Treasury and derivative Management
8. **Shri. CP. Abdul Gafoor**	Indian Banking, Management Strategy, Foreign Exchange

Interdisciplinary Ph.D Programme

Ph.D in Banking Technology is classified as Interdisciplinary programme. Candidates from Commerce, Management and Computer Science/ Information Technology are eligible to conduct their Doctoral Programme.

Thrust Areas

- Banking Technology Management
- Financial Management
- Management of Banking & Financial Institutions
- Security Analysis and Portfolio Management
- Derivatives Management
- Information Security
- Data Warehousing & Data Mining
- Network Management
- Software Architecture

Admission Procedure

Admission is open under Full Time, Part-Time (Internal) and Part-Time (External) Categories. Admission to Ph.D programme is done through an All India Admission Test followed by an Interview. Admissions are generally done along with regular PG programmes. At present the admission is done during July – August. Certain Categories of part time candidates are exempt from Written Test. However, all part time candidates should present their aptitude for research through Publications and paper presentations in National/ International Conferences.

Fee Structure

Ph. D. Programmes

Sl. No	Item	Ph.D. (all figures in Indian Rupees)		Account No
		Full-Time & Part-Time Internal	Part-Time External	
1	Research Fee: (p.s.) For Foreign national (p.s.): SAARC / Developing Countries South-East Asian Countries Others	1000 (Humanities) 1200 (Sciences) US $250 US $500 US $750	2000 2400 US $250 US $500 US $750	201
2	Registration Fee	100	100	
3	Matriculation Fee	50	50	
4	Recognition Fee: For degrees from Indian universities For degrees from foreign universities	200 500	200 500	
5	Identity Card Fee	25	25	
6	Sports Fee (p.a.)	100	100	
7	Medical Examination Fee (p.a.)	50	50	
8	Library Fund (p.s.)	600	600	
9	Laboratory Fee Science Courses having laboratories(p.s.)	500	500	
10	Internet Fund (p.s.)	250	250	
11	Students' Welfare Fund (p.a.)	100	100	204
12	Alumini Association Fund (to be paid before sub-mission of thesis)	100	100	
13	Caution Deposit (Refundable) Laboratory(Science Courses) Library	500 500	500 500	
14	Group Medical Insurance (for full-time candidates only)	432	-	
15	University Development Fund	500	500	213
16	Software Subscription Fee	3000	3000	171

Course Structure

The Course structure for this Ph.D programme consists of

I: Background course work
   (3 subjects during 1st Semester)

II: Pre-Ph.D Course work
   (3 subjects during II Semester)

III: Ph.D Thesis/ Dissertation
   (During III – VI Semester)

IV: Public Viva Voce examination

I BACKGROUND COURSE WORK:

Background Course work is compulsory for all candidates who do not possess MBA: Banking Technology degree.

Compulsory Course work during 1st Semester
(Two Streams)

Stream I (For IT Background Students)

PHDBT	*611*	*Indian Banking & Financial Systems*	*Soft*	*6 Credits*
PHDBT	*612*	*Accounting and Finance for Manager*	*Soft*	*6 Credits*
PHDBT	*613*	*Management Concepts & Organisation Behavior*	*Soft*	*6 Credits*

Stream II (For Non IT Students)

PHDBT	*615*	*Financial Information System*	*Soft*	*6 Credits*
PHDBT	*616*	*Business Intelligence*	*Soft*	*6 Credits*
PHDBT	*617*	*Banking Technology Management*	*Soft*	*6 Credits*

Pre-Ph.D Courses

Compulsory for all candidates. Candidates with M.Phil / M.Tech degree are given exemption.

PHDBT	*621*	*Research Methodology and Statistical Techniques*	*Hard*	*6 Credits*
PHDBT	*623*	*Area Paper*	*Soft*	*6 Credits*

Ph.D: BANKING TECHNOLOGY DEGREE PROGRAMME

PHDBT 611   : INDIAN BANKING & FINANCIAL SYSTEM

Soft Core
6 Credits

1. **Introduction**: Definition and Meaning of Banking – Systems of Banking – Branch Banking – Unit banking – Correspondence Banking – Indian Banking – Central Banking – RBI – Origin and growth – Functions – Bank Nationalization in India – Banking Regulation Act – Banking Sector Reforms.

