SNDT Women's University, Mumbai

Master of Science

(Department of Resource Management)

Resource Management and Ergonomics

as per NEP-2020

Syllabus

(2023-24)

Program Name: M.Sc. Resource Management & Ergonomics

Board of Studies: Resource Management

Faculty: Science & Technology

Program Degree in M.Sc.		Master of Science (Home Science)
Parenthesis if any (Specialization)		Resource Management & Ergonomics
Preamble		"Ergonomics today is emerging field addressing issues and concerns related to human machine interaction, occupational health and safety related problems & issues and aims at finding solutions to these work-related problems and implementing for better productivity and wellbeing of the workforce". The Master's Program in Resources Management & Ergonomics is professionally designed program incorporating all the areas of global concern in ergonomics & human-related factors. The program offers a variety of specialized courses, such as Human Resource Management, Financial Management, Ergonomics, Work & Work Posture Analysis, Job Analysis & Optimization, Occupational Ergonomics, Consumer Behavior, Consumer Ergonomics, Methods of Research, Statistics, Dissertation, Internship and Electives to choose in each Semester. The program in Resource Management & Ergonomics is of global concern and fast growing and gaining popularity among all industries, organizations, and professional bodies. The program is specialized program; one of its kind and has various opportunities in international job market.
Program Outcome		To enable the learner in a comprehensive understanding of the theoretical knowledge, subject skills, develop concept building and practical application of knowledge in different areas of work spheres.
		On successful completion of the Master's Program the student demonstrates an ability to engage in critical thinking by analyzing situations and constructing and selecting viable solutions to solve problems.
		Empower the learner to Protect & promote sustainability through Environment & Energy management knowledge by bringing end to the misuse of natural resources.
		Demonstrate the understanding of business opportunities for future ventures by application of competency skills in management & leadership qualities.
		To boost employability and careers prospects in global market through the well curated theoretical and practical training knowledge.

Program Specific Outcomes (POs)		After completing this program, Learner will
	1.	Ability to organize Ergonomics Awareness among employees, employers, educational institutes, occupational groups and other professionals
	2.	Knowledge and skills will contribute to determine the prevalence, predisposing factors, presenting features and outcome of treatment for various health problems.
	3.	Develop products that solve common workplace problems by using ergonomic research methods and theoretical knowledge.
	4.	Ability to apply knowledge of the sciences of ergonomics, human factors, work environment and workplace ergonomics
	5.	Demonstrate an ability to work effectively, make wise decisions, good networking & communicate effectively with colleagues and other professionals.
	6.	Ability to identify and explain issues facing start-ups and entrepreneurial businesses; emphasizing on financing, marketing and organization.
	7.	Application of consumer knowledge in buying practices & use of legal aids
	8.	Apply the knowledge of finance in wise investments opportunities & daily life.
Eligibility Criteria for Program		Students who have obtained any one of the following degrees from any recognized University and have obtained the degree as specified below are eligible to apply: • Minimum 50% percent or B grade for students with BSc Resource Management, BSc Home Management, BSc Family Resource Management, BSc Home Economics, BSc General Home Science, BSc Composite Home Science, BSc Family and Community Sciences, BA in Home Science, BSc in Microbiology/ Physiology/Physiotherapy. • Minimum 50% or B grade for students from any other allied fields.
Intake (For SNDT WU Departments and Conducted Colleges)		25

M.Sc. Resource Management & Ergonomics

Postgraduate Program of 2 years:

Year I

SN	Courses	Type of Course	Credits	Marks	Int	Ext
	Semester I					
114611	Fundamentals of Ergonomics & Design (Th)	Major (Core)	4	100	50	50
114612	Human Resource Management (Th)	Major (Core)	4	100	50	50
114613	Work Physiology & Work Study (2+2)	Major (Core)	4	100	50	50
114624	Work Posture and Analysis (Pr)	Major (Core)	2	50	50	0
124611	Consumer Behaviour (Th)	Major (Elective)	4	100	50	50
134611	Research Methodology (Th)	Minor Stream (RM)	4	100	50	50
	End of SEMESTER-I		**22**	**550**	**300**	**50**
	Semester II					
214611	Occupational Health & Safety (2+2)	Major (Core)	4	100	50	50
214612	Industrial Ergonomics (2+2)	Major (Core)	4	100	50	50
214613	Workplace & Environmental Ergonomics (2+2)	Major (Core)	4	100	50	50
214614	Statistics (Th)	Major (Core)	2	50	0	50
224611	Organization Behaviour (Th)	Major (Elective)	4	100	50	50
244641	Internship – Industry/Organization (Pr)	OJT	4	100	50	50
	End of SEMESTER-II		**22**	**550**	**250**	**300**

Exit option: (44 credit) after Three-Year UG Degree

M.Sc. Resource Management & Ergonomics

Postgraduate Program of 2 years:

Year II

SN	Courses	Type of Course	Credits	Marks	Int	Ext
	Semester III					
314621	Product & Furniture Design (Pr)	Major (Core)	4	100	50	50
314612	Designing for Special Population (Th)	Major (Core)	4	100	50	50
314623	Statistical Computing for Data Analysis (Pr)	Major (Core)	4	100	50	50
314614	Behavioral & Cognitive Ergonomics (Th)	Major (Core)	2	50	0	50
324611	Ergonomics in Everyday Life (Th)	Major (Elective)	4	100	50	50
354621	Research Project (Pr)	RP	4	100	50	50
	End of SEMESTER-III		**22**	**550**	**250**	**300**
	Semester IV					
414621	Technologies & Sustainable Ergonomics (Pr)	Major (Core)	4	100	50	50
414622	Internship (Pr)	Major (Core)	8	200	100	100
424611	Ergonomics for Sports & Leisure (Th)	Major (Elective)	4	100	50	50
454631	Research Project - Dissertation	RP	6	150	100	50
	End of SEMESTER-IV		**22**	**550**	**300**	**250**

Course Syllabus

Semester I: Fundamentals of Ergonomics & Management

Sr.No.	Courses	Type of Course	Credits	Marks	Int	Ext
	Semester I: Fundamentals of Ergonomics & Management					
114611	Fundamentals of Ergonomics & Design (Th)	Major (Core)	4	100	50	50
114612	Human Resource Management (Th)	Major (Core)	4	100	50	50
114613	Work Physiology & Work Study (2+2)	Major (Core)	4	100	50	50
114624	Work Posture and Analysis (Pr)	Major (Core)	2	50	50	0
124611	Consumer Behaviour (Th)	Major (Elective)	4	100	50	50
134611	Research Methodology (Th)	Minor Stream (RM)	4	100	50	50
	End of SEMESTER - I		**22**	**550**	**300**	**250**

Semester I: Fundamentals of Ergonomics & Management

Major (Core): Fundamentals of Ergonomics & Design (Th)

Subject Code: 114611

Course Description:

This course provides foundational knowledge of ergonomics and its critical role in designing efficient, safe, and user-centered environments. Emphasizing the relationship between humans, tools, and workspaces, learners will explore physical, cognitive, and organizational aspects of ergonomics, and apply these principles to everyday activities, professional settings, and design processes. The curriculum integrates human anatomy, anthropometry, work physiology, biomechanics, and environmental factors with core design philosophies such as Universal Design and innovation-driven product development.

Course Title	**Fundamentals of Ergonomics & Design**
Course Credits	4 (Th)
Course Outcomes	After going through the course, learners will be able to
	1. Define and apply the ergonomics principles in everyday life activities
	2. Design the workspaces as per human dimensions and needs
	3. Carryout work efficiently by applying principles of good workplace design, postures, and environment at work
	4. Apply the principles of preventive ergonomics to overcome workplace and occupational risks
	5. Differentiate between good ergonomics and poor ergonomics
Module 1 (Credit 1) : Domains of Ergonomics	
Learning Outcomes	After learning the module, learners will be able to
	1. Define various domains of ergonomics
	2. Differentiate between fitting job to man and fitting man to job
Content Outline	• History of Ergonomics, FJM & FMJ • Physical Ergonomics – Anthropometry, Anatomy, Work Physiology, Biomechanics • Cognitive Ergonomics – Stress, Fatigue, perception, memory, reasoning, and motor response • Organizational Ergonomics - team work, job shifts, work satisfaction, schedules, policies, and ethics

Module 2 (Credit 1) : Ergonomics and Health	
Learning Outcomes	After learning the module, learners will be able to
	1. Explore the occupational risks and apply preventive measures to reduce the risks
	2. Define the Man-Machine-Environment relationship and design the environment around it
Content Outline	• Relationship between Ergonomics and health, MME system health, fitness and Postural risks – MSD's, Injuries, Pains/aches, etc. • Impact of environment on Human Health • Preventive measures
Module 3 (Credit 1) : Design Principles	
Learning Outcomes	After learning the module, learners will be able to
	1. Use the various principles of design in designing different workplaces with different needs
	2. Design and analyze workplaces and products and apply innovative ideas to modify/develop user-friendly design
Content Outline	• Principles of Design, Universal Design, UX/VI Design • Six Pillars of Ergonomics Design • Product concept and design innovation • Workstation Design and Analysis
Module 4 (Credit 1) : Application & Benefits of Ergonomics	
Learning Outcomes	After learning the module, learners will be able to
	1. Differentiate between macro and micro ergonomics
	2. Design physical fitness program for workers/employees
	3. Use the knowledge of ergonomics for benefit of the varied population
Content Outline	• Macro & Micro Ergonomics • Health and physical fitness • Application in Healthcare, Aging, IT, Transportation, etc. • Inclusive Designing for special population

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

Total Marks – 50 (Internal)

1. **Individual Assignment:** To observe and analyze various workplace in terms whether ergonomics principles are followed or violated.
2. **Group Project:** To make a checklist by referring various available checklist to assess the Impact of MME system on workers in terms of MSD's and other occupational risks.

3. **Individual Project:** Using principles of design, design/redesign/modify any one tool/product
4. **Case Study:** To take up any one area/population/sector and do case study from Ergonomics point of view

References

1. Anshel, J. (1998): Visual Ergonomics in the Work Place, Taylor and Francis (UK, USA); published by Taylor and Francis, C., London.
2. Anton, T.J. (1989): Occupational Safety and Health Management, 2nd edition, (SanFransico, Tokyo).
3. Astrand & Rodahl. (1977). Textbook of Work Physiology: Physiological Bases of Exercise McGraw-Hill Series, USA.
4. Bhattacharya, A. and McGlothlin (1996): Occupational Ergonomics: Theory and Applications, Marcel Dekker Inc. (New York, Basel, Hong Kong); Marcel Dekker Inc., New York
5. Dul, J. and Weerdmeestre, B. (2001): Ergonomics for Beginners: A Quick Reference Guide; 2nd edition, Taylor and Francis (London, New York); published by Taylor and Francis, C., London
6. Harkness, S.P. (1976): Building without Barriers for the Disabled, Whitthey Library of Design, New York
7. Koncelik, J.A. (1982): Aging and the Product Environment, Hutchinson Ross Publication, Pennsylvania
8. Kroemer, K.H.E. and Grandjean, E. (1997) (5th edition): Fitting the Task to the Human, Taylor and Francis (London, New York); published by Taylor and Francis, C., London
9. Nicholson, A. and Ridd, J.E. (1988): Health Safety and Ergonomics, Butterworths, London, Butterworths, C.
10. Oborne, D.J. (1982) (2nd edition): Ergonomics at Work, (Chichester, New York, Toronto); Chichester: John Wiley & Sons.
11. Pleasant, S. (2001): Body Space, Taylor and Francis (Great Britain); published by Taylor and Francis, C., London.
12. Pleasant, S. (1991): Ergonomics, Work and Health, Mac Millan Press, London

Major (Core): Human Resource Management (Th)

Subject Code: 114612

Course Description:

This course provides a comprehensive foundation in Human Resource Management (HRM), focusing on the principles, strategies, and practices essential for effectively managing people within organizations. It equips learners with the knowledge and skills required to understand HRM functions, evaluate human resource needs, attract and retain talent, and maintain harmonious industrial relations.

The course emphasizes strategic human resource planning, recruitment and selection processes, employee training and development, performance appraisal techniques, and compensation management. It explores organizational development, communication, motivation, and career planning through theoretical insights, case studies, and practical exercises.

