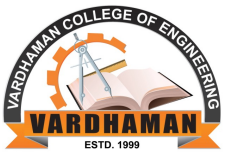

VARDHAMAN COLLEGE OF ENGINEERING

(AUTONOMOUS)

Affiliated to **JNTUH,** Approved by **AICTE,** Accredited by **NAAC** with **A++** Grade, **ISO 9001:2015** Certified

Kacharam, Shamshabad, Hyderabad - 501218, Telangana, India

www.vardhaman.org

CURRICULUM

For

Bachelor of Technology

Community Innovation and Transformation (CIT) Courses

Under

Choice Based Credit System (CBCS)

Bachelor of Technology

For batches admitted from the Academic Year 2024 - 2025

August 2024

Vision of the Institution:

To be a pioneer institute and leader in engineering education to address societal needs through education and practice.

Mission of the Institution:

- To adopt innovative student centric learning methods.
- To enhance professional and entrepreneurial skills through industry institute interaction.
- To train the students to meet dynamic needs of the society.
- To promote research and continuing education.

Objectives of CIT Courses:

- To meet the vision of the college to address the societal issues and to make the students socially responsible
- To provide aa viable solution for the problems identified in the community partner

Programme Curriculum Structure
Community Innovation and Transformation (CIT) Courses

Regulations: VCE-R22

#	Year	Semester	Course Code	Title of the Course	Hours per Week and Credit				Assessment Marks		
					L	T	P	C	CIE	SEE	Total
1	I	I	A8025	Community Centered Design Thinking	0	0	2	1	40	60	100
2	I	II	A8026	Product Design and Development	0	0	2	1	40	60	100
3	II	I	A8027	Technology Entrepreneurship	0	0	2	1	40	60	100
4	II	II	A8028	Community Driven Product Evaluation	0	0	2	1	40	60	100

Course Structure

A8025 - Community Centered Design Thinking

Hours Per Week			Hours Per Semester			Credits	Assessment Marks		
L	T	P	L	T	P	C	CIE	SEE	Total
0	0	2	0	30	0	1	40	60	100

1. Course Description

Course Overview

The Community-Centered Design Thinking course aims to enable students to identify and address unique needs and challenges within local communities. Through the application of design thinking principles, students will develop creative problem-solving mindsets and the ability to collaborate effectively in multidisciplinary teams. The course emphasizes integrating moral code, professional standards, and sustainability principles into design solutions.

Course Pre/co-requisites

This course has no specific prerequisite and co-requisite.

2. Course Outcomes (COs)

After the completion of the course, the student will be able to:

A8025.1. Identify the unique needs and challenges within the local communities

A8025.2. Apply Design Thinking principles and develop mindsets for creative problem-solving

A8025.3. Collaborate effectively in multidisciplinary teams to engage the community in the design process

A8025.4. Integrate moral code, professional standards, and sustainability principles into design solutions

3. Course Syllabus

Introduction to Community-Centered Design Thinking: Introduction to Community-Centered Design Thinking, Understanding the significance of community-centered approaches, Overview of Design Thinking principles for community engagement.

Needs and Challenges: Needs and Challenges Assessment, Techniques for identifying and analyzing unique needs within local communities, Case studies illustrating successful community-centered design projects.

Design Thinking in Action: Design Thinking in Action, Application of design thinking frameworks in solving community challenges, Hands-on exercises to develop creative problem-solving skills.

Collaboration in Multidisciplinary Teams: Collaboration in Multidisciplinary Teams, Strategies for effective collaboration in diverse teams, Team projects emphasizing community engagement and co-creation.

Ethical Design and Sustainability: Ethical Design and Sustainability Integrating moral code and professional standards into the design process. Incorporating sustainability principles for environmentally and socially responsible solutions.

4. Books and Materials

Reference Books:

1. Jeanne Liedtka, Randy Salzman, and Daisy Azer, Design Thinking for the Greater Good: Innovation in the Social Sector, Columbia University Press, 2017.

Course Structure

A8026 - Product Design and Development

Hours Per Week			Hours Per Semester			Credits	Assessment Marks		
L	T	P	L	T	P	C	CIE	SEE	Total
0	0	2	0	30	0	1	40	60	100

1. Course Description

Course Overview

This dynamic and hands-on course in Product Design and Development is tailored to provide students with a comprehensive understanding of the entire product development lifecycle. Students will investigate into the particulars of transforming creative ideas into tangible, market-ready products through a structured and iterative design process.

