ONGOING COURSE WORK
7TH SEMESTER:

HUM 4051: FINANCIAL MANAGEMENT [3 0 0 3]
(Program Elective – 3 credits)

Introduction and objectives of financial management, Evolution of corporate finance, responsibilities. Types of accounts, Golden rules of accounting, Preparation of journal, Ledger, Trial balance and final accounts. Sources of long-term finance, Characteristics of equity capital, Preference capital, Debenture capital & Term loans. Valuation of securities, Concepts, Bond valuation and related models, Bond value theorems, Yield to maturity. Equity valuation; Dividend capitalization approach, Leverage, Operating leverage, financial leverage, Total leverage, Indifference point analysis. Working capital management, Capital budgeting: appraisal criteria, pay-back period, Average rate of return, Net present value, Benefit cost ratio and internal rate of return. Risk analysis in capital budgeting, Cost of capital: introduction, cost of debt capital, Preference capital and Equity capital, Weighted average cost of capital, Determination of proportions, Cash management, Dividend decisions.

References:
1. Prasanna Chandra.,*Financial Management-Theory and Practice,9/e,* Tata McGraw Hill Education Pvt Ltd., New Delhi, 2016.
2. I M Pandey, *Financial Management*, Vikas Publishing House Pvt Ltd.,, New Delhi, 2015.
3. N Ramachandran & Ram Kumar Kakani, *Financial Accounting for Management*, 3/e, Tata McGraw Hill Education Pvt Ltd., New Delhi, 2011.
4. Eugene F Brigham & Michael C E, *Financial Management: Theory and Practice*. 12e, Cengage Learning, India, 2008.
5. Maheshwari S.N., *Financial Management*, Sultan Chand & Co., New Delhi, 2002.

HUM 4061: INTELLECTUAL PROPERTY MANAGEMENT [3 0 0 3]
(Program Elective – 3 credits)

Brief overview on intellectual property rights, Origin of Patent systems and criteria for patenting and subject matter, limitations in India, Components of IPR: Trademarks, Copyrights, Trade secrets, Legislative framework of Patent office (India, USA) and Patent filing procedure, Revocation of Patents, Treaties governing IPR and TRIPS, Licensing and technology transfer, Patent Cooperation treaty, Patent search and processing and drafting of patent specifications, Compulsory licensing and patent as business tool.

References
1. Manual of patent practice and procedure, 2019 www.ipindia.gov.in2. Patent office websites: India, US
3. Basic concepts of Intellectual Property Rights by Manthan D Janodia, Manipal University Pres, 2015.
4. Law relating to intellectual property by BL Wadehra. Universal Law publishing, 2016
5. Intellectual Property Rights in India by VK Ahuja, Lexis Nexis, 2015.
6. Official website of WIPO.

CSE 4066: ETHICAL HACKING AND CYBER SECURITY [3 0 0 3]
(Program Elective – 3 credits)

Computer Security concepts, Introduction to ethical hacking, Phases in ethical hacking, TCP/IP concepts review, Network and computer attacks, Foot-printing and Social engineering. Port Scanning, Types of port scans, Enumerating Windows operating systems, NETBIOS enumeration tools, DumpSec, Hyena, Nessus and open VAS, Tools for identifying vulnerabilities, Built-in Windows tools, Best practices in hardening Windows systems, Patching systems, Antivirus solutions, Windows OS vulnerabilities, Hacking web servers, Understanding web application vulnerabilities, Application vulnerabilities and counter measures, Tools for web attackers and security testers, Cybercrime: Mobile and Wireless devices, Tools and methods used in cybercrime, Cybercrimes and cybersecurity.

References:
1. Michael T. Simpson, Nicholas D. Antill, *Hands-On Ethical Hacking and Network Defense*, (3e), Cengage Learning, 2016.
2. William Stallings, *Cryptography and Network security*, (7e), Pearson, 2017.
3. Sumit Belapure, Nina Godbole, *Cyber Security: Understanding cybercrimes*, *Computer Forensics and Legal perspectives*, (1e) Wiley India, 2011.
4. Rafay Baloch, *Ethical hacking and penetration testing guide*, CRC Press, Taylor & Francis Group, 2015.
5. Kimberly Graves, *Official Certified Ethical Hacker Study Guide*, (1e), Wiley India, 2010.
6. Mark Taber, *Maximum Security: A Hacker's Guide to Protecting Your Internet Site and Network*, 1997.