Course Title	**Human Resource Management**
Course Credits	**4 (Th)**
Course Outcomes	After going through the course, learners will be able to
	1. Conversant with the nature and fundamentals of human resources.
	2. Apply different methods in managing human resources.
	3. Competent in hiring employees and deciding employee remuneration.
	4. Proficient in motivating and maintaining employees.
	5. Capable of developing industrial relations.
Module 1 (Credit 1): Introduction to Human Resource Management	
Learning Outcomes	After learning the module, learners will be able to
	1. Formulate the human resource policies in an organization
	2. Design and conduct training programmes for the employees efficiently
Content Outline	**HRM:** Nature, significance, scope, functions, objectives of HRM • Organization of HR Department • Principles, policies and Models of HRM **HRD:** Significance, scope, objectives and techniques of HRD • Functions and Attributes of HRD manager • Communication skills and organizational development • Employee Training: Assessment of training needs, training methods, training procedures, advantages of training and evaluation of training programs

Module 2 (Credit 1): Human Resource Planning and placement	
Learning Outcomes	After learning the module, learners will be able to
	1. Plan the requirement of human resource in organization and have good recruitment and selection strategies
	2. Efficiently organize the orientation and training programmes for new hired employees
Content Outline	• **Nature of Human Resource Planning -** Benefits of HR planning, Process of HR planning, Problems, Factors affecting and recent trends in HRP • **Job Design and Job Analysis -** Meaning and approaches to job design, Factors affecting, purpose and process, problems, uses and recent developments in job analysis • **Recruiting Human Resources -** Need, Objectives and importance of recruitment, recruitment policy and strategy, Recruitment process, traditional and modern sources, techniques, factors affecting and alternatives to recruitment • **Selecting Human Resources -** Role, nature and definition of selection, Organization and process of selection, factors affecting and barriers to effective selection • **Inducting and Placing New Hires -** Nature, purpose and different stages of orientation process, employee orientation programs, evaluation and problems and placement-meaning and problems
Module 3 (Credit 1): Performance Appraisal and Job Evaluation	
Learning Outcomes	After learning the module, learners will be able to
	1. Design the performance appraisal forms for different categories of employees and use right method for appraisal
	2. Differentiate between job evaluation and performance appraisal and have alternatives to job evaluation
Content Outline	• **Performance Appraisal -** Need for performance appraisers and appraisal, Process and methods of performance appraisal - Modern methods (BARS, assessment center MBO, HRA, Psychological appraisals), Sensitivity training and management grid, Uses and purposes of performance appraisal, Potential appraisal and challenges in performance appraisal, Edward Deming's view on performance appraisal • **Job evaluation -** Meaning and objectives of job evaluation, difference between job evaluation and performance appraisal, Principles and Procedure of Job Evaluation, Problems and alternative to job evaluation
Module 4 (Credit 1): Employee Remuneration and Career Planning and Development	
Learning Outcomes	After learning the module, learners will be able to
	1. Design and implement the remuneration and reward policy for the employees

	2. Guide the employees for career planning and developmental stages for career advancement
Content Outline	• **Managing Remuneration -** Employee Remuneration, Components of employee remuneration, Theories of employee remuneration, Influencing factors of remuneration, Remuneration plans, challenges of remuneration. Concepts of wage and salary administration and their Objectives, Role of reward system, factors affecting wage/salary levels, Wage Boards and Pay Commissions, Wage Incentive, profit sharing, Bonus and Managerial Compensation, Fringe Benefits, Non-Monetary Rewards • **Career Planning and Development –C**areer planning and development for employee and organization, career development programs, Job satisfaction, career personality test, career planning process, potential challenges in Career Planning and Development

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

Total Marks: 50 (Internal)

1. **Individual Assignment:** Differentiate between HRM & HRP
2. **Group Project:** Recruitment, selection and hiring methods employed by organizations
3. **Individual Project:** Design an appraisal form for different categories of employees
4. **Case Study:** To take up any one organization and study their career planning and career development strategies.

References:

1. Ashwathappa, K. (2004) Human Resource and Personnel Management, 3rd edition Tata McGraw Hill Publication.
2. Bratton, J. & Gold, J (1999) Human Resource Management Theory and Practice, London, MacMillan Business.
3. Bhambra, A. (1999), Nature of Human Resource Management, New Delhi, Commonwealth Publishers.
4. Rao, S. (2002) Personnel and Human Resource Management, Himalaya Publishing House.
5. Armstrong, M. (1992): A Handbook of Human Resource Management, New Delhi, Adity Books Pvt Ltd
6. Chopra, R.K. (2001): Management of Human Resources. Allahabad, KitabMahal.
7. Dessler, G. (2001): Human Resource Management. New Delhi, Prentice Hall.
8. SubbaRao, P. (2002): Personnel and Human Resource Management, Himalaya Publishing House.

Major (Core): Work Physiology & Work Study (Th/Pr)

Subject Code: 114613

Course Description:

This course introduces learners to the scientific principles of human work performance by integrating physiological concepts with work study techniques. It explores how the human body responds to physical activity, workload, postures, and environmental conditions, enabling students to assess physical fitness, energy requirements, and fatigue among workers. By understanding work physiology, learners develop the ability to categorize work, evaluate physiological workload in laboratory and field settings, and relate posture to performance and well-being.

The course also emphasizes work study tools—including method study and work measurement—to optimize work processes, improve efficiency, and ensure worker safety and comfort. Through hands-on exercises in time and motion studies, job analysis, work-rest cycles, and workstation design, learners gain practical insights into scientific analysis of work and human capability. This blend of theoretical understanding and applied practice prepares students to design efficient work systems, enhance productivity, and support worker health in diverse occupational environments.

Course Title	**Work Physiology & Work Study**
Course Credits	**2 (Th)+2 (Pr)**
Course Outcomes	After going through the course, learners will be able to
	1. Gain the competencies to differentiate types of work and classify them in appropriate categories
	2. To assess physiological workload in laboratory and in field situations
	3. Develop skills in conducting time and motion studies and techniques of work measurements
	4. Develop skills in assessing physical fitness
	5. Find the relationship between posture and workload
Module 1 (Credit 1): Work Physiology (Th) (15 hrs))	
Learning Outcomes	After learning the module, learners will be able to
	1. Differentiate people based on body types
	2. Design the need for food intake based on types of work

Content Outline	• Work, components of work, factors affecting work, types of work, fuel for work, physiological workload, energy expenditure • Skeletal Muscles – types, functions, structure, muscle contraction • Body Type and somatotypes • Effect of posture on physiological functions • Effects of physical work environment on the worker • Fatigue – types of fatigue, symptoms of fatigue, causes of fatigue, factors contributing to inefficiency and fatigue in industry, boredom, staleness.
Module 2 (Credit 1): Work Physiology (Pr)	
Learning Outcomes	After learning the module, learners will be able to
	1. Define the workload, physical fitness and fatigue
	2. Analyse the impact of working in different environment on worker
Content Outline	• Energy cost of various activities – physiological cost of work • Physical Fitness – Cardiorespiratory, Muscular Strength, Flexibility, etc. • Body composition • Effect of Heat, Light, Noise, Vibration on Worker • Effect of fatigue on work
Module 3 (Credit 1): Work Study (Th)	
Learning Outcomes	After learning the module, learners will be able to
	1. Carryout work measurement using different techniques
	2. Apply principles of time and motion study to improve performance
Content Outline	• Work study – Method study and Measurement study • Job Design – Method analysis, trends in job design, physical consideration in job design (work physiology-work-rest cycle and ergonomics-fitting job to man) • Behaviourial approaches to job design-job enlargement, job rotation, job enrichment • principles of motion economy, motion study techniques • Work measurement – purpose, techniques of work measurements, time study, work sampling • Need for developing new methods
Module 4 (Credit 1): Work Study (Pr)	
Learning Outcomes	After learning the module, learners will be able to
	1. Design work-rest cycle for different jobs
	2. Analyse and suggest the best method to perform task

Content Outline	• Work rest cycle study • Job analysis • Time and motion study • Method study – to examine job and find most suitable or efficient method to perform job. • To design workstation

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

1. **Individual Assignment:** To find out the physiological workload for different types of work
2. **Group Project:** To conduct time and motion study for different jobs
3. **Individual Project:** Job Design-job enlargement, job rotation, job enrichment
4. **Case Study:** Fatigue assessment using questionnaire method

References:

1. Anton, T.J. (1989): Occupational Safety and Health Management, 2nd edition, (SanFransico, Tokyo).
2. Astrand & Rodahl. (1977). Textbook of Work Physiology: Physiological Bases of Exercise McGraw-Hill Series, USA.
3. Brouha, L. (1960). Physiology in Industry: Evaluation of industrial stresses by the physiological reactions of the worker. International Series of Monographs on Pure and Applied Biology. Division: Modern Trends in Physiological Sciences, Vol. 4. Pergamon Press.
4. Dul, J. and Weerdmeestre, B. (2001): Ergonomics for Beginners: A Quick Reference Guide; 2nd edition, Taylor and Francis (London, New York); published by Taylor and Francis, C., London
5. Grandjean, E. (1971): Fitting the task to the man: An Ergonomic Approach. 2nd edition, Taylor and Francis Ltd (London, New York).
6. Karpovich P.V. (1965). Physiology of muscular activity. 6th Edition. W.B. Saunders Company. USA.
7. Koncelik, J.A. (1982): Aging and the Product Environment, Hutchinson Ross Publication, Pennsylvania
8. Kroemer, K.H.E. and Grandjean, E. (1997) (5th edition): Fitting the Task to the Human, Taylor and Francis (London, New York); published by Taylor and Francis, C., London
9. Oborne, D.J. (1987): Ergonomics at Work. 2nd edition, John Wiley & Sons Ltd. Chichester, New York, Toronto.
10. Pleasant, S. (1991): Ergonomics, Work and Health, Mac Millan Press, London
11. Weiner, J.S. and Lourie. J.A. (1981). Practical Human Biology. Academic Press Inc. (London) Ltd.

Major (Core): Work Posture and Analysis (Pr)

Subject Code: 114624

Course Description:

This course focuses on understanding human work posture, its impact on health, and its role in workplace efficiency and comfort. Students will learn to identify and differentiate good and poor postures and understand their biomechanical and physiological consequences. Emphasis is placed on hands-on learning, applying ergonomic principles to assess postures in real work settings, and designing posture-friendly workstations for diverse user groups including individuals with special needs.

Through practical exposure to standardized postural assessment tools and workplace observation, students will develop the ability to analyze working postures, identify risk factors, and recommend appropriate corrective measures. The course empowers learners to educate workers on adopting healthy postures, prevent musculoskeletal disorders, and enhance overall workplace well-being and productivity. The focus on real-world application prepares students to contribute to ergonomic interventions in organizational environments and foster healthier man-machine relationships.

Course Title	**Work Posture and Analysis**
Course Credits	**2 (Pr)**
Course Outcomes	After going through the course, learners will be able to
	1. Differentiate between good posture and poor posture.
	2. Apply the knowledge of posture to design workplaces for normal and disable population to improve their quality of life.
	3. Demonstrate and use knowledge to practically train the people at workplace/organization to adopt right posture
	4. Independently carryout postural analysis by using right methods of postural assessment to enhance wellbeing of employees
	5. Develop the good relationship between man and machine/tool used.
Module 1 (Credit 1): Work Posture Study (15 hrs)	
Learning Outcomes	After learning the module, learners will be able to
	1. Define types of postures and problematic postures
	2. Design workplaces that will help people to have good posture
Content Outline	• Study of Work Postures adopted at work • Case study for Awkward Postures at work • Fixed Postures – static postures at work • Dynamic Postures – types of postures adopted at movable jobs

Module 2 (Credit 1): Work Posture Analysis (15 hrs)	
Learning Outcomes	After learning the module, learners will be able to
	1. Differentiate between postural assessment tools and their application
	2. Use the postural assessment tools effectively at workplaces
Content Outline	Methods of postural Assessment • OWAS • RULA • REBA • ROSA • WERA • QEC

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

Total Marks – 25 (Internal)

1. **Individual Assignment:** To observe various postures adopted at workplace or while performing any activity anywhere, classify them and make presentation.
2. **Case Study:** To carryout practical assessment of postures studied in a particular set-up/organization/workplace.

References:

1. Dul, J. and Weerdmeestre, B. (2001): Ergonomics for Beginners: A Quick Reference Guide; 2nd edition, Taylor and Francis (London, New York); published by Taylor and Francis, C., London
2. Kroemer, K.H.E. and Grandjean, E. (1997) (5th edition): Fitting the Task to the Human, Taylor and Francis (London, New York); published by Taylor and Francis, C., London
3. Oborne, D.J. (1987): Ergonomics at Work. 2nd edition, John Wiley & Sons Ltd. Chichester, New York, Toronto.
4. Pleasant, S. (1991): Ergonomics, Work and Health, Mac Millan Press, London

Major (Elective): Consumer Behaviour (Th)

Subject Code: 124611

Course Description:

This course offers an in-depth understanding of the psychological, social, economic, and cultural factors that influence consumer decision-making. It introduces learners to major consumer behaviour theories, buying behaviour models, and motivation processes, allowing them to analyse consumer needs, preferences, and responses in diverse market environments. Emphasis is placed on understanding consumer rights, responsibilities, and empowerment in the context of India's evolving socio-economic landscape and global market dynamics.

The course explores the impact of globalization, liberalization, digitization, and aggressive marketing strategies on consumer behaviour, while highlighting ethical consumerism and sustainable consumption. Students will learn to evaluate consumer problems, apply consumer protection laws, and utilize redressal mechanisms effectively. Through case discussions and practical exercises, learners develop the knowledge and confidence to act as socially responsible, informed, and empowered consumers and to contribute to consumer advocacy and protection initiatives.

Course Title	**Consumer Behaviour**
Course Credits	**4 (Th)**
Course Outcomes	After going through the course, learners will be able to
	1. Apply the knowledge of the determinants of consumer behaviour and techniques of decision-making process for purchasing
	2. Use the knowledge of legal aids and consumer laws to deal with consumer problems and fight to protect their rights
	3. Apply consumer legislations, rights, and responsibilities of the consumers to full use and understand their limitations
	4. Demonstrate the skills to understand the impact of global trade in the Indian Consumer Market
	5. Demonstrate the signs of empowered consumer by being a responsible consumer
Module 1 (Credit 1): Introduction to Consumer Behaviour	
Learning Outcomes	After learning the module, learners will be able to
	1. Apply the knowledge of decision-making models in buying habits
	2. Demonstrate the skills in anticipating global market and its effect on consumers

Content Outline	• **Consumer behaviour**
	  • Introduction, Definition and concept of Consumer Behaviour
	  • Ergonomic approach to consumer products and services
	  • Different stages of consumer buying process
	  • Consumer Motivation
	• **Factors affecting Consumer Behaviour**
	  • Individual factors affecting buying behaviour
	  • Group factors affecting buying behaviour
	  • Social factors affecting buying behaviour
	• **India's New Economic Policy and Its Impact on Consumers**
	  • Globalization, Privatization and Liberalization
	  • Wider choice for consumers: Buying skills
	  • Aggressive Marketing in the face of competition
	  • Effects of Employment (Purchasing power of Consumers)
	  • Effects on economy and developing countries- effect on consumer
	  • Competition policy-Regulatory reforms

Module 2 (Credit 1): Factors affecting Consumer Behaviour	
Learning Outcomes	After learning the module, learners will be able to
	1. Demonstrate the behaviourial changes based on social, geographical, group and individual influences on making purchases
	2. Differentiate the buying behaviour based on understanding of decision-making models

Content Outline	• **Factors affecting**
	  • Individual factors affecting buying behaviour
	  • Group factors affecting buying behaviour
	  • Social factors affecting buying behaviour
	• **Decision Making Models in Buying Behaviour**
	  • Psychological Process
	  • Pavlovian Model
	  • Input-Output Model
	  • Sociological Model etc.

