Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Choice Based Credit System (CBCS) in Light of NEP-2020

M. Tech (Common for all Engineering branches)

(2021-2023)

COURSE CODE	CATEGORY	COURSE NAME	TEACHING &EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MTRM301	AECC	Research Methodology in Engineering	60	20	20	0	0	3	1	0	4

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

1. The course has been developed with orientation towards research related activities and recognizing the ensuing knowledge as property.
2. To analyze and evaluate research works and to formulate a research problem to pursue research.
3. To develop skills related to professional communication and technical report writing.

Course Outcomes:

At the end of the course, students will demonstrate their ability to:

1. Understanding and formulation of research problem.
2. Apply quantitative and qualitative methods used in engineering research.
3. Analyze interpret and evaluate data that relate to engineering problems.
4. Develop skills related to professional communication, technical report writing and publishing papers.
5. Act professionally, autonomously, ethically and in teams to produce a professional product.

Syllabus

Unit-I

Introduction to Research Methodology: - An overview of Research process, Types of research; Approaches to research, Importance of criticism in Literature review, identifying research gaps; Formulation of research problem; Research design,

Data: Primary and secondary data-sources, advantages/disadvantages; Sampling and primary data collection, sampling size, random and structured sampling

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Unit-II

Measurement and Scaling Techniques: - Types of scales, Criteria for good measurement, Attitude measurement - Likert's scale, Semantic differential scale, Thurstone-equal appearing interval scale.

Statistical Tools for Data Analysis: - Measure of central tendency, Measures of dispersion, Correlation and Regression, Formulation of hypothesis, Type I & Type II error, Parametric test, non-parametric test.

Unit-III

Research Methods I - Use of computer software in research and understanding the limitations. Multi-attribute decision making methods, Data envelopment analysis, Grey relational analysis etc., Multidisciplinary research problems, Synthesis of disciplinary research findings; Reliability and sensitivity analysis.

Unit-IV

Research Methods II - Modeling and simulation of engineering problem; Mathematical modeling-formulation, calibration, validation, application; measurement design – validity, reliability, scaling and sources of error. Mathematical programming methods, Numerical analysis, Optimization techniques, Design of laboratory experiments and field tests.

Unit-V

Academic Writing Skills and Presentation - Layout of a Research paper, research report, Thesis structure, Impact factor of Journals, Ethical issues related to publishing, Plagiarism and Self-Plagiarism. Reference Management Software like Mendeley, Software for paper formatting like LaTeX/MS Office, Software for detection of Plagiarism. Guidelines on how to write research papers. Content of Poster presentation, Power point presentation, Oral presentation

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Text Books -

1. C.R. Kothari, 2012. Research Methodology Methods and Techniques, 3/e, Vishwa Prakashan,
2. Montgomary, Douglas C., 2007. Design and Analysis of Experiments (Wiley India).
3. Chawla, D. and Sodhi, N., 2011. Research methodology: Concepts and cases. Vikas Publishing House.

Reference:

1. Donald H.McBurney, "Research Methods", 5th Edition, Thomson Learning, ISBN: 81-315-0047.
2. Donald R. Cooper, Pamela S. Schindler, "Business Research Methods", 8/e, Tata McGraw-Hill Co. Ltd.,
3. Timothy J. Ross, "Fuzzy Logic with Engg Applications", , Wiley Publications, 2nd Ed[d]
4. Thiel D.V. "Research Methods for Engineering", Published by Cambridge University Press, UK
5. P.J. van Laarhoven & E.H. Aarts, "Simulated Annealing: Theory and Applications" (Mathematics and Its Applications).

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Choice Based Credit System (CBCS) in Light of NEP-2020
MBA+Ph.D. - III SEMESTER (2021-2023)

MBAIEO303 TOTAL QUALITY MANAGEMENT

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MBAIEO303	DSE	Total Quality Management (TQM)	60	20	20	-	-	3		-	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical: **C** - Credit; **DSE**- Discipline Specific Elective

***Teacher Assessment** shall be based on following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objectives

The objective of this course is to help students to understand the basics of TQM its uses and its application in present business scenario. Other objective of this course is to acquaint the students with the conceptualization of Total Quality (TQ) from design assurance to processes assurance to service assurance

Examination Scheme

The internal assessment of the students' performance will be done out of 40 Marks. The semester Examination will be worth 60 Marks. The question paper and semester exam will consist of two sections A and B. Section A will carry 36 Marks and consist of five questions, out of which student will be required to attempt any three questions. Section B will comprise of one or more cases / problems worth 24 marks.