CSE 4057: INTERNET OF THINGS [3 0 0 3]
(Program Elective – 3 credits)

Introduction to internet of things, loT in global context, Design Principles, loT Technology Fundamental- Devices and gateways, Local and wide area networking, Data management, Business processes in loT, loT reference Architecture, loT Domain Model, Functional Model, Information Model, Communication Model, Deployment and Operational View, loT Prototyping- Prototyping Embedded Devices, Electronics, Sensors, Actuator, Embedded Computing Basics, Arduino, Raspberry Pi, BeagleBone Black, IoT Use Cases - Industrial Automation, Smart Home, Smart City, Commercial Building Automation.

References:
1. McEwen A., Designing the Internet of Things, Wiley, 2014
2. Holler J., From Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence, Academic Press, 2014.
3. Francis daCosta, Rethinking the Internet of Things: A Scalable Approach to Connecting Everything, Apress Publications, 2013
4. Pethuru R., The Internet of Things: Enabling Technologies, Platforms, and Use Cases, CRC Press, 2017
5. Vijay M., Internet of Things (A Hands-on-Approach), Universities Press, 2014
6. Daniel M., Building the Internet of Things with IPv6 and MIPv6: The Evolving World of M2M Communications, Wiley, 2013.

CSE 4076: SOFTWARE TESTING AND ANALYSIS [3 0 0 3]
(Program Elective – 3 credits)

Introduction, Software Quality, Behaviour and Correctness, Correctness versus
Reliability, Testing and Debugging, V-Model, Boundary Value Analysis, Robustness
3. Booch Grady, Rambugh James, Jacobson Ivar, *The Unified Modeling Language
User Guide*, Second Edition, Pearson Education, 2010.
4. G Lasater, *Design patterns*, Wordware publishing Inc, 2007.Testing, Worst Case Testing,
Special Value Testing, Random Testing, Equivalence Class
Testing, Decision Tables, Test Cases based on Decision Tables, Test adequacy basics,
Adequacy criteria based on control flow, data flow concepts, Adequacy criteria based on
data flow, Test Assessment using Mutation, Regression Test Process, Selecting
Regression Tests, Test Design, Using JUnit or NUnit, Stubs and Mocks, Integration errors,
Dependence, OO Versus Non-OO programs, Integration Hierarchy, Automated test
generation techniques.
References:
1. Aditya P Mathur, *Foundations of Software Testing*, (2e), Pearson Education, 2008
2. Paul C. Jorgensen, *Software Testing A Craftsman's Approach*, (3e), 2013
3. Mauro Pezze, Michal Young, *Software Testing and Analysis: Process, Principles and
Techniques*, Wiley, 2008
4. Gopalaswamy Ramesh, Srinivasan Desikan, *Software testing Principles and
Practices*, (2e), Pearson, 2007

BIO 4301: BODY MIND MEDICINE
(Open Elective – 3 credits)

8TH SEMESTER:

CSE 4298 Industrial Training **(1 credit)** – Completed at SAP Labs Bangalore (find
Completed Certificate below)

CSE 4299 Project Work/Practice School **(12 credits)** – Accepter Offer at SAP Labs
Bangalore

03.08.2023

TO WHOM IT MAY CONCERN

This is to certify that Mr. Rushin Reddy Ramesh, student of Manipal Institute of Technology has successfully completed his/her project as a backend security intern at SAP Labs, Bangalore, India under the guidance of Mrs. Mukta Sriram Gudlavaletti, team manager.

Documentation of the application in the project report is not feasible due to its confidential nature. The interns are not allowed to share the application outside the workplace.

This project is in partial fulfillment of the requirements for the award of the degree B.Tech. for the academic years 2020 - 2024. The duration of the project was from 4 June 2023 to 4 August 2023.

Should you require any further information, please do not hesitate to contact +9180 66655650 or send an email to hrdirectapj@sap.com.

Thank you.

Yours faithfully

Sabish Kovath Bhaskar
Manager, Local HR Services India

Confidential