Module 3 (Credit 1): Consumer Empowerment and Consumer Education	
Learning Outcomes	After learning the module, learners will be able to
	1. Demonstrate the qualities of empowered consumer
	2. Apply the knowledge of consumer education to solve consumer problems

Content Outline	• **Consumer Empowerment**
	  • Introduction and importance of consumer empowerment
	• **Consumer Aids**
	  • Classification of consumer aids
	  • Information, protection and product safety
	  • Education and services
	• **Consumer education**
	  • Scope of consumer education

	• Approaches to consumer education
	• **Consumer Satisfaction/Dissatisfaction**
	  • Definition
	  • Theories of disconfirmed expectations
	  • Post purchase dissonance
	  • Factors affecting dissonance
	  • Dissonance reduction

Module 4 (Credit 1): Consumer Protection and Legislation and Consumerism	
Learning Outcomes	After learning the module, learners will be able to
	1. Develop the skills to resolve consumer problems by applying knowledge of consumer protection acts
	2. Strengthen the consumer movement by consumer awareness training programmes

Content Outline	• **Consumer Protection and Legislation [Pertaining to goods, services, housing etc.]**
	  • Consumer protection rights, Right to boycott and consumer laws
	  • Consumer forum
	  • Redressal mechanism as per the Consumer Protection act
	  • Integrated three stage consumer complaint redressal mechanism:
	  • Consumer Online Research and Empowerment (CORE) Centre
	  • National Consumer Helpline (NCH)
	  • Consumer Voice
	  • FICCI Alliance for consumer care (FACC)
	  • Non-Litigation Mechanism or Alternative Dispute Resolution (ADR)
	  • Computerization and Computer Networking of Consumer Forums in the Country
	• **Consumerism**
	  • Need and Scope of Consumerism
	  • Origin and Growth
	  • Objectives of consumer movement
	  • Consumer movement abroad
	  • Consumer movement in India
	  • Consumer movement in Maharashtra
	• **Modern trends in Consumerism**

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

Marks – 50 (Internal)

1. Individual Assignment: Consumer Rights and Responsibilities
2. Workshop: To organize workshop on consumer awareness on consumer rights
3. Group Project: To carryout one case study on factors affecting consumer behaviour.
4. Discussion: Modern trends in consumerism

References:

1. Khan M. (2001): Consumer Behaviour, New Age International (P) Limited Publisher.
2. Nair, S. R. (2001): Consumer Behaviour (Test & Cases), Himalaya Publishing House.
3. Nair, S. R. (2001): Consumer Behaviour in Indian Perspective, Himalaya Publishing House.
4. Niraj Kumar (1999): Consumer Protection in India, Himalaya Publishing House.
5. Sharan, A.K. (1999): Consumer Psychology, Rajat Publications.

Minor Stream (RM): Research Methodology (Th)

Subject Code: 134611

Course Description:

This course provides a foundation in scientific research processes, emphasizing systematic inquiry, research design, sampling techniques, and ethical considerations. Students learn to frame research problems, formulate hypotheses, review literature, select suitable methods, and develop data collection tools. The course also introduces basic statistical concepts to analyze and interpret research data, enabling learners to conduct and evaluate research with academic rigor.

Course Title	**Research Methodology**
Course Credits	**4 (Th)**
Course Outcomes	After going through the course, learners will be able to
	1. Develop a scientific approach and know the processes of research
	2. Develop the competence for selecting methods and tools appropriate for research topics
	3. Understand concepts of statistical measures of central tendency, dispersion, variability and probability
Module 1 (Credit 1): The Research Process	
Learning Outcomes	After learning the module, learners will be able to
	1. Understand process of research and its relationship to knowledge and science.
	2. Identify research process based on actual researches conducted.
	3. Recognize process of research problem formulation.
Content Outline	**The Research Process** • Scientific approach to enquiry in comparison to native, common-sense approach • Knowledge, theory and research • Role, need and scope of research in the discipline of Home Science • Assignment: Differentiate between investigative reporting and research report (with examples to be brought by students as exercise) **Steps in Research Process and Elements of Research** • Identifying interest areas and prioritizing • Selection of topic and considerations in selection • Review of related literature and research • Variables- types of variables including discrete and continuous variables • Conceptual definitions and operational definitions • Concepts, hypotheses and theories

	• Hypothesis- meaning, attributes of a sound hypothesis, Stating the hypothesis and types of hypothesis • Hypothesis testing- null hypothesis, sample distribution, level of significance, critical regions, Type I and Type II errors • Research Design • Research questions, objectives and assumptions • **Ethics in Research**
Module 2 (Credit 1): Types of Research	
Learning Outcomes	After learning the module, learners will be able to
	1. Understand and apply different types of research procedures.
	2. Able to design research studies by knowing methods of research.
Content Outline	• Basic and Applied research, Qualitative and Quantitative research (brief review of differences) • Historical research • Descriptive research methods – survey, case study, correlational study, content analysis, causal-comparative research • Analytic studies- pre-experimental, experimental research, quasi experimental research • Qualitative research, Ethnography • Evaluative research- general characteristics, use of qualitative methods in enquiry • Scope and importance in Home Science.
Module 3 (Credit 1): Sampling	
Learning Outcomes	After learning the module, learners will be able to
	1. Understand different techniques of sampling.
	2. Apply sampling procedures for specific research problems.
Content Outline	• Rationale, characteristics- meaning, concept of population and sample, and utility • Types of sampling and generalizability of results • Probability sampling - simple random sample, systematic random sample, stratified random sampling etc - random and non-random samples, random numbers and use • Non-probability sampling - purposive samples, incidental samples, quota samples, snowball samples • General consideration in determination of sample size
Module 4 (Credit 1): Tools for Data Collection	
Learning Outcomes	After learning the module, learners will be able to
	1. Define and differentiate different tools of data collection.
	2. Design different tools of data collection

Content Outline	• Primary and secondary methods of data collection • Different types of questionnaires, rating scales, check lists, schedules, attitude scales, inventories, standardized tests, interviews, observation • Development of tools, estimation of reliability and validity of tools • Procedure for preparation of the tool, administration of tools for data collection • Procedure for data collection • Planning for data analysis-coding of responses

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

1. **Assignment 1:** Recognize different Types of variables.
2. **Classroom activity 1:** Hypothesis formations and research questions from Research readings – students identify hypothesis/research questions – Discussion
3. **Presentation 1:** Construction of tools for data collection a) types of questions b) Questionnaire c) interview schedule d) observation e) scales
4. **Presentation 2:** Types of sampling methods used in research
5. **Classroom Activity 2:** Differentiate between (a) basic and applied research (Exercise to be based on actual research papers published in accredited journals) (b) qualitative and quantitative research
6. **Assignment 2:** Identify 5 research papers on particular area/topic of research and write review.

References

1. Bell, J. (1997): How to Complete Your Research Project Successfully: A Guide for First-time Researchers, UBSPD, New Delhi.
2. Festinger, L. and Katz, D. (ed.) (1977): Research Methods in the Behavioral Sciences, Amerind Publishing, New Delhi.
3. Gupta, S. (2001) "Research Methodology and Statistical Techniques", Deep and Deep, New Delhi.
4. Jain, G. (1998): Research Methodology: Methods and Techniques, Mangal Deep, Jaipur.
5. Kothari, C.R. (2000): Research Methodology: Methods and Techniques, WishwaPrakashan, New Delhi.
6. Kumar, A. (1997): Social Research Method (The Art of Scientific Investigation), Anmol Publication, New Delhi.
7. Kumar, A. (2002): Research Methodology in Social Sciences, Sarup and Sons, New Delhi.
8. McBurney, D.H. (2001): Research Methodology, Thomson-Wadsworth, Australia.

END OF SEMESTER I

Course Syllabus

Semester II: Industrial & Occupational Ergonomics

	Semester II					
Sr. No.	**Courses**	**Type of Course**	**Credits**	**Marks**	**Int**	**Ext**
	Semester II: Industrial & Occupational Ergonomics					
214611	Occupational Health & Safety (2+2)	Major (Core)	4	100	50	50
214612	Industrial Ergonomics (2+2)	Major (Core)	4	100	50	50
214613	Workplace & Environmental Ergonomics (2+2)	Major (Core)	4	100	50	50
214614	Statistics (Th)	Major (Core)	2	50	0	50
224611	Organization Behaviour (Th)	Major (Elective)	4	100	50	50
244641	Internship – Industry/ Organization (Pr)	OJT	4	100	50	50
	End of SEMESTER - II		**22**	**550**	**250**	**300**

Major Core: Occupational Health & Safety (2Th+2Pr)

Subject Code: 214611

Course Description:

This course introduces learners to the principles and practices of occupational health and safety, emphasizing hazard identification, risk assessment, and workplace injury and illness prevention. Through theoretical knowledge and hands-on practical activities, students learn to recognize physical, chemical, biological, and ergonomic risks, assess occupational diseases, and recommend control measures. The course also covers workplace hygiene, safety monitoring methods, and relevant health and labour laws. Students will develop skills to promote safe work environments, ensure compliance with safety regulations, and apply ethical and professional standards in protecting worker health and wellbeing.

Course Title	**Occupational Health & Safety**
Course Credits	**2(Th)+2(Pr)**
Course Outcomes	After going through the course, learners will be able to
	1. Understands the Safety and health policy, importance of training
	2. Understand the occupations hazards, diseases and disorders and measures undertaken to make workplace safe
	3. Identify the impact of occupational hazards and occupational hygiene on employee's health
	4. Use the knowledge of occupational laws, rules and regulations for solving workers problems related to health and safety
	5. Set the stage for an overview of health care, Risk and the harm caused by the healthcare, Human error and complex systems, Ethics, professional behaviours and regulation
Module 1 (Credit 1): Occupational Hazards and Risk Assessment (Pr)	
Learning Outcomes	After learning the module, learners will be able to
	1. Determine the risks on exposure to different occupational settings
	2. Use different methods to assess risk at workplaces and communicate preventive measures
Content Outline	• Physical, Chemical, Biological and Ergonomical Hazards • Initial Ergonomics Risk assessment (INERA) – Awkward posture, Fixed posture, Forceful exertions, Repetitive motions, Vibrations, contact stress & environmental factors • Hazards identification methods – Hazard Identification & Risk Assessment (HIRA), HAZOP, HAZID, Failure Mode Effect Analysis (FEMA), Job Safety Analysis (JSA), Human Error Analysis (HEA), Technic of operation Review (TOR), Fault Tree Analysis, Event Tree Analysis

Module 2 (Credit 1): Occupational Diseases (Th)	
Learning Outcomes	After learning the module, learners will be able to
	1. Identify the occupational health problems and suggest preventive measures
	2. Use knowledge of physiology to suggest workplace changes
Content Outline	• Occupational infections • Respiratory and cardiovascular diseases • Musculoskeletal disorders • Occupational carcinogen • Reproductive disorders
Module 3 (Credit 1): Occupational Hygiene & Safety (Pr)	
Learning Outcomes	After learning the module, learners will be able to
	1. Design workplace to reduce the impact of exposure on workers
	2. Monitor exposures and prevent its impact on workers by using various control measures
Content Outline	• Occupational Hygiene overview • Monitoring exposures • Biological monitoring • Prevention and control of exposures
Module 4 (Credit 1): Legislation Governing Health and Safety in different Types of Work and Work Settings (Th)	
Learning Outcomes	After learning the module, learners will be able to
	1. Use the knowledge of labour laws to ethically safeguard the interest of workers
	2. Make workers aware about responsibilities and rights of employees and employers
Content Outline	• Ethics • Policies • Acts and rules • Health surveillance

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

Marks 50 (Internal)

1. **Assignment 1:** Identify different Types of occupational health problems/diseases/disorders in 5 occupations
2. **Classroom activity 1:** To make a checklist to identify occupational disease in some occupations
3. **Presentation 1:** Construction of tools for data collection a) types of questions b) Questionnaire c) interview schedule d) observation e) scales

4. **Classroom Activity 2:** To learn to use ergonomics equipment's to measure the environmental exposures

References

1. Ajmal A. (2023). Ethics in Occupational Health and Safety. Notion Press, India.
2. Bare Act: The Professional Safety, Health and Working Conditions Code, 2020 (37 of 2020). Professional Book Publishers.
3. Balge M. Z. (2000). Occupational Health and Safety. Third Edition. National Safety Council.
4. Friend M and Kohn J. (2006). Fundamentals of occupational Health and Safety. Fourth Edition, Government Institutes.
5. Goetsch, D. L. (2010). Occupational Safety and Health for Technologists, Engineers, and Managers. Ninth Edition. Pearson Publication.
6. Haldar S.K. (2020). Occupational Health and Hygiene in Industry. CBS Publishers.
1. Haldar S.K. (2023). Industrial and Occupational Health. Second Edition. CBS Publishers & Distributors Pvt. Ltd.
2. Oxford Handbook of Occupational Health, Oxford Medical Publications, 2013, edited by Dr Julia Smedley, Dr Finlay Dick, Dr Steven Sadhra
3. Lee, G. C.H. (1999): Advances in Occupational Ergonomics and Safety, IOS Press, Amsterdam, Berlin, Oxford, Tokyo, Washington) Amsterdam IOS Press C.
4. Mital A. (1988): Trends in Ergonomics/Human Factors I, Butterworths, London, Butterworths, C.
5. Stranks, J. (1995). Occupational Health and Hygiene: (Health and Safety in Practice Guide). First Edition, Pitman, London.

Major Core: Industrial Ergonomics (2 Th+2 Pr)

Subject Code: 214612

Course Description:

This course provides an applied understanding of ergonomics in industrial settings, focusing on designing safe, efficient, and worker-centered workplaces. Students learn to analyze human-machine interaction, workplace layout, environmental factors (noise, heat, vibration, lighting), and organizational systems to reduce human error and improve productivity. Through practical assessments and industrial visits, learners gain hands-on experience to identify hazards, evaluate industrial environments, and recommend improvements aligned with ergonomic standards and safety regulations.