Course Outcomes

1. Equip students with selection and applying appropriate techniques in identifying customer needs, as well as the quality impact that will be used as inputs in TQM methodologies.
2. Familiarize the students with the measurement of cost of poor quality and process effectiveness and efficiency to track performance quality and to identify areas for improvement.

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Choice Based Credit System (CBCS) in Light of NEP-2020
MBA+Ph.D. - III SEMESTER (2021-2023)

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MBAIEO303	DSE	Total Quality Management (TQM)	60	20	20	-	-	3		-	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical: **C** - Credit; **DSE**- Discipline Specific Elective

***Teacher Assessment** shall be based on following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

COURSE CONTENT

Unit I : Introduction to TQM

1. Meaning of the terms quality
2. Quality control and quality assurance
3. Importance of quality
4. Quality dimensions of products and services
5. Quality and competitive advantage
6. Cost of quality
7. TQM, Evolution of TQM, Basic principles of TQM
8. TQM VS Traditional management
9. Advantages of TQM

Unit II: Philosophical Framework to TQM

1. Contribution of various gurus of TQM
2. Deming-Deming's chain reaction, Deming's principles, deadly sins
3. PDCA cycle
4. Juran's Quality Triology, Juran'sBreakthrough Sequence
5. Philips Crosby- Quality is free
6. Taguchi's Quality loss function
7. Ishikawa's contributions and Quality Circles

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Unit III: Benchmarking

1. Definition, reasons for benchmarking, types of benchmarking
2. Process of benchmarking
3. What to benchmark, understanding current performance, planning, studying others, using findings
4. Xerox model of benchmarking
5. Advantages and pitfalls of benchmarking
6. Concept of Kaizen and its applications

Unit IV: Quality Management Systems

1. Quality Management Systems(QMS): Introduction, Definition of QMS
2. ISO 9000
3. ISO 14000
4. Six Sigma - Historical developments, statistical framework for six sigma
5. DPU and DPMO concepts
6. DMAIC methodology
7. Six sigma and TQM

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Unit V: Quality Control and Quality Awards

1. Quality Control tools: Introduction, 7 tools of quality control
2. Poka-yoke
3. Quality Function Deployment
4. Quality Awards : Introduction, Need for Quality Awards
5. Deming Prize and its features
6. Golden peacock award
7. Rajiv Gandhi National Quality Award

Suggested Readings

1. Mukherjee, P.N. (2006). ***Total Quality Management.*** New Delhi; PHI learning Pvt Ltd.
2. Janakiraman, B&Gopal R.K. (2006). ***Total Quality Management:Text and case*** New Delhi; PHI learning PVT Ltd.
3. Mandal , S.K. (2009). ***Total Quality Management.*** New Delhi; Vikas Publishing House PVT Ltd.
4. Evans ,James. R. (2016). ***Quality Management.*** Boston; Cengage learning.

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MTIE210	DCC	Sustainable Manufacturing	60	20	20	30	20	2	0	2	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; C - Credit;
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Course Educational Objectives (CEOs)

Sustainability aims to conserve energy and natural resources, and to ensure that they have minimal impact on the environment and society. It targets at fulfilling the needs of the present without compromising the ability of future generations to meet their own needs.

- This course provides an overview of the Sustainability through Green Manufacturing Systems; various methodologies and its application in improving the eco-efficiency are focused.
- Students will also learn about the commonly used Sustainable manufacturing tools such as Environmentally Conscious Quality Function Deployment (ECQFD) and Life Cycle Assessment (LCA).
- Simulation of the Manufacturing Systems is also discussed in this course to make the students learn the modern tools that are used in the virtual environment.