2. **Financial System**: Meaning – Concepts – Financial System and Economic Development – Theoretical development and Empirical evidence of Gurley and Shah, Donaldson, etc – Financial structure – Financial Markets

3. **Structure of Indian Financial System** – Money and Capital Markets – Money Market : Sub markets – Characteristics of well developed Money Market – Bill Market scheme – Components – Reforms in Indian Money Market

4. **Capital Market** : Meaning, Components – New Issue Market, Private Placements – Book Building, Secondary Market – Stock exchange – Reforms in Indian Capital Market – Regulations by SEBI – Indian Debt market – Government and Private – **Non-Banking Financial Intermediaries** – Chit funds companies – Nidhis – Finance companies – Hire Purchase and Leasing and Insurance sector.

5. **Foreign Exchange Market** : Meaning and structure – Regulatory authority in India – Players in Forex Market – Authorized dealers and Money changers

Basic Text Book & References:

1. *Bhole L M., Financial Markets and Institutions , Tata Mc Graw Hill, Delhi, 2010 (Text Book).*
2. Srivastava R M., Management of Indian Financial Institutions, Himalaya Publishing House, Mumbai 2007.
3. Khan M Y., Indian Financial System, Tata Mc Graw Hill, Delhi 2009.
4. Tennan M L., Banking : Law and Practice in India, India Law House, New Delhi 2005.
5. Dekock: Central Banking: Crosby Lockwood Staples, London 2007.

Ph.D: BANKING TECHNOLOGY DEGREE PROGRAMME
PHDBT 612 : ACCOUNTING & FINANCE FOR MANAGERS

Soft Core
6 Credits

1. **Financial Accounting**: Accounting Concepts and Conventions – Recording of Business Transactions – Double Entry System – Journal – Ledger – Trail Balance – Preparation of Final accounts

2. **Joint Stock Company Accounts**: Issue of Shares (Principles only) – Final Accounts of Companies (Format only) – Banking Company accounts – Capital and Reserves- Preparation of Final Accounts of Banking Companies- Non-Performing assets – Asset Classification and Provisioning

3. **Management Accounting**: How Management accounting differs from Financial Accounting – Financial Analysis – Tools of Financial Analysis – Ratio Analysis – Computation and Interpretation of Ratios - **Funds Flow analysis** – Preparation of Funds Flow Statement – Cash flow Analysis – Preparation of Cash Flow statement – Evaluation of Funds and cash Flow analysis

4. **Marginal Costing and Profit Planning**: Cost-Volume-Profit analysis – Applications of Marginal Costing Techniques - **Budgetary Control and Standard Costing**: Budgets and Budgetary Control – Preparation of Budgets – Standard Costing and Variance Analysis – Calculation of Material Cost Variance and Labour Variance – Utility of Variance Analysis.

5. **Introduction to Tally** - Basic features – Undervalue, Preparation of Ledger accounts on Tally- Preparation of Invoices- subsidiary books -Display__ of final accounts - Ratios (Practice sessions: 10)

Basic Text Book & References:

1. *Gupta R L and Radhaswamy M, Advanced Accounts, Vol I , Sultan Chand & Sons, New Delhi (Text Book) 2009.*
2. Jain S P and K L Narang, Advanced Accounts, Kalyani Publishers, Ludhiana 2005.
3. Jain S P and K L Narang, Cost Accounts, Kalyani Publishers, Ludhiana 2007.
4. Maheswary S N, Management Accounting, Sultan Chand & Sons, New Delhi 2005.
5. Shukla M C and Grewal T S, Advanced accounts, Vol I , S Chand & Co, New Delhi 2010.