Course Title	**Industrial Ergonomics**
Course Credits	**2 (Th)+2 (Pr)**
Course Outcomes	After going through the course, learners will be able to
	1. Gain competence on recommended standards in industries and apply then whenever and wherever needed
	2. Identify the reasons for human error/accident in particular workplace and rectify the problem effectively
	3. Apply standards of noise, light, and vibration to improve the quality of life of the workers.
	4. Use the knowledge of impact of environment on workers to design better workplaces.
	5. Identify industrial problems and with knowledge of visits can suggest improvements in work environment
Module 1 (Credit 1): Introduction to Industrial Ergonomics (Th)	
Learning Outcomes	After learning the module, learners will be able to
	1. Apply principles of design in work places
	2. Design the workflow and good work practices for different types of work in organizations
Content Outline	• Human factors application (Human error, accidents, social aspects, work environment, MMH, repetitive activities, work capacity, stress) • User-design Experience-Human Computer Interaction • Work organization design-Work organization, work flow, workload, job design, job analysis, work practices
Module 2 (Credit 1): Industrial Safety & Acts (Th)	
Learning Outcomes	After learning the module, learners will be able to
	1. Identify the safety at workplace and design problems with displays and controls

	2. Gain competence to resolve industrial health issues within the labour laws and acts
Content Outline	• Workplace design – Displays & controls • Safety at workplace • Working in enclosed spaces • Industrial Health issues • Ethics in industrial safety • Legislation & regulation
Module 3 (Credit 1): Industrial Work Environment (Pr)	
Learning Outcomes	After learning the module, learners will be able to
	1. Develop competence in designing good work environment
	2. Define the issues related to the working environment and mitigate them
Content Outline	• Assessment of Heat Stress • Assessment of working in Cold environment • Impact of vibration among people working with vibrating tools in industries or drivers driving vehicles • Health problems among people working in chemical industries • Air pollution and its impact on human health
Module 4 (Credit 1): Industrial Visits (Pr)	
Learning Outcomes	After learning the module, learners will be able to
	1. Apply the theoretical knowledge in practical situations
	2. Visualize the working conditions, workplace design, workflow, risk factors in various industrial set-ups
Content Outline	• Visit to Consumer Product Manufacturing Unit • Visit to Pharmaceutical Packing unit • Visit to Automobile/Textile Industry • Visit to Furniture Manufacturing Industry

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

Marks 50 (Internal)

1. **Assignment 1:** To study the workflow of the activity in work situation
2. **Classroom activity 1:** To prepare checklist for repetitive work
3. **Presentation 1:** Study of controls and displays
4. **Classroom Activity 2:** To learn how to use ergonomics equipment's to measure the environmental exposures
5. **Report Writing:** Writing reports for industrial visits.

References

1. Ajmal A. (2023). Ethics in Occupational Health and Safety. Notion Press, India.

2. Bare Act. (2020). The Factories Act, 1948 (63 of 1948) with State Amendments. Professional Book Publishers.
3. Haldar S.K. (2017). Industrial and Occupational Health. CBS Publishers & Distributors Pvt. Ltd.
4. Oxford Handbook of Occupational Health, Oxford Medical Publications, 2013, edited by Dr Julia Smedley, Dr Finlay Dick, Dr Steven Sadhra
5. Lee, G. C.H. (1999): Advances in Occupational Ergonomics and Safety, IOS Press, Amsterdam, Berlin, Oxford, Tokyo, Washington) Amsterdam IOS Press C.
6. Mohapatra R. (2002). Occupational Health Hazards and Remedies. Jaypee Publication
7. Mital A. (1988): Trends in Ergonomics/Human Factors I, Butterworths, London, Butterworths, C.

Major Core: Workplace & Environmental Ergonomics (2Th+2Pr)

Subject Code: 214613

Course Description:

This course introduces principles of workplace and environmental ergonomics, focusing on designing safe, comfortable, and productive workspaces that align with human capabilities and needs. Students learn to apply anthropometric data, ergonomic design guidelines, and environmental standards related to heat, cold, noise, vibration, and lighting. Through practical assessments and field work, learners gain hands-on experience using ergonomic tools and instruments to evaluate work environments and recommend evidence-based improvements for worker health and performance.

Course Title	**Workplace & Environmental Ergonomics**
Course Credits	**2 (Th)+2 (Pr)**
Course Outcomes	After going through the course, learners will be able to
	1. Design the workplaces and work environment ergonomically
	2. Use the knowledge of impact of environment on workers to design better workplaces.
	3. Apply standards of noise, light, and vibration to improve the quality of life of the workers.
	4. To Understands the effects of different types environment like heat and cold on human body and solve the problems.
	5. Gain the knowledge of various assessment tools to assess work environment and suggest improved work environment
Module 1 (Credit 1): Workplace Ergonomics (Th)	
Learning Outcomes	After learning the module, learners will be able to
	1. Design the spaces as per human needs
	2. Apply the anthropometric data for designing
Content Outline	• Anthropometry • Design Principles, Universal Design, Inclusive Design • Workplace design principles and guidelines • Design of Tools and equipment's • Office workplace design
Module 2 (Credit 1): Workplace Design (Pr)	
Learning Outcomes	After learning the module, learners will be able to
	1. Gain competence in designing workplaces using design principles
	2. Prepare guidelines for designing workplaces

Content Outline	• To study different workplaces using design principles and prepare report with suggestions for improvement • To design new workplace based on the requirements of design • To develop guidelines based on the workplaces studied
Module 3 (Credit 1): Environmental Ergonomics (Th)	
Learning Outcomes	After learning the module, learners will be able to
	1. Develop products and barriers to the systems to reduce environmental stress
	2. Design workplaces environment friendly using theoretical knowledge
Content Outline	• Introduction to Environmental Ergonomics • Impact of Heat stress, Cold stress, Noise & Vibration, Lighting on human health • Air Pollution and its impact on humans, animals and vegetation
Module 4 (Credit 1): Assessment of Work Environment (Pr)	
Learning Outcomes	After learning the module, learners will be able to
	1. Independently use equipment's for physical environment study
	2. Use knowledge of equipment's to assess and interpret data based on standards available.
Content Outline	• Laboratory study of the equipment's and checklists for assessment of physical work environment • Use of equipment's to assess work environment in lab and on field settings • Compilation of data collected, analysis and interpretation of results • Solutions and suggestions for improving work environment

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

Marks 50 (Internal)

1. **Assignment 1:** To search anthropometric data for workplace design and guiding principles
2. **Classroom activity 1:** To study the workplace and make layout of the area and analyze
3. **Presentation 1:** Factors affecting work environment
4. **Classroom Activity 2:** To learn how to use ergonomics equipment's to measure the physical environmental.

References

1. Anton, T.J. (1989): Occupational Safety and Health Management, 2nd edition, (SanFransico, Tokyo).
2. Astrand & Rodahl. (1977). Textbook of Work Physiology: Physiological Bases of Exercise McGraw-Hill Series, USA.

3. Brouha, L. (1960). Physiology in Industry: Evaluation of industrial stresses by the physiological reactions of the worker. International Series of Monographs on Pure and Applied Biology. Division: Modern Trends in Physiological Sciences, Vol. 4. Pergamon Press.
4. Dul, J. and Weerdmeestre, B. (2001): Ergonomics for Beginners: A Quick Reference Guide; 2nd edition, Taylor and Francis (London, New York); published by Taylor and Francis, C., London
5. Grandjean, E. (1971): Fitting the task to the man: An Ergonomic Approach. 2nd edition, Taylor and Francis Ltd (London, New York).
6. Karpovich P.V. (1965). Physiology of muscular activity. 6th Edition. W.B. Saunders Company. USA.
7. Koncelik, J.A. (1982): Aging and the Product Environment, Hutchinson Ross Publication, Pennsylvania
8. Kroemer, K.H.E. and Grandjean, E. (1997) (5th edition): Fitting the Task to the Human, Taylor and Francis (London, New York); published by Taylor and Francis, C., London
9. Oborne, D.J. (1987): Ergonomics at Work. 2nd edition, John Wiley & Sons Ltd. Chichester, New York, Toronto.
10. Pleasant, S. (1991): Ergonomics, Work and Health, Mac Millan Press, London
11. Weiner, J.S. and Lourie. J.A. (1981). Practical Human Biology. Academic Press Inc. (London) Ltd.

Major Core: Statistics (Th)

Subject Code: 214614

Course Description:

This course introduces fundamental statistical concepts and analytical techniques used in research and data interpretation. Learners explore probability distributions, measures of central tendency and variability, and principles of parametric and non-parametric testing. Emphasis is placed on developing skills in data coding, management, and analysis using SPSS and MS Excel, enabling students to apply statistical tools, interpret results, and draw valid scientific inferences for both small and large sample studies.

Course Title	**Statistics**
Course Credits	**2 (Th)**
Course Outcomes	After going through the course, learners will be able to
	1. Discriminate between parametric and non-parametric tests
	2. Apply statistical tests for data analysis for both large and small samples
	3. Analyse and interpret the results based on statistical inferences drawn
Module 1 (Credit 1): Introduction to Statistics	
Learning Outcomes	After learning the module, learners will be able to
	1. Use the concept of statistical measures in research
	2. Carryout the management of data using SPSS and MS Excel

Content Outline	• **Concepts**
	  • Definition, conceptual understanding of statistical measures, popular concepts and misuse of statistics
	• **Normal Distribution and its Properties**
	  • Normal distribution
	  • Binomial distribution
	  • Probability, use of normal probability tables, area under normal distribution curve
	  • Parametric and non-parametric tests
	• **Data Management**
	  • Planning for data analysis – coding of responses, preparation of code book
	  • Coding of data
	  • Use of statistical programs
	  • MS Excel
	  • SPSS

Module 2 (Credit 1): Data Analysis	

Learning Outcomes	After learning the module, learners will be able to
	1. Define the grouped and un-grouped data
	2. Apply the large sample and small sample tests and interpret results

Content Outline	• **Data Analysis**
	  • Quantitative analysis, descriptive statistics, inferential statistics: Uses and limitations, Summation sign and its properties
	  • Proportions, percentages, ratios
	  • Measures of central tendency-mean, median, mode-arithmetic mean and its uses, mid – range, geometric mean, weighted mean
	  • Measures of dispersion /variability- range, variance, standard deviation, standard error, coefficient of variation, Kurtosis, skewness
	  • Grouped data-frequency distribution, histogram, frequency polygons, percentiles, quartiles, tertiles, ogive
	• **Large and Small Sample tests and interpretation**
	  • Z-test for single proportions and difference between proportions
	  • Large sample test for single mean and difference between means
	  • Small sample tests- 't'-test, paired 't'-test, 'F' Test

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

Total Marks – 25 (Internal)

1. **Individual Assignment:** Assignment on probability, Non-parametric & parametric tests
2. **Classroom Assignment:** To carryout large and small sample tests and interpretation of results

References:

1. Gupta S.P. (2019). Statistical Methods. 46th Edition. Sultan Chand and Sons, India.
2. Pandit, D.N. (2022). Statistics: A Modern Approach. Hindustan Publishing Corporation, India.
3. Gun, A.M., Gupta, M.K. and Dasgupta, B. (2013). Fundamentals of Statistics. Vol. 1, World Press.
4. Levin R.I. and Rubin D.S. (2006). Statistics for Management. Edition Seventh. Prentice-Hall of India Pvt. Ltd. New Delhi.

Major Elective: Organization Behaviour (Th)

Subject Code: 224611

Course Description:

This course provides a comprehensive understanding of human behavior within organizational settings, focusing on individual, group, and organizational dynamics. Students explore key concepts such as personality, perception, motivation, leadership, communication, power, politics, and conflict management to enhance workplace effectiveness. Through theoretical insights and practical exposure, the course equips learners to analyze organizational structures and culture, manage change, foster teamwork, and apply organizational behavior principles for improved performance and employee development.

Course Title	**Organization Behaviour**
Course Credits	**4 (Th)**
Course Outcomes	After going through the course, learners will be able to
	1. Understands the behaviour of individuals and group processes in organizations.
	2. Know the processes used in organization to achieve efficiency and effectiveness
	3. Know organizational structure through practical experience
	4. Understand different personality traits of individuals, their values, attitudes, and perceptions
	5. Demonstrate the characteristics and qualities needed for leadership and motivation
	6. Comprehend the knowledge to understand the group behavior, power and politics used in organizations
	7. Understand the reasons for conflicts and apply techniques to resolve them for development of the organization and employees
	8. Demonstrate organizational skills to communicate the organizational structure, culture and changes taking place in organization
Module 1 (Credit 1): Introduction to Organisational Behaviour	
Learning Outcomes	After learning the module, learners will be able to
	1. Define history of organizational behaviour in chronological order
	2. Demonstrate the knowledge of various models of organizational behaviour
Content Outline	• Scope, significance, History and development of Organisational Behaviour as a subject. • Meaning and definition of Organisational Behaviour • Models of Organisational Behaviour

Module 2 (Credit 1): The Individual	
Learning Outcomes	After learning the module, learners will be able to
	1. Identify leadership qualities and apply in organization
	2. Differentiate individual aspects of human behaviour in organization
Content Outline	• Foundation of individual behaviour. • Personality and learning. • Perception and attribution. • Values, attitudes and job satisfaction. • Motivation, concept and application. • Leadership.
Module 3 (Credit 1): The Group	
Learning Outcomes	After learning the module, learners will be able to
	1. Identify the importance of working as a team and team building in organization
	2. Define different aspects of human behaviour like power, politics, conflicts in organizations
Content Outline	• Foundation of group behaviour. • Communication. • Power and politics • Conflicts and negotiation
Module 4 (Credit 1): Organizational Dynamics	
Learning Outcomes	After learning the module, learners will be able to
	1. Develop the organization structure for different types of organizations
	2. Bring about change in the organizations when needed for organizational development
Content Outline	• Foundation of organisational structure. • Organisational culture • Organisational change. • Organisational Development.