Course Outcomes (COs)

course outcomes are:

1. Students will be able to have a basic knowledge about sustainable manufacturing
2. Students will be able to use the tools required for implementing sustainable manufacturing
3. Students will be able to do calculations required for implementing sustainable manufacturing
4. Students will know about practical applications of sustainable manufacturing

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Syllabus

Unit-I

Concept of sustainability, manufacturing, operations, processes, practices, Resources in manufacturing, Evolution of Sustainable Manufacturing, Definitions of sustainable Manufacturing, Circular Business Models, Linkage between Lean and Sustainable Manufacturing.

Unit-II

Environmentally Conscious Quality Function Deployment (ECQFD), ECQFD Phase-I, ECQFD Phase-II, ECQFD Phase-III, ECQFD Phase-IV, Extended Producer Responsibility (EPR) policy.

Unit-III

Fundamentals of Life Cycle Assessment (LCA), LCA Phase-I, LCA Phase-II, LCA Phase-III, LCA Phase-IV, Life Cycle Cost Analysis, Product Life Cycle Management: Energy and Mass, Workpool and Throughput.

Unit-IV

Frameworks for measuring sustainability- Indicators of sustainability – Environmental, Economic, Societal and Business indicators - Concept Models and Various Approaches, Product Sustainability and Risk/Benefit assessment– Corporate Social Responsibility.

Unit-V

Green Supply chain: Carbon footprints in transportation, Whole value chain, and lifecycle of products/services, from the development, to the end of life stages. Machining for eco-efficiency. Implementation of lean methods: validating requirements. Managing materials for sustainability.

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References

1. G. Atkinson, S. Dietz, E. Neumayer, — "Handbook of Sustainable Manufacturing". Edward Elgar Publishing Limited, 2007.
2. D. Rodick, "Industrial Development for the 21st Century: Sustainable Development Perspectives", UN New York, 2007.
3. Rogers, P.P., Jalal, K.F. and Boyd, J.A., "An Introduction to Sustainable Development", Earth scan, London, 2007.
4. P. Lawn, "Sustainable Development Indicators in Ecological Economics", Edward Elgar Publishing Limited.
5. S. Asefa, "The Economics of Sustainable Development", W.E. Upjohn Institute for Employment Research, 2005.
6. "Sustainable Manufacturing: Concepts, Tools, Methods and Case Studies", Dr.S. Vinodh, CRC Press; 1st edition (27 October 2020)
7. "Sustainable Manufacturing: Challenges, Solutions and Implementation Perspectives", Rainer Stark, GüntherSeliger, JérémyBonvoisin, Springer; 1st edition(2017)
8. "Sustainable Manufacturing: Shaping Global Value Creation", Günther Seliger, Springer-Verlag Berlin Heidelberg, 1st edition (2012)

List of Experiments:

1. To study and prepare design for Sustainable Manufacturing Implementation, and Assessment in given situations.
2. To study and prepare LCA for given situations.

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3. To study and prepare the framework for SM implementations.
4. To study and prepare the framework for GM implementations.
5. To study and prepare the Carbon footprints in transportations.

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MTIE2011	DCC	Work Study and productivity techniques	60	20	20	30	20	2	0	2	3

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

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Course Objectives:

1. To provide basic understanding to the students about the concept and significance of work study and productivity management.
2. To impart thorough knowledge to the students about various techniques of work-study for improving the productivity of an organisation.
3. To impart through knowledge and skills to students with respect to allowances, rating, calculation of basic and standard time for manual operations in an organisation.
4. To provide the knowledge to the students about various wages and incentives schemes.

Course Outcomes:

1. Students will be able to calculate the basic work content of a specific job for employees of an organization. Thereby they will be able to calculate the production capacity of man power of an organization.
2. Students will be able to analyze and calculate the level of risk in a job causing stress, fatigue and musculoskeletal disorders and design appropriate work systems.
3. Students will be able to analyze the existing methods of working for a particular job and develop an improved method through questioning technique.
4. Students will be able to devise appropriate wage and incentive plan for the employees of an organization

UNIT-I **(8Hr)**

Productivity Techniques : Concept of Productivity, Factors affecting Productivity, Total productivity model. Short term and Long term Productivity Planning Models. Productivity improvement Techniques: Technology based, Material based, Employee based, Product and Time based P.I. Techniques.

