NIRMA UNIVERSITY

Institute:	**INSTITUTE OF DESIGN**
Name of Programme:	**BACHELOR OF DESIGN**
Course Code:	3DD204CC26
Course Title:	**Systems Thinking**
Course Type:	■ **Core/** ☐ Value Added Course/ ☐ Departmental Elective/ Institute Elective/ ☐ University Elective/ Open Elective Any other
Year of introduction:	**Academic Year 2026-27**

L	**T**	**Practical component**				**C**
		LPW	**PW**	**W**	**S**	
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Course Learning Outcomes (CLO):

At the end of the course, the student will be able to:

1. Understand systems thinking as a holistic approach to solving complex problems. **BL2**
2. Explore interconnected systems and wicked problems by mapping causal relationships between systems elements. **BL4**
3. Apply Systems Thinking methodologies such as Iceberg model, giga-mapping techniques to evaluate interconnectedness of system elements. **BL5**
4. Engage in practical application through field research, visualization techniques, and AI-augmented analysis to address real-world challenges undertaken **BL4**
5. Identify and design intervention opportunities for the system studied and develop comprehensive solutions using systems thinking methodologies. **BL6**

Content: **Total Teaching hours: 105 Hrs**

Units	**Content**	**Teaching hours**
Unit 1	**Introduction to Systems Thinking** • Fundamentals of systems thinking: definitions, principles, and mental models • Systems vs. linear thinking: understanding complexity, emergence, and interconnectedness. **Understanding Wicked Problems** • Understanding characteristics, examples, and • interconnected challenges • Mapping of selected problem area and stakeholder identification	**12 Hrs.**

Unit 2	**Systems Models and Tools for Analysis I** • Iceberg Model: Four levels of perspective (events, patterns, structures, mental models) • Bullwhip Effect: Understanding supply chain dynamics and amplification effects. • Principles of Causal loop diagramming: variables, links, and feedback loops.	**12 Hrs.**
Unit 3	**Leverage Points and Research Methods** • Introduction to Leverage points: from parameters to paradigms • Field research methodologies: observation, interviews, surveys, and ethnographic approaches • AI-assisted research: For literature review, survey • design, and data analysis	**18 Hrs.**
Unit 4	**Systems Models and Tools for Synthesis** • Introduction to Giga mapping: A comprehensive system for visualisation • Integration of research findings into system maps	**18 Hrs.**
Unit 5	**Field Research & Insights** • Identification of a Real world wicked problem • Field research execution and data collection • Stakeholder interviews and observational studies • Data synthesis, insights and pattern recognition	**21 Hrs.**
Unit 6	**Addressing the wicked problem through Design** • Analysis of research findings to identify design opportunities • Development of design briefs based on systems research insights • Identification of Leverage points	**24 Hrs.**
Self-Study	Suggested AI/Research Tools such as: • GPT: literature synthesis, survey design, pattern analysis • Claude: narrative formation, complex reasoning, stakeholder analysis • Grok: real-time information synthesis, trend analysis • Napkin: AI-powered concept visualization and mapping • Miro: collaborative system mapping and workshop facilitation	
Suggested Readings/ References	**Books** 10. Meadows, D. H. (2008), *Thinking in systems: A primer*. Chelsea Green Publishing. 11. Senge, P. M. (2006). *The Fifth Discipline: The Art & Practice of the Learning Organization*. Doubleday/Currency. 12. von Bertalanffy, L. (1968). *General System Theory: Foundations, Development, Applications*. George Braziller.	

	13. Checkland, P. (1981). *Systems Thinking, Systems Practice*. John Wiley & Sons. *14.* Sterman, J. D. (2000). *Business Dynamics: Systems Thinking and Modeling for a Complex World.* Irwin/McGraw-Hill. 15. Wahl, D. C. (2016). *Designing Regenerative Cultures*. Triarchy Press. 16. Stroh, D. P. (2015). *Systems Thinking for Social Change*. Chelsea Green Publishing. 17. O'Connor, J., & amp; McDermott, I. (1997). *The Art of Systems Thinking: Essential Skills for Creativity and Problem Solving.* Thorsons. 18. Diamond, J. (2005). *Collapse: How Societies Choose to Fail or Succeed.* Viking.
Suggested field visits	Related to selected problem area