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

Marks 50 (Internal)

1. **Assignment 1:** To study different organizational structures
2. **Classroom activity 1:** To prepare organizational structure for different types of organizations
3. **Presentation 1:** Individual presentations on personality, perception, values and attitudes, motivation and leadership
4. **Presentation 2:** Team presentation on communication, power & Politics and Conflicts & Negotiations
5. **Classroom Activity 2:** Quiz on Organization Culture and Organization Change

References

1. K. Ashwathappa (2002) Organisational Behaviour, Mumbai, Himalaya Publishing House.
2. Stephen P. Robbins (2001): Organisational Behaviour – concepts, controversies and applications – New Delhi, Prentice Hall of India.
3. Fred Luthons (1998) Organisational Behaviour, Boston, McGraw-Hill Publishing Co.
4. Mcshane, S.L. & Glinow, M.A. (2000): Organisational Behaviour – New Delhi, McGraw-hill Publishing Co. Ltd.
5. Singh, M. (2001), Organisational Behaviour – New Delhi, Deep and Deep Publications Pvt. Ltd.
6. Newstom, J.W. & Devis, K. (2000): Organisational Behaviour – New Delhi, McGraw-hill Publishing Co. Ltd.
7. Gupta, R. (2001) Organisational Behaviour – New Delhi, KitabMahal.
8. Cook, C.W. & Hunaskar, P.L. (2001): Management and Organisational Behaviour – Boston, McGraw-hill Irwin.
9. Kumar, M. & Mittal R. (2001) Organisational Behaviour – New Delhi, Anmol Publication Pvt. Ltd.
10. Chandan, J.S. (2001): Organisational Behaviour – New Delhi, Vikas Publishing House Pvt. Ltd.
11. Pettinger, R. (1996): Organisational Behaviour – London, Macmillan Press Ltd.
12. Hersey, P. & Blanchard, K. (1996): Management of Organisational Behaviour – New Delhi, Prentice Hall India.

OJT: Internship – Industry/Organization (Pr)

Subject Code: 244641

Course Description:

This internship course offers students the opportunity to gain real-world exposure by working in an industrial or organizational environment. It enables learners to apply theoretical knowledge, develop professional competencies, practice ethical workplace behavior, and enhance communication and leadership skills. Throughout the internship, students undertake assigned tasks, maintain systematic records, and prepare a structured internship report showcasing observations, achievements, and recommendations. The course aims to bridge academic learning with practical experience, supporting career readiness and professional growth.

Course Title	**Internship – Industry/Organization**
Course Credits	**4 (Pr)**
Course Outcomes	After going through the course, learners will be able to
	1. Absorb the knowledge gained during internship to connect to practical applications and gain work experience
	2. Apply professional training gained for career planning and development.
	3. Understand and apply work ethics while working in an organization.
	4. Demonstrate the ability to handle projects independently with confidence and show good leadership qualities in managing people
	5. Apply skills of record keeping and report writing learnt during the internship
Module 1 (Credit 1)	
Learning Outcomes	After learning the module, learners will be able to
	1. Develop good communication skills
	2. Demonstrate professionalism and work ethics
Content Outline	• Identification of Organization for Internship- Formal communication, permission/ approval, identifying and planning the assignment to be undertaken during the internship programmer
Module 2 (Credit 1)	
Learning Outcomes	After learning the module, learners will be able to
	1. Document the records precisely

	2. Demonstrate the skill to review tasks efficiently
Content Outline	• Review of the assignment- Documentation of the different tasks/activities within the organization
Module 3 (Credit 1)	
Learning Outcomes	After learning the module, learners will be able to
	1. Apply theoretical knowledge, practically in an organization
	2. Demonstrate sound theoretical knowledge in field situation
Content Outline	• Application of theoretical and practical inputs to real field situation
Module 4 (Credit 1)	
Learning Outcomes	After learning the module, learners will be able to
	1. Compile the data and present
	2. Write formal structured reports for the organizations
Content Outline	• Compiling the report with – introduction, observation, remarks, conclusion with recommendation

Reference:

University Manual for Internship for the Department of Resource Management

The PG Program in Resource Management and Ergonomics Visits and List of Journals for reference:

Field Visits to the

1. Industries - Manufacturing Units, textile industries, etc.
2. Institutions – IDC (IIT, Bombay), NITIE (Now IIM, Mumbai), CIFE - Mumbai, CLI - Mumbai, FurniTech - Pune, Alok Industry – Silvassa, etc.

List of Ergonomics & Human Factors Journals for reference

1. Ergonomics by Taylor & Francis
2. Human Factors by Sage Publications
3. Human Factors and Ergonomics by ResearchID
4. Journal of Agromedicine by Taylor & Francis
5. Journal of Ergonomics by Longdom Publishing
6. Applied Ergonomics by ScienceDirect.com by Elsevier

SNDT Women's University, Mumbai

Department of Resource Management

Master of Science

Resource Management & Ergonomics

as per NEP-2020

Syllabus for Semester – III & IV

(2024-25)

UNIVERSITY DEPT. OF RESOURCE MANAGEMENT
S.N.D.T. Women's University
Juhu Road, Santacruz (West),
Mumbai-400 049.

Course Syllabus

Semester III: Design Study and Research

SN	Courses	Type of Course	Credits	Marks	Int	Ext
	Semester III					
314621	Product & Furniture Design (Pr)	Major (Core)	4	100	50	50
314612	Designing for Special Population (Th)	Major (Core)	4	100	50	50
314623	Statistical Computing for Data Analysis (Pr)	Major (Core)	4	100	50	50
314614	Behavioral & Cognitive Ergonomics (Th)	Major (Core)	2	50	0	50
324611	Ergonomics in Everyday Life (Th)	Major (Elective)	4	100	50	50
354621	Research Project (Pr)	RP	4	100	50	50
	End of SEMESTER-III		**22**	**550**	**250**	**300**

Semester III: Product & Furniture Design (Pr)

Major (Core): Product & Furniture Design (Pr)

Subject Code: 314621

Course Description:

This practical course focuses on the design and development of products and furniture, tailored for MSc Interior Design & Ergonomics students. The course covers the entire design process, from conceptualization and sketching to prototyping and final presentation. Emphasis is placed on ergonomics, materials, and sustainable practices, enabling students to create functional, aesthetic, and user-centred designs.

Course Title	**Product & Furniture Design (Pr)**
Course Credits	**4 Credits**
Course Outcomes	After going through the course, learners will be able to
	1. Develop a comprehensive understanding of the product and furniture design process.
	2. Apply ergonomic & design principles to ensure comfort and usability.
	3. Explore and experiment with different materials and fabrication techniques.
	4. Create functional and aesthetically pleasing product and furniture designs.
	5. Produce prototypes and effectively communicate design ideas through presentations.
Module 1: Introduction to Product & Furniture Design	
Learning Outcomes	After learning the module, learners will be able to
	1. Apply design thinking and user-centered design methodologies.
	2. Integrate ergonomic principles into design projects.
Content Outline	● Overview of Product and Furniture Design ● Design Thinking and User-Centered Design ● History and Evolution of Furniture Design ● Ergonomics and Human Factors ● Introduction to Design Software (AutoCAD, Google SketchUp)
Module 2: Concept Development and Sketching	
Learning Outcomes	After learning the module, learners will be able to

	1. Develop and refine design concepts through sketching.
	2. Use rapid visualization techniques to communicate ideas & create mood boards
	3. Analyze case studies to understand successful design elements.
Content Outline	• Ideation and Concept Development • Sketching Techniques and Rapid Visualization • Creating Mood Boards and Design Narratives • Form and Function in Design • Case Studies of Iconic Furniture Designs
Module 3: Materials, Techniques, and Prototyping	
Learning Outcomes	After learning the module, learners will be able to
	1. Identify, select and incorporate sustainable materials for product & furniture design.
	2. Apply various fabrication techniques & utilize digital fabrication tools for precision and efficiency to create prototypes.
	3. Develop and test prototypes to refine design concepts.
Content Outline	• Material Selection and Properties • Sustainable Materials and Practices • Fabrication Techniques (Woodworking, Metalworking, Upholstery, etc.) • Digital Fabrication (3D Printing, CNC Milling) • Prototype Development and Testing
Module 4: Final Design and Presentation	
Learning Outcomes	After learning the module, learners will be able to
	1. Refine design concepts & produce detailed technical drawings with specifications based on prototype testing and feedback.
	2. Develop effective design presentation skills.
	3. Present final designs in a professional critique and exhibition setting.
Content Outline	• Refining Design Concepts and Prototypes • Creating Technical Drawings and Specifications • Design Presentation Techniques • Client and Stakeholder Feedback • Final Design Critique and Exhibition

Assessment Pattern:

<u>Assignments/Activities towards Comprehensive Continuous Evaluation (CCE):</u>

For Practical subject Total Marks – 100 (Continuous Assessment)

Module 1: Furniture Design Case study (Marks – 25)
- Research paper on the history of furniture design
- Ergonomic analysis project

Module 2: Sketching project (Marks – 25)
- Concept development sketches
- Mood board and design narrative

Module 3: Prototypes development (Marks – 25)
- Material selection and sustainability report
- Prototype development project

Module 4: Final project and presentations (Marks – 25)
- Technical drawings and specifications
- Final design presentation and critique

References

1. Ambrose, G., & Harris, P. (2011). **Ergonomics in Product Design**. AVA Publishing.

2. Lefteri, C. (2012). **Making It: Manufacturing Techniques for Product Design**. Laurence King Publishing.

3. Lawson, S. (2013). **Furniture Design: An Introduction to Development, Materials, and Manufacturing**. Laurence King Publishing.

Major (Core): Designing for Special Populations (Theory)

Subject Code: 314612

Course Description:

This course is tailored for MSc Ergonomics students to explore the principles, theories, and practical applications of designing for special populations within the field of interior design. Special populations include individuals with diverse physical, sensory, cognitive, and emotional needs. Through theoretical studies, case analyses, and design projects, students will gain insights into creating inclusive and accessible interior environments that cater to the unique requirements of special populations from an ergonomic perspective.

Course Title	**Designing for Special Populations (Theory)**
Course Credits	**4 Credits**
Course Outcomes	After going through the course, learners will be able to
	1. Understand the diverse needs and characteristics of special populations relevant to ergonomics.
	2. Explore theoretical frameworks and principles of inclusive design from an ergonomic standpoint.
	3. Analyze case studies and best practices in designing for special populations with a focus on ergonomic considerations.
	4. Apply ergonomic principles to create accessible and user-friendly interior environments for special populations.
	5. Develop sensitivity, empathy, and awareness towards designing for diverse user groups with ergonomic needs.
Module 1 (Credit 1): Understanding Special Populations	
Learning Outcomes	After learning the module, learners will be able to
	1. Explore the ergonomic implications of physical, sensory, cognitive, and emotional disabilities & Socio-cultural perspectives on disability and ergonomics.
	2. Familiarize with legislation and standards governing accessibility and inclusion from an ergonomic standpoint.
	3. Develop empathy and a user-centered design approach towards special populations in ergonomic design.
Content Outline	• Introduction to Special Populations in Ergonomics and Interior Design • Overview of Physical, Sensory, Cognitive, and Emotional Disabilities from an Ergonomic Perspective

	• Socio-Cultural Perspectives on Disability and Ergonomics • Legislation and Standards for Accessibility and Inclusion in Ergonomics • Empathy and User-Centered Design Approach in Ergonomic Design
Module 2 (Credit 1): Theoretical Frameworks of Inclusive Design from an Ergonomic Perspective	
Learning Outcomes	After learning the module, learners will be able to
	1. Explore the inclusive environments & role of human factors and ergonomics in designing for special populations.
	2. Examine theories of environmental psychology and apply strategies for designing spaces that accommodate aging-in-place and universal accessibility with ergonomic considerations.
	3. Understand the importance of sensory design in creating multi-sensory environments from an ergonomic viewpoint.
Content Outline	• Principles of Universal Design and Inclusive Environments in Ergonomics • Human Factors and Ergonomics in Interior Design for Special Populations • Environmental Psychology and User Behavior from an Ergonomic Viewpoint • Designing for Aging-in-Place and Universal Accessibility with Ergonomic Considerations • Sensory Design and Multi-Sensory Environments in Ergonomic Design
Module 3 (Credit 1): Designing Environments for Special Populations	
Learning Outcomes	After learning the module, learners will be able to
	1. Formulate & Conceptualize design solutions with a user-centered ergonomic approach, incorporating universal design principles.
	2. Develop & Design project for a Special Environment that promote accessibility and inclusion with ergonomic features.
Content Outline	• Residential and Housing Design • Public Spaces and Community Facilities • Workplaces and Educational Environments • Healthcare and Rehabilitation Facilities • Transportation and Mobility Solutions
Module 4 (Credit 1): Case Studies and Best Practices in Ergonomic Design for Special Populations	
Learning Outcomes	After learning the module, learners will be able to
	1. Analyze case studies of inclusive design projects targeting special populations from an ergonomic perspective.

	2. Critically assess design solutions for their effectiveness in meeting diverse user needs from an ergonomic standpoint.
	3. Discuss ethical considerations and responsibilities in ergonomic design for special populations & explore strategies for promoting emotional well-being and mental health through ergonomic design.
Content Outline	• Case Studies of Inclusive Interior Design Projects with Ergonomic Considerations • Best Practices in Designing for Special Populations with a Focus on Ergonomics • Analyzing Design Solutions for Accessibility and Inclusion from an Ergonomic Perspective • Ethical Considerations in Ergonomic Design for Special Populations • Designing for Emotional Well-being and Mental Health with Ergonomic Principles

Assessment Pattern:

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE):

Internal Total Marks – 50 (Continuous Assessment)

Module 1: Inclusive Design (Marks – 10)
- Assignment on the importance of inclusive design
- Case study analysis of an inclusive design project

Module 2: Accessibility project (Marks – 15)
- Report on Accessibility compliance
- Design project addressing physical, cognitive, and sensory impairments

Module 3: Design projects (Marks – 10)
- Design proposal for a specific population
- Presentation on multigenerational design strategies

Module 4: Group projects and presentations (Marks – 15)
- Design Project Proposal and Presentation with Ergonomic Emphasis
  - Assistive technology integration project
  - Final inclusive design project and presentation

References

1. Steinfeld, E., & Maisel, J. (2012). **Universal Design: Creating Inclusive Environments**. Wiley.
2. Leibrock, C. (1999). **Design for Dignity: Accessible Environments for People with Disabilities**. Whitney Library of Design.
3. Preiser, W. F. E., & Ostroff, E. (2001). **Universal Design Handbook**. McGraw-Hill Education.