Ph.D: BANKING TECHNOLOGY DEGREE PROGRAMME

PHDBT 613 : MANAGEMENT CONCEPT AND & ORGANISATION BEHAVIOUR

Soft Core
6 Credits

1. **Nature of Management** : Tasks of a Professional Manager – Social Responsibilities of Business – Manager and Environment – Systems approach to Management – Levels in Management – Managerial Skills

2. **Planning**: Steps in Planning process – Scope and Limitations – Short Range and Long Range Planning – Flexibility in Planning – Characteristics of a Sound Plan – Management by Objectives (MBO) – Policies and Strategies – Scope and Formulation – Decision Making – Techniques and Process

3. **Organizing**: Organization Structure and Design – Authority Relationships – Delegation of Authority and Decentralization – Interdepartmental Coordination – Emerging trends in Corporate structure, strategy and Culture – Impact of Technology on Organizational design – Mechanistic Vs Adoptive structures – Formal and Informal Organizations

4. **Staffing**: Overview of staffing and directing functions – Controlling – Prerequisites of Control systems – Control process – Methods, Tools and Techniques of Control – Design of Control Techniques – Choices in Control

5. **Comparative Management Styles** and Approaches: Japanese Management Practices – Organizational Creativity and Innovation – Management of Innovation – Entrepreneurial Management – Bench Marking – Best Management Practices across the World – Management of Diversities – Select cases of domestic and international corporations

Basic Text Book & References:

1. *Koontz, Harold, Cyril O' Donnell and Heinz Weihrich., Management, Tata Mc Graw Hill, New Delhi (Text Book) 2007.*
2. Richard M Hodgets, Management, Academic Press, New Jersey 2005.
3. Drucker, Peter F., Practice of Management, Pab Books, NY 1998.
4. Drucker, Peter F., Innovation and Entrepreneurship, Heinman, NY 1999.
5. Rao VSP., Organisational Behavior, S Chand & Co., New Delhi, 2001.

Ph.D: BANKING TECHNOLOGY DEGREE PROGRAMME

PHDBT 615 : FINANCIAL INFORMATION SYSTEM

Soft Core
6 Credits

1. **Basic concepts of Data, Information and System** – Evolution and need of information system – Decision making concepts – organizational decision making – information concepts as a quality product – classification of the information – Methods of Data and information collection – Human as a information processor – information system concepts – Characteristics of Information system – Types of information system – Technology of information systems.

2. **Database Management Systems** – Concepts – Structure of Database System – Data Independence – Structure of DBMS - Characteristics of DBMS – Data Models – Relational Model – Database Design – Database analysis and ER Modelling – SQL – Normalization – Concurrency, Transactions and Implementations – Metadata, Security and DBA – Types of DBMS.

3. **Role and impact of MIS** – Role and importance of management – Approaches to Management – Functions of the manager – Management as a control system – MIS & Client Server Architecture – Process of management – Planning – Organization – Staffing – Co-ordination and Controlling – Management by exception – MIS as a support to management – Organization structure and Theory – Basic model and organization structure – Organizational Behaviour.

4. **System analysis and design** – Need for system Analysis – System Analysis of existing System – System Development Model – Structured Systems Analysis and Design – Development of MIS – Development of long Range plans of the MIS. **Deterministic systems** – Artificial intelligence – Knowledge Based Expert System – MIS and the role of DSS – Enterprise management systems – EMS – Enterprise Resource Planning (ERP) system – ERP basic features – benefits – selection – implementation.

5. **Financial Information System** – Concepts – Financial Decision Support System – Financial Decision Process – Internet and Web based Information System – Next Generation Information System – Electronic commerce – Electronic Business – Commercial applications – Information system in Banks – Case Studies – Design and development using CASE Tools.

Basic Text Book & References:

1. *W.S.Jawadekar, Management Information Systems, Tata McGraw Hill Publishing Company Limited, 2005. (Text Book)*
2. Kenneth C Landon and Jane P.Laudon, "Management Information Systems", Prentice Hall, Sixth edition, 2000.
3. Effy Oz, Management Information Systems, Thomson Learning, 2007.
4. Gordon B. Davis and Margerethe H.Olson, Management Information System, McGraw Hill 2005.
5. Jerome Karnter, Management Information System, III edition, PHI, 2000.
6. C.J.Date, An Introduction to Database Systems, Pearson Addison Wesley, Eighth Edition, 2008.
7. Abraham Silberschatz, Henry F.Korth and S.Sudarshan, Database System Concepts, McGraw-Hill, Fourth Edition, 2010.