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UNIT-II **(8Hr)**

Work Study: Definition, objectives and areas of application of work study in industries,Historical review. Interrelation between method study and work measurement; Human aspects of work-study. Role of work-study in productivity improvement.

Method Study : Definition and objectives; Engineering approach to methods analysis and improvement. Data collection and recording techniques; critical examination and development, creative thinking, tools of creativity. Installation and maintenance of the new improved methods.

UNIT-III **(10Hr)**

Motion Economy and Analysis : Principles of motion economy, motion analysis; Micro motion and memo motion study; Therbligs and Simo charts.

Work Measurement : Definition and objectives; work measurement techniques, Stop watch time study, Principles and procedures. Systems of performance rating; calculation of basic time, allowances and standard time. predetermined motion time and other standard systems,MOST , Work Sampling : principles and techniques, application of work sampling studies.

UNIT-IV **(8Hr)**

Introduction to Ergonomics : Ergonomics as a multi-disciplinary field, components.Importance of ergonomics in equipment and work design. Concept of man-machine system; Types and characteristics of Man-machine systems. Rest Pause design based on physiological consideration, Anthropometry and Work place design

UNIT-V **(9Hr)**

Wage Incentives and Job Evaluation :. Various types of wage Incentive schemes and their impact on productivity. Comparison of different incentive plans, design of incentive plans, Group system of Wage payment. Supervisory incentive plans. Job Evaluation : Purpose, Various types of jobs evaluation system and their application of classification.Wage Cure. Designing salary structure and Grade. Merit Rating. Perfomance Appraisal.

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References:

1. Sumanth D.J., "Productivity Management", TMH, 2015.
2. I.L.O., "Introduction of Work Study", 2012.
3. Maynard H.B., "Industrial Engineering Hand Book", McGraw-Hill Education; 5th edition, 2001.
4. Jhamb L.C., "Workstudy and Ergonomics", EPH, 2007.

List of experiments:

1. To study and prepare productivity improvement techniques in given study.
2. To study and prepare man-machine chart for given situations.
3. To study and Calculate co-efficient of correlation for time study person using performance rating technique.
4. To study & Calculate standard time for given job.
5. To study about Sampling Plans and Decide about acceptance or rejection of a particular product using sampling plans.
6. To Study and Prepare Operation Process Chart (OPC) for given assembly.

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MBAI201 FINANCIAL MANAGEMENT

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MBAI201	CC	Financial Management	60	20	20	-	-	3		-	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical: **C** - Credit; **CC**- Core Course
***Teacher Assessment** shall be based on following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objective
The objective of this course is to understand the concept of Business Finance. It also aims at learning of financial tools and developing the skills of financial analysis and financial decisions. The emphasis will be on the concepts and application rather than derivations

Examination Scheme
The internal assessment of the students' performance will be done out of 40 Marks. The semester Examination will be worth 60 Marks. The question paper and semester exam will consist of two sections A and B. Section A will carry 24 Marks and consist of three questions, out of which student will be required to attempt any two questions. Section B will comprise of five questions, out of which student will be required to attempt any three cases / problems worth 36 marks.

Course Outcomes
1. Familiarized with the various sources of finance which a business house can mobilize.
2. Develop the ability to measure the risk and return of the various portfolios.
3. Implement investment decisions, the process and methods of evaluation of various investment proposals.
4. Develop the skills to analyze the impact of various financing alternatives on the wealth maximization/ valuation of the firm.