4. Null, R. (2013). **Universal Design: Principles and Models**. CRC Press.

5. Story, M. F., Mueller, J. L., & Mace, R. L. (Eds.). (1998). **The Universal Design File: Designing for People of All Ages and Abilities**. NC State University, The Center for Universal Design.

6. Sanford, J. A. (2012). **Design for the Ages: Universal Design as a Rehabilitation Strategy**. Springer Publishing Company.

7. Pullin, G. (2009). **Design Meets Disability**. MIT Press.

8. Farage, M. A., Miller, K. W., Ajayi, F., & Hutchins, D. (Eds.). (2012). **Designing for Older Adults: Principles and Creative Human Factors Approaches**. CRC Press.

Major (Core): Statistical Computing for Data Analysis (Pr)

Subject Code: 314623

Course Description:

This practical course is designed for MSc students to gain hands-on experience with statistical software for data analysis. The course focuses on practical application rather than theoretical concepts, equipping students with the skills to analyse and interpret data relevant to the research. Students will work with real-world datasets and learn how to use statistical software tools such as SPSS, R, and Excel to perform data analysis, visualization, and reporting.

Course Title	**Statistical Computing for Data Analysis (Pr)**
Course Credits	**4 Credits**
Course Outcomes	After going through the course, learners will be able to
	1. Develop proficiency in using statistical software tools for data analysis.
	2. Apply statistical techniques to analyze and interpret any data.
	3. Gain practical experience in data visualization and reporting.
	4. Present statistical findings in a clear and professional manner.
	5. Apply statistical methods to solve real-world design & ergonomics research problems.
Module 1 (Credit 1) : Introduction to Statistical Concepts and Software	
Learning Outcomes	After learning the module, learners will be able to
	1. Understand basic statistical concepts & Navigate and use SPSS, R, and Excel for data analysis.
	2. Import and manage data in statistical software & conduct exploratory data analysis to summarize and visualize data.
Content Outline	• Overview of Statistical Concepts (Descriptive and Inferential Statistics) • Introduction to Statistical Software (SPSS, R, Excel) • Data Types and Data Entry • Basic Data Manipulation and Cleaning • Exploratory Data Analysis (EDA)
Module 2 (Credit 1) : Descriptive Statistics and Visualization	

Learning Outcomes	After learning the module, learners will be able to
	1. Calculate and interpret measures of central tendency and variability.
	2. Create and analyze frequency distributions and cross-tabulations & use data visualizations
	3. Develop skills in using statistical software to generate descriptive statistics and visualizations.
Content Outline	• Measures of Central Tendency (Mean, Median, Mode) • Measures of Variability (Range, Variance, Standard Deviation) • Frequency Distributions and Histograms • Cross-tabulations and Contingency Tables • Data Visualization Techniques (Charts, Graphs)
Module 3 (Credit 1) : Inferential Statistics and Hypothesis Testing	
Learning Outcomes	After learning the module, learners will be able to
	1. Apply sampling methods and confidence intervals.
	2. Perform hypothesis testing using t-tests, Chi-square tests, and ANOVA & Conduct correlation and regression analysis to examine relationships between variables.
	3. Use statistical software to perform inferential statistical analyses.
Content Outline	• Sampling Methods and Sampling Distributions • Confidence Intervals • Hypothesis Testing (t-tests, Chi-square tests) • Analysis of Variance (ANOVA) • Correlation and Regression Analysis
Module 4 (Credit 1) : Advanced Data Analysis and Reporting	
Learning Outcomes	After learning the module, learners will be able to
	1. Apply multivariate analysis techniques to complex data sets & conduct time series analysis and make forecasts based on data trends.
	2. Use non-parametric methods for data that do not meet parametric assumptions.
	3. Effectively report and interpret statistical results in a professional and scholarly manner.
Content Outline	• Multivariate Analysis Techniques (Factor Analysis, Cluster Analysis) • Time Series Analysis and Forecasting • Non-parametric Methods • Reporting and Interpreting Statistical Results

	• Presenting Data in Research Papers and Reports

Assessment Pattern:

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE):

For Practical subject Total Marks – 100 (Continuous Assessment)

Module 1: Hands-on software tutorials and exercises (Marks – 25)
- Data entry and cleaning assignment
- Exploratory data analysis project

Module 2: Data visualization project (Marks – 25)
- Descriptive statistics report
- Data visualization assignment

Module 3: Case studies and real-world data analysis projects (Marks – 25)
- Hypothesis testing assignment
- Correlation and regression analysis project

Module 4: Group projects and presentations (Marks – 25)
- Multivariate analysis project
- Final data analysis report and presentation

References

1. Aggarwal, B. M. (2008). ***Business statistics*** (2nd ed.). Ane Books Pvt. Ltd.
2. **Agresti, A., & Finlay, B. (2018). Statistical Methods for the Social Sciences (5th ed.). Pearson.**
3. **Field, A. (2018).** ***Discovering Statistics Using SPSS*** (5th ed.). Sage Publications.
4. **Gravetter, F. J., & Wallnau, L. B. (2020). Essentials of Statistics for the Behavioural Sciences (10th ed.). Cengage Learning.**
5. Gupta, S. C., & Kapoor, V. K. (2014). ***Fundamentals of mathematical statistics*** (11th ed.). Sultan Chand & Sons.
6. Gupta, S. P. (2018). ***Statistical methods*** (46th ed.). Sultan Chand & Sons.
7. Nagar, A. L., & Das, R. K. (2003). ***Basic statistics*** (2nd ed.). Oxford University Press.
8. **Heiman, G. W. (2014). Basic Statistics for the Behavioural Sciences (7th ed.). Cengage Learning.**
9. **Moore, D. S., McCabe, G. P., Alwan, L. C., Craig, B. A., & Duckworth, W. M. (2018). The Practice of Statistics for Business and Economics (5th ed.). W. H. Freeman.**
10. Ram, A. (2016). ***Statistics for management*** (8th ed.). Vrinda Publications Pvt. Ltd.
11. Sharma, J. K. (2010). ***Business statistics*** (2nd ed.). Pearson Education India.
12. Srivastava, T. N., & Rego, S. (2008). ***Statistics for management*** (1st ed.). Tata McGraw-Hill Education.

13. Tamhane, A. C., & Dunlop, D. D. (2000). ***Statistics and data analysis: From elementary to intermediate*** (1st ed.). Prentice Hall India.
14. **Tabachnick, B. G., & Fidell, L. S. (2019). Using Multivariate Statistics (7th ed.). Pearson.**
15. **Triola, M. F. (2018). Elementary Statistics (13th ed.). Pearson.**
16. **Wasserman, L. (2004). All of Statistics: A Concise Course in Statistical Inference. Springer.**
17. **Wickham, H., & Grolemund, G. (2017). *R for Data Science: Import, Tidy, Transform, Visualize, and Model Data*. O'Reilly Media.**

Major (Core): Behavioural & Cognitive Ergonomics (Theory)

Subject Code: 314614

Course Description:

This course is tailored for MSc Ergonomics students and focuses on understanding the behavioural and cognitive aspects of human performance within the context of ergonomics. Students will explore theories, principles, and methodologies related to human behaviour, cognition, and interaction with products, systems, and environments. The course aims to provide students with insights into designing ergonomic solutions that optimize human performance, satisfaction, and well-being.

Course Title	**Behavioural & Cognitive Ergonomics (Theory)**
Course Credits	**2 Credits**
Course Outcomes	After going through the course, learners will be able to
	1. Understand the theoretical foundations of behavioral and cognitive ergonomics.
	2. Analyze human factors influencing performance, decision-making, and user experience.
	3. Apply cognitive psychology principles to design intuitive and user-friendly products and systems.
	4. Explore methodologies for assessing cognitive workload, attention, and mental workload.
	5. Develop critical thinking skills for evaluating and improving the ergonomic design of products and environments.
Module 1 (Credit 1): Theoretical Foundations of Behavioral & Cognitive Ergonomics	
Learning Outcomes	After learning the module, learners will be able to
	1. Define behavioral and cognitive ergonomics and their relevance in design.
	2. Understand human information processing and cognitive architecture.
	3. Analyze models of human decision-making and problem-solving.
	4. Explore the role of attention and perception in ergonomic design.

	5. Discuss the significance of mental models in human-computer interaction.
Content Outline	• Introduction to Behavioral & Cognitive Ergonomics • Human Information Processing and Cognitive Architecture • Models of Human Decision-Making and Problem-Solving • Attention and Perception in Ergonomic Design • Mental Models and Human-Computer Interaction
Module 2 (Credit 1): Applications of Behavioral & Cognitive Ergonomics in Design	
Learning Outcomes	After learning the module, learners will be able to
	1. Apply principles of behavioral and cognitive ergonomics to design for user experience and usability.
	2. Conduct cognitive work analysis and task analysis to inform design decisions.
	3. Understand the role of human factors in product design and human-computer interaction.
	4. Apply interface design principles to enhance cognitive ergonomics.
	5. Explore methodologies for evaluating usability and user experience.
Content Outline	• Designing for User Experience and Usability • Cognitive Work Analysis and Task Analysis • Human Factors in Product Design and Human-Computer Interaction • Interface Design Principles for Enhancing Cognitive Ergonomics • Evaluating Usability and User Experience of Products and Systems

Assessment Pattern:

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE):

Internal Total Marks – 50 (Continuous Assessment)

Module 1: Case study (Marks – 25)
- Literature review on theoretical foundations
- Conceptual analysis of a case study

Module 2: Project (Marks – 25)
- Design critique of a product or interface
- Usability evaluation report

References

1. Card, S. K., Moran, T. P., & Newell, A. (1983). **The Psychology of Human-Computer Interaction** (1st ed.). Psychology Press.
2. Dowell, J., & Craig, A. T. (1986). **Cognitive Ergonomics: Understanding, Learning, and Designing Human-Computer Interaction** (1st ed.). Lawrence Erlbaum Associates.
3. Hollnagel, E. (2016). **Cognitive Systems Engineering** (1st ed.). CRC Press.
4. Lee, J. D., Wickens, C. D., Liu, Y., & Boyle, L. N. (2017). **Designing for People: An Introduction to Human Factors Engineering** (3rd ed.). Create Space Independent Publishing Platform.
5. Salvendy, G. (Ed.). (2019). **Handbook of Human Factors and Ergonomics** (5th ed.). Wiley.
6. Vicente, K. J. (1999). **Cognitive Work Analysis: Toward Safe, Productive, and Healthy Computer-Based Work** (1st ed.). Lawrence Erlbaum Associates.

Major (Elective): Ergonomics in Everyday Life (Theory)

Subject Code: 324611

Course Description:

This course is designed for MSc Ergonomics students to explore the principles, theories, and applications of ergonomics in everyday life contexts. Students will investigate how ergonomic design influences various aspects of daily activities, including work, leisure, transportation, and domestic environments. Through theoretical studies, case analyses, and real-world examples, students will develop a comprehensive understanding of how ergonomic principles can improve comfort, safety, and efficiency in everyday life.

Course Title	**Ergonomics in Everyday Life (Theory)**
Course Credits	**4 Credits**
Course Outcomes	After going through the course, learners will be able to
	1. Understand the fundamental principles and theories of ergonomics.
	2. Analyze ergonomic factors influencing daily activities in different contexts.
	3. Apply ergonomic design principles to improve comfort, safety, and efficiency in everyday life settings.
	4. Evaluate the ergonomic suitability of products, environments, and systems encountered in daily life.
	5. Develop critical thinking skills for identifying ergonomic challenges and proposing effective solutions.
Module 1 (Credit 1): Introduction to Ergonomics Principles	
Learning Outcomes	After learning the module, learners will be able to
	1. Define scope of ergonomics and its relevance in various domains.
	2. Explore the historical development of ergonomics as a discipline & understand human factors and ergonomics theories relevant to everyday life.
	3. Apply ergonomic design principles and guidelines to enhance daily activities considering ethics in design
Content Outline	• Definition and Scope of Ergonomics • Historical Overview of Ergonomics • Human Factors and Ergonomics Theories • Ergonomic Design Principles and Guidelines

	• Ethical Considerations in Ergonomics
Module 2 (Credit 1): Ergonomics in Work Environment	
Learning Outcomes	After learning the module, learners will be able to
	1. Analyze ergonomic factors influencing comfort and productivity in office environments.
	2. Design workstations for sitting & standing to minimize the risk of musculoskeletal disorders (MSD's).
	3. Evaluate the ergonomic suitability of workplace designs to promoting work-life balance and well-being in occupational settings.
Content Outline	• Ergonomics in Office Environments • Designing Workstations for Comfort and Productivity • Preventing Musculoskeletal Disorders (MSDs) in the Workplace • Ergonomic Considerations for Standing and Sitting Tasks • Work-Life Balance and Well-being in Occupational Settings
Module 3 (Credit 1): Ergonomics in Leisure and Transportation	
Learning Outcomes	After learning the module, learners will be able to
	1. Examine & Design ergonomic products for enhanced comfort and usability in leisure and recreation.
	2. Improve comfort and safety in travel and commuting through ergonomic design interventions.
	3. Discuss the ergonomic implications of digital devices and strategies for managing screen time
Content Outline	• Ergonomics in Leisure Activities and Hobbies • Designing Ergonomic Products for Leisure and Recreation • Ergonomic Considerations in Transportation Modes (e.g., Cars, Bicycles) • Improving Comfort and Safety in Travel and commuting • Ergonomics of Digital Devices and Screen Time Management
Module 4 (Credit 1): Ergonomics in Domestic Environments	
Learning Outcomes	After learning the module, learners will be able to
	1. Apply ergonomic principles to improve comfort and functionality in home design and interior spaces.
	2. Ensure child ergonomics and safety in home environments & select ergonomic furniture and equipment suitable for domestic use.