Ph.D: BANKING TECHNOLOGY DEGREE PROGRAMME
PHDBT 616 : BUSINESS INTELLIGENCE

Soft Core
6 Credits

UNIT I

BI Data Warehousing and Business Analysis: - Data warehousing Components –Building a Data warehouse – Mapping the Data Warehouse to a Multiprocessor Architecture – DBMS Schemas for Decision Support – Data Extraction, Cleanup, and Transformation Tools –Metadata – reporting – Query tools and Applications – Online Analytical Processing (OLAP) – OLAP and Multidimensional Data Analysis - Interface of BI with organization capability - Paperless office & Virtual Organization.

UNIT II

Knowledge Discovery - Data Mining: - Data Mining Functionalities – Data Preprocessing – Data Cleaning – Data Integration and Transformation – Data Reduction – Data Discretization and Concept Hierarchy Generation. Association Rule Mining: - Efficient and Scalable Frequent Item set Mining Methods – Mining Various Kinds of Association Rules – Association Mining to Correlation Analysis – Constraint-Based Association Mining. Data Mining tools, Market Basket Analysis, Management Applications Customer Relations Management (CRM) Data Visualization and Multidimensionality Geographical Information Systems (GIS) and Business applications.

UNIT III

Classification and Prediction: - Issues Regarding Classification and Prediction – Classification by Decision Tree Introduction – Bayesian Classification – Rule Based Classification – Classification by Back propagation – Support Vector Machines – Associative Classification – Lazy Learners – Other Classification Methods – Prediction – Accuracy and Error Measures – Evaluating the Accuracy of a Classifier or Predictor – Ensemble Methods – Model Section.

UNIT IV

Cluster Analysis: - Types of Data in Cluster Analysis – A Categorization of Major Clustering Methods – Partitioning Methods – Hierarchical methods – Density-Based Methods – Grid-Based Methods – Model-Based Clustering Methods – Clustering High-Dimensional Data – Constraint-Based Cluster Analysis – Outlier Analysis - Mining Object, Spatial, Multimedia, Text and Web Data: Multidimensional Analysis and Descriptive Mining of Complex Data Objects – Spatial Data Mining – Multimedia Data Mining – Text Mining – Mining the World Wide Web.

UNIT V

Other Decision Supporting Technologies - Executive Support Systems, Knowledge Management Characteristics and Capabilities of DSS Collaborative Computing Technologies: Group Support Systems Intelligent Support Systems (Expert Systems, ANN, Genetic Algorithm etc.) and their Managerial Applications

REFERENCES

1. Jiawei Han and Micheline Kamber "Data Mining Concepts and Techniques" Second Edition, Elsevier, Reprinted 2010.

2. Alex Berson and Stephen J. Smith "Data Warehousing, Data Mining & OLAP", Tata McGraw – Hill Edition, Tenth Reprint 2007.

3. K.P. Soman, Shyam Diwakar and V. Ajay "Insight into Data mining Theory and Practice", Easter Economy Edition, Prentice Hall of India, 2006.

4. G. K. Gupta "Introduction to Data Mining with Case Studies", Easter Economy Edition, Prentice Hall of India, 2006.

5. Pang-Ning Tan, Michael Steinbach and Vipin Kumar "Introduction to Data Mining", Pearson Education, 2007.

PHD: BANKING TECHNOLOGY DEGREE PROGRAMME

PHDBT 617: BANKING TECHNOLOGY MANAGEMENT

Hard Core
6 Credits

1. **Branch Operation and Core Banking -** Introduction and Evolution of Bank Management – Technological Impact in Banking Operations – Total Branch Computerization – Concept of Opportunities – Centralized Banking – Concept, Opportunities, Challenges & Implementation

2. **Delivery Channels -** Overview of delivery channels – Automated Teller Machine (ATM) – Phone Banking – Call centers – Internet Banking – Mobile Banking – Payment Gateways – Card technologies – MICR electronic clearing

3. **Back office Operations** - Bank back office management – Inter branch reconciliation – Treasury Management – Forex Operations – Risk Management – Data centre Management – Net work Management – Knowledge Management (MIS/DSS/EIS) – Customer Relationships Management (CRM)

4. **Interbank Payment System -** Interface with Payment system Network – Structured Financial Messaging system – Electronic Fund transfer – RTGSS – Negotiated Dealing Systems & Securities Settlement Systems – Electronic Money – E Cheques

5. **Contemporary Issues in Banking Techniques** – Analysis of Rangarajan Committee Reports – E Banking - Budgeting – Banking Softwares – Case study: Analysis of Recent Core Banking Software.