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COURSE CONTENT

UNIT I: Introduction
1. Introduction to financial management
2. Objectives of financial management – profit maximization and wealth maximization
3. Interface of Financial Management with other functional areas

UNIT II: Capital Structure Decision
1. Short term and long term sources of funds and their characteristics Cost of Capital
2. Computation of cost of Equity, Debt and Preference Capital.
3. Weighted Average Cost of Capital
4. Capital Structure and its Theories.
5. Developing the Concept of Leverage in Finance
6. Computation and Inferences of Degree of Operating Leverage
7. Financial Leverage and Combined Leverage

UNIT III: Investment Decisions
1. Time Value of Money
2. Investment evaluation techniques – Net present value
3. Internal rate of return
4. Payback period
5. Discounted payback period
6. Accounting rate of return

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UNIT IV: Working Capital Management

1. Factors influencing working capital requirements
2. Current asset policy and current asset finance policy
3. Determination of operating cycle and cash cycle
4. Estimation of working capital requirements of a firm

UNIT V: Dividend Decisions

1. Dividend policy – Factors affecting the dividend policy
2. Dividend policies- Stable dividend, Stable payout

Suggested Readings

1. Khan M. Y. and Jain P. K. (2007). ***Financial Management***. Tata McGraw Hill, Latest Edition.
2. Pandey I. M. (2009). ***Financial Management***. Vikas Publications, Latest Edition.
3. Chandra Prasanna (2011). ***Financial Management***. Tata McGraw Hill, Latest Edition.
4. Kapil (2012). ***Financial Management***. Pearson Education, Latest Edition.
5. Shrivastav and Mishra (2008). ***Financial Management***. Oxford University press, Latest Edition.
6. Brigham and Houston (2009).***Fundamentals of Financial Management***. Cengage Learning, Latest Edition.
7. Vanhorns and Bhandari (2008). ***Fundamentals of Financial Management***. Prentice Hall, Latest Edition.
8. Kothari and Dutta (2005***).Contemporary Financial Management***. Macmillan India Ltd, Latest Edition.
9. Stephen A. Ross, Wester Field, Jordan (2008). ***Fundamentals of Corporate Finance.*** McGraw Hill, Latest Edition.

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MTIE2012	DCS	Innovation and Design Thinking	60	20	20	0	0	2	0	0	2

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Course Educational Objectives (CEOs)

The objective of the course is to develop basic knowledge of (A) Introduction, (B) Understand, Observing, and Defining the Problem, (C) Ideation and Prototyping, (D) Testing and Implementation, and (E) Future.

Course Outcomes (COs)

After completion of this course the students are expected to be able to demonstrate the following knowledge, skills, and attitudes:

1. Students are able to understand the design process and use design thinking methods in every stage of the problem.
2. Students learn the different phases of design thinking.
3. Students can apply various design thinking methods to different problems.

Syllabus

Unit-I

Introduction

why design? tools for design thinking, principles of design thinking, the process of design thinking, and how to plan a design thinking project.

Unit-II

Understand, Observe and Define the Problem

Search field determination, problem clarification, understanding of the problem; analysis

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reformulation of the problem, observation phase, empathetic design, tips for observing, methods for empathetic design, point of view phase, characterization of the target group, and description of customer needs.

Unit-III
Ideation and Prototyping
Ideate phase, the creative process, creative principles, creativity techniques, evaluation of ideas, prototype phase, lean startup method for prototype development, visualization, and presentation techniques, and design thinking in IT.

Unit-IV
Testing and Implementation
Test phase, tips for interviews, tips for surveys, kano models, desirability testing, how to conduct workshops, requirements for the space, material requirements, agility for design thinking.

Unit-V
Future
Design thinking meets the corporation, the new social contract, design activism, and designing tomorrow. Growth storytelling representation; strategic foresight change; Strategy and organization business model design.

References

1. Christian Mueller-Roterberg (2018), Handbook of Design Thinking: Tips & Tools for how to design thinking, Kindle Edition
2. Jeanne Liedtka, and Tim Ogilvie (2011), DESIGNING FOR GROWTH: A Design Thinking Tool Kit for Managers, Columbia business school publishing.
3. Tim Brown (2009), Change by Design: How Design Thinking Transforms Organizations

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and Inspires Innovation, Kindle Edition.

4. Hasso Plattner, Christoph Meinel and Larry Leifer (2011), "Design Thinking: Understand Improve – Apply", Springer.
5. Roger Martin, (2009) "The Design of Business: Why Design Thinking is the Next Competitive Advantage", Harvard Business Press.