	3. Understand aging-in-place and universal design principles for creating inclusive domestic environments.
Content Outline	• Ergonomics in Home Design and Interior Spaces • Designing Kitchen and Bathroom Ergonomics • Child Ergonomics and Safety in Home Environments • Ergonomic Furniture and Equipment for Domestic use • Aging-in-Place and Universal Design Principles

Assessment Pattern:

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE):

Internal Total Marks – 50 (Continuous Assessment)

Module 1: Assignment & Case study (Marks – 15)
- Written assignment on the history of ergonomics
- Case study analysis of ergonomic design principles

Module 2: Project Presentation (Marks – 10)
- Workplace ergonomic assessment report
- Presentation on work-life balance initiatives

Module 3: Case studies and real-world data analysis projects (Marks – 10)
- Ergonomic product design project
- Case study analysis of transportation ergonomics

Module 4: Group projects and presentations (Marks – 15)
- Home ergonomic assessment and redesign project
- Presentation on aging-in-place and universal design principles

References

1. Bridger, R. S. (2018). **Introduction to Human Factors and Ergonomics** (4th ed.). CRC Press.
2. Dul, J., & Weerdmeester, B. (2008). **Ergonomics for Beginners: A Quick Reference Guide** (3rd ed.). CRC Press.
3. Kroemer, K. H. E., Kroemer, H. B., & Kroemer-Elbert, K. E. (2001). **Ergonomics: How to Design for Ease and Efficiency** (2nd ed.). Prentice Hall.
4. Norman, D. A. (2013). **The Design of Everyday Things** (Revised and expanded ed.). Basic Books
5. Wilson, J. R., & Corlett, E. N. (2005). **Evaluation of Human Work** (3rd ed.). CRC Press.
6. Carayon, P. (Ed.). (2011). **Handbook of Human Factors and Ergonomics in Health Care and Patient Safety** (2nd ed.). CRC Press.

Research Project : Research Project (Pr)

Subject Code: 354621

Course Description:

This course is designed to guide MSc Interior Design students through the process of conducting a comprehensive research project related to interior design. Students will learn how to formulate research questions, design and implement research methodologies, analyse data, and present their findings. The course aims to develop students' research skills and contribute to the body of knowledge in the field of interior design.

Course Title	**Statistical Computing for Data Analysis (Pr)**
Course Credits	**4 Credits**
Course Outcomes	After going through the course, learners will be able to
	1. Develop a research proposal with clear objectives and methodology.
	2. Conduct a literature review and contextualize the research within existing knowledge.
	3. Implement appropriate research methods and collect data.
	4. Analyze data using suitable techniques and tools.
	5. Present research findings in a coherent and scholarly manner.
Module 1: Research Foundations and Proposal Development	
Learning Outcomes	After learning the module, learners will be able to
	1. Develop clear and concise research questions and hypotheses.
	2. Design a research study with appropriate methodology.
	3. Plan & Write a comprehensive research proposal.
	4. Apply ethical principles in research.
Content Outline	• Introduction to Research in Interior Design • Formulating Research Questions and Hypotheses • Research Design and Methodology • Writing a Research Proposal • Ethics in Research
Module 2: Literature Review and Theoretical Framework	
Learning Outcomes	After learning the module, learners will be able to

	1. Conduct a thorough literature review on a chosen topic & Identify gaps and areas for further research.
	2. Develop a theoretical framework to guide the research.
	3. Appropriately cite sources and understand the importance of academic integrity.
	4. Design & Write a coherent literature review section.
Content Outline	• Conducting a Literature Review • Identifying Gaps in Existing Research • Developing a Theoretical Framework • Citing Sources and Avoiding Plagiarism • Writing the Literature Review Section
Module 3: Data Collection and Analysis	
Learning Outcomes	After learning the module, learners will be able to
	1. Apply various data collection methods & design effective tools for data collection.
	2. Collect data systematically and ethically.
	3. Analyze data using appropriate methods and tools
	4. Interpret and present data findings.
Content Outline	• Qualitative and Quantitative Research Methods • Designing Surveys, Interviews, and Observation Protocols • Data Collection Techniques • Data Analysis Methods (Statistical Analysis, Thematic Analysis) • Using Software Tools for Data Analysis (SPSS, R, Excel)
Module 4: Presenting Research Findings and Writing the Research Report	
Learning Outcomes	After learning the module, learners will be able to
	1. Structure report and present research findings clearly and effectively.
	2. Apply visual tools to enhance the presentation of data.
	3. Write logical conclusions and recommendations.
	4. Prepare for and deliver an effective oral presentation during viva voce.
Content Outline	• Structuring the Research Report • Writing the Results and Discussion Sections • Visualizing Data (Charts, Graphs, Tables) • Writing Conclusions and Recommendations • Preparing for Oral Presentations and Viva voce

Assessment Pattern:

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE):

For Practical subject Total Marks – 100 (Continuous Assessment)

Module 1: Research Proposal (Marks – 25)
- Preparation of Research proposal
- Assignment on Ethics in research

Module 2: Review of Literature **(Marks – 25)**
- Collecting review of literature
- Literature review draft

Module 3: Data Collection (Marks – 25)
- Data collection plan
- Data analysis report

Module 4: Research Report (Marks – 25)
- Research report draft
- Final research report
- Oral presentation/Viva voce

References

1. Creswell, J. W., & Creswell, J. D. (2018). **Research Design: Qualitative, Quantitative, and Mixed Methods Approaches** (5th ed.). Sage Publications.
2. Bryman, A. (2016). **Social Research Methods** (5th ed.). Oxford University Press.
3. Babbie, E. R. (2020). **The Practice of Social Research** (15th ed.). Cengage Learning.
4. Yin, R. K. (2018). **Case Study Research and Applications: Design and Methods** (6th ed.). Sage Publications.
5. Saunders, M. N. K., Lewis, P., & Thornhill, A. (2019). **Research Methods for Business Students** (8th ed.). Pearson.
6. Cohen, L., Manion, L., & Morrison, K. (2018). **Research Methods in Education** (8th ed.). Routledge.
7. Neuman, W. L. (2014). **Social Research Methods: Qualitative and Quantitative Approaches** (7th ed.). Pearson.
8. Patton, M. Q. (2015). **Qualitative Research & Evaluation Methods** (4th ed.). Sage Publications.
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10. Robson, C., & McCartan, K. (2016). **Real World Research** (4th ed.). Wiley.

Course Syllabus

Semester IV: Technologies and Research

	Semester IV					
414621	Technologies & Sustainable Ergonomics (Pr)	Major (Core)	4	100	50	50
414622	Internship (Pr)	Major (Core)	8	200	100	100
424611	Ergonomics for Sports & Leisure (Th)	Major (Elective)	4	100	50	50
454631	Research Project - Dissertation	RP	6	150	100	50
	End of SEMESTER-IV		**22**	**550**	**300**	**250**

Semester IV: Technologies and Research

Major (Core): Technologies & Sustainable Ergonomics (Practical)

Subject Code: 414621

Course Description:

This course is designed for MSc Ergonomics students focusing on practical applications of technologies and sustainable practices in ergonomics design. Students will explore the integration of advanced technologies and sustainable principles to enhance ergonomic solutions in various domains. Through hands-on projects, case studies, and practical exercises, students will develop proficiency in utilizing technologies for ergonomic assessments, designing sustainable products and systems, and addressing contemporary challenges in ergonomics.

Course Title	**Technologies & Sustainable Ergonomics (Practical)**
Course Credits	**4 Credits**
Course Outcomes	After going through the course, learners will be able to
	1. Apply advanced technologies for ergonomic assessments and interventions.
	2. Integrate sustainable principles into ergonomic design practices.
	3. Evaluate the environmental impact of ergonomic solutions and propose sustainable alternatives.
	4. Utilize digital tools and software for ergonomic analysis, simulation, and visualization.
	5. Develop innovative and sustainable ergonomic solutions for real-world applications.
Module 1 (Credit 1): Introduction to Technologies in Ergonomics	
Learning Outcomes	After learning the module, learners will be able to
	1. Understand the role of technologies in enhancing ergonomics practices.
	2. Explore digital tools and software for ergonomic assessments and interventions.
	3. Discuss the application of wearable technologies for real-time monitoring and feedback.

	4. Examine the use of VR and AR in ergonomic design and training.
	5. Identify assistive technologies and their implications for human-machine interaction.
Content Outline	• Overview of Technologies in Ergonomics • Digital Tools and Software for Ergonomic Assessments • Wearable Technologies for Monitoring and Feedback • Virtual Reality (VR) and Augmented Reality (AR) Applications in Ergonomics • Human-Machine Interaction and Assistive Technologies
Module 2 (Credit 1): Sustainable Ergonomics Principles and Practices	
Learning Outcomes	After learning the module, learners will be able to
	1. Define sustainable ergonomics and its relevance in design practices.
	2. Explore principles and practices of sustainable product design.
	3. Discuss eco-design principles and strategies for reducing environmental impact.
	4. Understand the concepts of circular economy and closed-loop systems.
	5. Identify sustainable materials and manufacturing processes for ergonomic products.
Content Outline	• Introduction to Sustainable Ergonomics • Sustainable Product Design and Lifecycle Assessment • Eco-design Principles and Strategies • Circular Economy and Closed-Loop Systems • Sustainable Materials and Manufacturing Processes
Module 3 (Credit 1): Technologies for Sustainable Ergonomics	
Learning Outcomes	After learning the module, learners will be able to
	1. Explore the integration of technologies and sustainable principles in ergonomic design.
	2. Utilize digital twin and simulation tools for sustainable product development.
	3. Discuss IoT applications in monitoring and optimizing sustainability in ergonomics.
	4. Analyze data using advanced analytics for assessing environmental impact.

	5. Identify smart technologies for enhancing energy efficiency and waste reduction
Content Outline	• Integration of Technologies and Sustainable Principles • Digital and Simulation Tools for Sustainable Design • IoT (Internet of Things) Applications in Sustainable Ergonomics • Data Analytics for Environmental Impact Assessment • Smart Technologies for Energy Efficiency and Waste Reduction
Module 4 (Credit 1): Case Studies and Innovative Solutions	
Learning Outcomes	After learning the module, learners will be able to
	1. Analyze case studies of technologies and sustainable ergonomics applications.
	2. Develop innovative solutions for addressing contemporary ergonomic challenges.
	3. Apply design thinking principles and prototyping techniques to sustainable ergonomics projects.
	4. Pitch and present ergonomic solutions effectively to stakeholders.
Content Outline	• Case Studies of Technologies and Sustainable Ergonomics Applications • Innovative Solutions for Addressing Contemporary Challenges • Design Thinking and Prototyping for Sustainable Ergonomics • Pitching and Presenting Ergonomic Solutions to Stakeholders • Reflection on Learning and Future Directions in Technologies & Sustainable Ergonomics

Assessment Pattern:

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE):

For Practical subject Total Marks – 100 (Continuous Assessment)

Module 1: Assignment &/ Hands-on exercise (Marks – 25)
- Literature review on technologies in ergonomics
- Hands-on exercise using digital tools for ergonomic assessment

Module 2: Case study &/ Project (Marks – 25)
- Article/Research paper on sustainable ergonomics practices
- Design project incorporating sustainable principles

Module 3: Project &/ Report (Marks – 25)
- Design project integrating technologies and sustainable principles
- Data analysis report on environmental impact assessment

Module 4: Case study Report (Marks – 25)

- Case study analysis and presentation
- Final project presentation and reflection

References

1. Biselli, P. M., & Soares, M. (Eds.). (2019). **Technologies for Sustainable Ergonomics**. CRC Press.
2. Chapman, J. (2005). **Sustainable Product Design**. Routledge.
3. Thatcher, A., Yeow, P. H. P., & Moray, N. (2018). **Sustainable Ergonomics: Designing Work Systems for a Sustainable Future**. Springer.
4. Kleiner, B. M., & Sears, J. M. (2011). **Macroergonomics: Theory, Methods, and Applications**. CRC Press.
5. Martin, J. W., & Lave, L. B. (2010). **Design for Environment: A Guide to Sustainable Product Development** (2nd ed.). McGraw-Hill.
6. Robertson, M. M., & Maynard, W. S. (Eds.). (2005). **Sustainable Work Systems: From Design to Action**. Taylor & Francis.

Internship: Internship (Pr)

Subject Code: 414622

Course Description:

The Internship course offers MSc Ergonomics students the opportunity to gain substantial practical experience in the field of interior design through supervised work placements in relevant industries. This extended internship allows students to deepen their understanding of interior design practice, develop advanced skills, and build professional networks. Through hands-on projects and immersive experiences, students will enhance their readiness for career advancement in the interior design profession.

Course Title	**Internship (Pr)**
Course Credits	**8 Credits (240 Hours)**
Course Outcomes	After going through the course, learners will be able to
	1. Apply advanced theoretical knowledge and skills to real-world design projects.
	2. Develop advanced professional skills, work ethics, and leadership qualities.
	3. Establish strong connections and networks within the interior design industry.
	4. Engage in critical reflection and self-assessment to identify areas for continuous improvement and growth.
Module 1: Pre-Internship Preparation and Goal Setting	
Learning Outcomes	After learning the module, learners will be able to
	1. Apply advanced theoretical knowledge and skills to real-world design projects.
	2. Gain extensive practical experience across various aspects of interior design practice.
	3. Develop advanced professional skills, work ethics, and leadership qualities.
	4. Establish strong connections and networks within the interior design industry.
Content Outline	• Defining Personal and Professional Objectives for the Internship • Tailoring Resume, Portfolio, and Cover Letter for Placement Opportunities • Researching and Identifying Potential Internship Host Organizations • Developing Effective Networking Strategies • Setting Learning Goals and Expectations for the Internship Experience
Module 2: Immersive Internship Experience	

Learning Outcomes	After learning the module, learners will be able to
	1. Familiarize oneself with the host organization's operations, culture, and projects.
	2. Adopt roles and responsibilities within the internship setting.
	3. Actively participate in real-world design projects and collaborative activities.
	4. Seek mentorship and guidance from experienced supervisors and peers.
Content Outline	• Introduction to the Host Organization's Structure, Culture, and Projects • Understanding Internship Roles, Responsibilities, and Expectations • Engaging in Real-World Design Projects and Collaborative Activities • Applying Advanced Interior Design Concepts, Techniques, and Methodologies • Seeking Mentorship and Professional Guidance from Supervisors and Peers
Module 3: Professional Development and Leadership	
Learning Outcomes	After learning the module, learners will be able to
	1. Develop advanced design and presentation skills for professional settings.
	2. Enhance communication, negotiation, and client management abilities.
	3. Collaborate effectively & manage time, resources, and project deadlines efficiently and responsibly.
	4. Navigate ethical, legal, and regulatory considerations inherent in interior design practice.
Content Outline	• Developing Advanced Design and Presentation Skills • Enhancing Communication, Negotiation, and Client Management Abilities • Leading and Collaborating Effectively within Design Teams • Managing Time, Resources, and Project Deadlines • Navigating Ethical, Legal, and Regulatory Considerations in Interior Design Practice
Module 4: Reflective Practice and Career Planning	
Learning Outcomes	After learning the module, learners will be able to
	1. Reflect critically on internship experiences, achievements, and challenges.
	2. Evaluate progress towards initial learning objectives and goals set at the beginning of the internship.