Basic Text Book & References:

1. **Financial Services Information Systems - Jessica Keyes Auerbach publication; 2nd edition (Text Book) 2010.**
2. Kaptan S S & Choubey N S., "E-Indian Banking in Electronic Era", Sarup & Sons, New Delhi, 2008
3. Vasudeva, "E – Banking", Common Wealth Publishers, New Delhi, 2008
4. Turban Rainer Potter, Information Technology, John Wiely & Sons Inc. 2010
5. Banking Technology - Indian Institute of Bankers Publication 2010.

PHD: BANKING TECHNOLOGY DEGREE PROGRAMME

PHDBT 621: RESEARCH METHODOLOGY

Hard core
6 Credits

Unit I: Research Methodology and Design: Approaches Selection of Problem Techniques involved in defining a problem Concept of Research Design Basic Principles Sample Survey - Sampling Designs.

Unit II: Techniques of survey and collection of data Objectives and Hypothesis Scaling techniques - design of questionnaire and schedules collection of data interview technique experimental and case study Pilot study processing of data Tabulation.

Unit III: Formulation of Hypothesis Null and Alternative Hypothesis Analysis of data Statistical measures Bivariate analysis Sampling Level of significance Testing of Hypothesis Difference in Means Proportions Variance Testing correlation and regression coefficients.

Unit IV: Parametric and Non parametric tests ANOVA Interactional effects Multivariate Analysis of variance (MANOVA) Analysis of covariance (MANCOVA) Non-parametric Tests Chisquare test Test of goodness of fit Kolmograv Smirnov Test- Krushal wallis test of one way AOV Mann Whitney U test- Sign test- kendall s coefficients of concordance Turkey HSD tests Duncan s Multi-range test Friedman two analysis.

Unit V: Multi-variate Analysis and Time Series Tests on interdependencies Factor Analysis Principal components Canonical Correlations- Discriminate Analysis- Cluster Analysis Conjoint Analysis Time Series ARIMA Box-Jenkinson's models Forecasting Methods.

Unit VI: Research Reports and Review: Research Report types indexing- Review of Research works in the area of Finance, Marketing, Personnel Management Methodology adopted Techniques employed.

Books:

1) C.R Kothari Research Methodology: Methods and Techniques Wiley Eastern Ltd., New Delhi, 2007.
2) Gideon Sjoberg & Roger Nett; A methodology for a social Research, Rowat Publication, New Delhi 2002.
3) Roa KV, Research Methodology; Himalaya, Bombay, 2001.
4) D. Amarchand (Ed), Research Methods in commerce, Emerald, Madras 1997.
5) Anderson. T.W, Introduction to Multivariate statistical analysis, Wiley estern, New York, 2007.
6) Hajek, Jaroslav, A course in Non- Parametric Statistics, Holden day, San Francisco, 2004.
7) Daniel, Wagne W, Biostatistics , Wiley & Sais, Taranto, 2007.
8) Afifi AA and Virginia Clark computer aided Multivariate Analysis, Life time Learning Publication co., California, 1999.

PHD: BANKING TECHNOLOGY DEGREE PROGRAMME

PHDBT 623: AREA PAPER

(TO BE DECIDED BY THE DOCTORAL COMMITTEE FOR EACH CANDIDATE SEPARTELY BASED ON THE BROAD FIELD OF RESEARCH)

Hard Core
6 CREDITS

Syllabus is designed based on at least 30 Reprints of Papers Published in National and International journals. The topics should cover the theoretical Background, empirical works and Cross Country/ Cross industry experiences.