	3. Gather feedback from supervisors, mentors, and peers to inform self-assessment.
	4. Develop a strategic career plan and set actionable goals for future advancement.
Content Outline	• Reflecting on Internship Experiences, Achievements, and Challenges • Evaluating Progress Towards Initial Learning Objectives and Goals • Gathering Feedback from Supervisors, Mentors, and Peers • Identifying Strengths, Weaknesses, and Areas for Professional Growth • Developing a Strategic Career Plan and Setting Future Goals

Assessment Pattern:

<u>Assignments/Activities towards Comprehensive Continuous Evaluation (CCE):</u>

For Practical subject Total Marks – 100 (Continuous Assessment)

Module 1: Internship Pre-preparation (Marks – 25)
- Internship goals and objectives statement
- Updated resume, portfolio, and cover letter submission

Module 2: Progress Mid-Term (Marks – 25)
- Mid-internship progress report and evaluation
- Supervisor feedback and performance evaluation

Module 3: Professional Development (Marks – 25)
- Professional development portfolio showcasing advanced skills
- Leadership and teamwork assessment

Module 4: Classroom Project (Marks – 25)
- Final internship reflection report
- Presentation & Viva voce

References

1. **Department Internship Manual**. (2020).

Major (Elective): Ergonomics for Sports & Leisure (Theory)

Subject Code: 424611 (Elective)

Course Description:

This course is designed for MSc Ergonomics students interested in understanding the application of ergonomic principles to sports and leisure activities. Students will explore the interaction between humans and sports equipment, environments, and facilities, with a focus on optimizing performance, safety, and comfort. Through theoretical studies, case analyses, and practical exercises, students will develop the knowledge and skills necessary to design ergonomic solutions that enhance the sporting experience and promote well-being in leisure activities.

Course Title	**Ergonomics for Sports & Leisure (Theory)**
Course Credits	**4 Credits**
Course Outcomes	After going through the course, learners will be able to
	1. Understand the principles and theories of ergonomics as applied to sports and leisure.
	2. Analyze human factors affecting performance, injury prevention, and comfort in sports and leisure activities.
	3. Apply ergonomic design principles to sports equipment, facilities, and environments.
	4. Evaluate the ergonomic suitability of sports and leisure products and facilities.
	5. Develop critical thinking and problem-solving skills for addressing ergonomic challenges in sports and leisure contexts.
Module 1 (Credit 1): Introduction to Ergonomics for Sports & Leisure	
Learning Outcomes	After learning the module, learners will be able to
	1. Define ergonomics and its relevance to sports and leisure activities.
	2. Identify human factors affecting performance and safety in sports.
	3. Understand the biomechanics of movement and its implications for sports performance.
	4. Apply ergonomic design principles to sports equipment and facilities.

	5. Discuss ethical considerations in the application of ergonomics to sports and leisure.
Content Outline	• Overview of Ergonomics and Its Applications in Sports & Leisure • Human Factors Influencing Performance and Safety in Sports • Biomechanics of Movement and Sports Performance • Ergonomic Design Principles for Sports Equipment and Facilities • Ethical Considerations in Ergonomics for Sports & Leisure
Module 2 (Credit 1): Human-Centered Design in Sports Equipment and Apparel	
Learning Outcomes	After learning the module, learners will be able to
	1. Examine ergonomic design principles for sports equipment and apparel.
	2. Explore materials and technologies used in sports product design.
	3. Consider anthropometric factors in designing sports equipment for athletes.
	4. Evaluate the role of comfort in optimizing performance in sports apparel.
	5. Discuss sustainability and eco-friendly practices in sports product design.
Content Outline	• Ergonomic Design of Sports Equipment and apparel • Materials and Technologies in Sports Product Design • Anthropometric Considerations in Designing for Athletes • Comfort and Performance Optimization in Sports Apparel • Sustainability and Eco-friendly Practices in Sports Product Design
Module 3 (Credit 1): Ergonomics of Sports Facilities and Environments	
Learning Outcomes	After learning the module, learners will be able to
	1. Understand the principles of ergonomic design for sports facilities and venues.
	2. Explore environmental ergonomics in outdoor sports and leisure activities.
	3. Consider safety and accessibility in the design of sports environments.
	4. Identify ergonomic challenges and solutions in extreme sports contexts.

	5. Discuss the importance of user experience and enjoyment in sports and leisure environments
Content Outline	• Designing Ergonomic Sports Facilities and Venues • Environmental Ergonomics in Outdoor Sports and Leisure Activities • Safety and Accessibility Considerations in Sports Environments • Ergonomic Challenges and Solutions in Extreme Sports • User Experience and Enjoyment in Sports and Leisure Environments
Module 4 (Credit 1): Advanced Topics in Sports Ergonomics	
Learning Outcomes	After learning the module, learners will be able to
	1. Explore emerging trends and innovations in sports ergonomics.
	2. Understand ergonomic considerations in e-sports and virtual reality.
	3. Examine strategies for injury prevention and rehabilitation in sports.
	4. Discuss the role of data analytics and technology in optimizing sports performance.
	5. Identify future directions and challenges in sports ergonomics research.
Content Outline	• Emerging Trends and Innovations in Sports Ergonomics • Ergonomic Considerations in E-sports and Virtual Reality • Injury Prevention and Rehabilitation in Sports • Data Analytics and Technology in Sports Performance Optimization • Future Directions and Challenges in Sports Ergonomics Research

Assessment Pattern:

<u>Assignments/Activities towards Comprehensive Continuous Evaluation (CCE):</u>

Internal Total Marks – 50 (Continuous Assessment)

Module 1: Assignment & Case study (Marks – 15)
- Literature review on human factors in sports ergonomics
- Case study analysis of ergonomic design in a sports facility

Module 2: Project Assignment (Marks – 10)
- Design critique of a sports equipment or apparel
- Article/Research paper on sustainable practices in sports product design

Module 3: Case studies and real-world data analysis projects (Marks – 10)
- Design proposal for an ergonomic sports facility or venue
- Case study analysis of user experience in a sports environment

Module 4: Group projects and presentations (Marks – 15)

- Research presentation on an advanced topic in sports ergonomics
- Final exam covering advanced topics in sports ergonomics

References

1. Reilly, T., & Knapik, B. (Eds.). (2003). **Ergonomics in Sport and Physical Activity: Enhancing Performance and Improving Safety**. Routledge.
2. Rasmussen, J. M., & Wickens, C. D. (2014). **Human Factors in Sports, Health, and Performance**. CRC Press.
3. Troup, J. D. G. (1992). **Ergonomics in Sports and Exercise**. Butterworth-Heinemann.
4. Kerr, R. (2003). **Ergonomics and the Design of Sport**. Routledge.
5. Hong, Y. (Ed.). (2013). **International Research in Sports Biomechanics**. Routledge.
6. Bullock, M. I., & Panagiotopoulou, A. (2016). **Handbook of Ergonomics in Sport and Exercise**. Nova Science Publishers.

Research Project: Research Project – Dissertation

Subject Code: 454631

Course Description:

The Research Project - Dissertation course is the pinnacle of the MSc Ergonomics program, offering students the opportunity to delve deeply into a topic of their interest within the field of Human Factors & Ergonomics. Under the mentorship of a faculty advisor, students will conceive, execute, and document an extensive research project that contributes to the advancement of knowledge in interior design. This course emphasizes critical analysis, research methodology, and scholarly writing, preparing students for careers in academia, research, or professional practice.

Course Title	**Research Project – Dissertation**
Course Credits	**6 Credits**
Course Outcomes	After going through the course, learners will be able to
	1. Develop a well-defined research question or hypothesis within the scope of interior design.
	2. Design and implement a robust research methodology suitable for investigating the research question.
	3. Collect, analyze, and interpret data using appropriate quantitative or qualitative research methods.
	4. Demonstrate proficiency in scholarly writing, including literature review, methodology description, and results discussion.
Module 1: Research Proposal Development	
Learning Outcomes	After learning the module, learners will be able to
	1. Define a clear and concise research question and objectives.
	2. Conduct a thorough review of existing literature and establish a theoretical framework.
	3. Design an appropriate research methodology and justify methodological choices.
	4. Address ethical considerations and develop a detailed research proposal outlining the research plan and timeline.
Content Outline	• Formulating a Research Question and Objectives • Review of Literature and Theoretical Framework • Research Design and Methodology • Ethical Considerations and Institutional Approval • Developing a Comprehensive Research Proposal
Module 2: Data Collection and Analysis	
Learning Outcomes	After learning the module, learners will be able to
	1. Implement data collection techniques and ensure data quality and integrity.

	2. Recruit participants and obtain informed consent in accordance with ethical guidelines.
	3. Manage and analyze collected data using appropriate statistical or qualitative analysis methods.
	4. Interpret research findings derived from quantitative and qualitative data analysis & present data analysis results
Content Outline	• Selection of Data Collection Techniques and Instruments • Participant Recruitment and Informed Consent • Data Management and Quality Assurance • Quantitative Data Analysis Methods • Qualitative Data Analysis Techniques
Module 3: Research Execution and Progress Reporting	
Learning Outcomes	After learning the module, learners will be able to
	1. Execute research activities according to the approved research plan and timeline.
	2. Manage project timelines and milestones effectively to ensure timely progress.
	3. Identify and address challenges encountered & maintain open communication with supervisors and seek guidance as needed.
	4. Prepare and deliver progress reports that document research execution and findings.
Content Outline	• Executing Research Activities According to Plan • Project Management and Timelines • Addressing Challenges and Modifying Research Protocols • Communicating Progress with Supervisors • Preparing and Delivering Progress Reports
Module 4: Data Interpretation and Results Presentation	
Learning Outcomes	After learning the module, learners will be able to
	1. Analyze and interpret research findings derived from collected data.
	2. Present research results clearly and effectively through written and oral means.
	3. Utilize data visualization techniques to enhance the presentation of results.
	4. Discuss the implications and limitations of the study findings.
Content Outline	• Analyzing and Interpreting Research Findings • Presenting Results Effectively • Utilizing Data Visualization Techniques • Discussing Implications and Limitations of the Study • Drafting the Results Section of the Dissertation
Module 5: Dissertation Writing and Revision	
Learning Outcomes	After learning the module, learners will be able to
	• Structure the dissertation manuscript according to established academic conventions.

	• Demonstrate proficiency in scholarly writing and citation practices.
	• Revise and edit the dissertation draft for clarity, coherence, and academic rigor.
	• Incorporate feedback received from supervisors and peers to improve the quality of the dissertation & submit manuscript.
Content Outline	• Structuring the Dissertation: Introduction, Methodology, Results, Discussion, Conclusion • Academic Writing Style and Citation Practices • Revising and Editing the Dissertation Draft • Incorporating Feedback from Supervisors and Peers • Finalizing the Dissertation for Submission
Module 6: Dissertation Viva Voce and Presentation	
Learning Outcomes	After learning the module, learners will be able to
	• Prepare and deliver a comprehensive dissertation defense presentation that effectively communicates research findings and contributions.
	• Respond confidently and professionally to questions and critiques posed by the examining committee.
	• Reflect on the research journey, including challenges faced, lessons learned, and personal growth experienced throughout the process.
	• On successful completion of the dissertation, acknowledge the support received from mentors, peers, and loved ones.
Content Outline	• Preparing for the Dissertation Defense • Presentation of Research Findings to Examining Committee • Responding to Questions and Critiques • Reflecting on the Research Journey • Celebrating the Completion of the Dissertation

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE):

For Practical subject Total Marks – 100 (Continuous Assessment)

Module 1: Research Proposal (Marks – 25)
- Research proposal submission
- Proposal presentation

Module 2: Data collection (Marks – 25)
- Data collection and management plan
- Data analysis report

Module 3: Progress report (Marks – 25)
- Progress report on research execution
- Presentation on research progress

Module 4: Project (Marks – 25)
- Presentation on data interpretation and results
- Results section draft of the dissertation

Module 5: Progress report (Marks – 25)
- Dissertation draft submission

- Peer review and feedback

Module 6: Project (Marks – 25)
- Dissertation viva voce presentation evaluation by the examining committee.
- Responses to questions and critiques during the viva.

References

1. Creswell, J. W., & Creswell, J. D. (2018). **Research Design: Qualitative, Quantitative, and Mixed Methods Approaches** (5th ed.). Sage Publications.
2. Bryman, A. (2016). **Social Research Methods** (5th ed.). Oxford University Press.
3. Babbie, E. R. (2020). **The Practice of Social Research** (15th ed.). Cengage Learning.
4. Yin, R. K. (2018). **Case Study Research and Applications: Design and Methods** (6th ed.). Sage Publications.
5. Saunders, M. N. K., Lewis, P., & Thornhill, A. (2019). **Research Methods for Business Students** (8th ed.). Pearson.
6. Cohen, L., Manion, L., & Morrison, K. (2018). **Research Methods in Education** (8th ed.). Routledge.
7. Neuman, W. L. (2014). **Social Research Methods: Qualitative and Quantitative Approaches** (7th ed.). Pearson.
8. Patton, M. Q. (2015). **Qualitative Research & Evaluation Methods** (4th ed.). Sage Publications.
9. Kothari, C. R. (2004). **Research Methodology: Methods and Techniques** (2nd ed.). New Age International Publishers.
10. Robson, C., & McCartan, K. (2016). **Real World Research** (4th ed.). Wiley.