Course Pre/co-requisites

A8025 - Community-Centered Design Thinking

2. Course Outcomes (COs)

After the completion of the course, the student will be able to:

A8026.1. Generate innovative product concepts to represent potential solutions based on identified community needs

A8026.2. Develop proficiency in using relevant design tools and software for product ideation, prototyping, and testing

A8026.3. Create functional prototypes and iteratively refine product designs based on feedback to align with user expectations

A8026.4. Document and communicate product designs to the community partner

3. Course Syllabus

Introduction to Product Design as per Community Need: Understanding the principles and significance of product design, product development life cycle, recognizing the role of design in addressing community needs, techniques for identifying and analyzing community needs.

Ideation and Concept Generation: Generating innovative product concepts, developing proficiency in using relevant design tools and software for product ideation, hands-on training in design tools for ideation, prototyping, testing, Evaluation, and selection of potential product concepts.

Prototyping: Creating functional prototypes to represent product designs, Application design tools, and software for prototyping and testing.

Iterative Refinement: Iteratively refining prototypes based on user feedback, Incorporating sustainable and user-centered design principles, Synthesizing user expectations with iterative design refinements.

Documentation and Communication Strategies: Documenting product designs with detailed specifications, Effective communication strategies for conveying designs to community partners, Preparation of user manuals and documentation for community partners.

4. Books and Materials

Reference Books:

1. Karl Ulrich and Steven Eppinger, Product Design and Development, 7th Edition, McGraw Hill Publications, 2020.
2. Hasso Plattner , Design Thinking: Understand – Improve – Apply, Springer Publications, 2011.

Course Structure

A8027 - Technology Entrepreneurship

Hours Per Week			Hours Per Semester			Credits	Assessment Marks		
L	T	P	L	T	P	C	CIE	SEE	Total
0	0	2	0	30	0	1	40	60	100

1. Course Description

Course Overview

This course is designed to equip students with the knowledge and skills needed to thrive in the dynamic field of technology entrepreneurship. Students will research into the fundamentals of identifying opportunities, developing innovative solutions, and navigating the challenges of launching and scaling technology-driven ventures. Students will gain a comprehensive understanding of lean startup methodologies, product development, funding strategies, legal considerations, and effective leadership in the startup ecosystem .

Course Pre/co-requisites

A8026 - Product Design and Development

2. Course Outcomes (COs)

After the completion of the course, the student will be able to:

A8027.1. Foster an entrepreneurial mindset and analyze markets to identify opportunities for technological innovation

A8027.2. Implement iterative processes for product improvement based on community feedback

A8027.3. Enhance communication skills to pitch ideas to diverse stakeholders

A8027.4. Develop leadership skills to effectively lead and manage teams in a startup environment

3. Course Syllabus

Cultivating an Entrepreneurial Mindset: Understanding and fostering an entrepreneurial mindset, Analyzing markets to identify opportunities for technological innovation, Recognizing the role of mindset in startup success.

Business Models and Adaptive Strategies: Developing business models for technology-driven ventures, Exploring strategies for adapting to changing market conditions, Integrating innovation into business planning.

Effective Communication in Entrepreneurship: Enhancing communication skills for effective idea pitching, Tailoring communication strategies for diverse stakeholders, Practicing persuasive communication in an entrepreneurial context.

Leadership Skills in Startup Environments: Developing leadership skills to effectively lead and manage startup teams, Team dynamics and roles in a startup environment, Building a culture of innovation and entrepreneurship within a team.

Integration and Application: Integrating entrepreneurial mindset, business models, communication, and leadership skills, Final reflections of Customer Journey Map(CJM).

4. Books and Materials

Reference Books:

1. Eric Ries, The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses, 1st Edition, Crown Business Publications, 2011.
2. Peter Thiel , Zero to One: Notes on Startups, or How to Build the Future, 1st Edition, Crown Business Publications, 2014.

Course Structure

A8028 - Community Driven Product Evaluation

Hours Per Week			Hours Per Semester			Credits	Assessment Marks		
L	T	P	L	T	P	C	CIE	SEE	Total
0	0	2	0	30	0	1	40	60	100

1. Course Description

Course Overview

The Community-Driven Product Evaluation (CDPE) course is designed to immerse students in a unique approach to product assessment that places communities at the center of the evaluation process. In an era where user perspectives and societal impacts play a crucial role in shaping successful products, this course provides a comprehensive understanding of how to engage, collaborate, and derive valuable insights from diverse communities during the evaluation phase of product development.

Course Pre/co-requisites

A8027 - Technology Entrepreneurship

2. Course Outcomes (COs)

After the completion of the course, the student will be able to:

A8028.1. Develop appropriate evaluation metrics and criteria, based on community input

A8028.2. Develop business models and explore strategies for changing market conditions

A8028.3. Prepare design and transition documents for delivering products to the community

A8028.4. Evaluate the success or failure of startups based on the community inclusiveness

3. Course Syllabus

Foundations of Community-Driven Product Evaluation: Understanding the importance of community involvement in product evaluation, Exploring participatory methods for engaging communities in the evaluation process, Ethical considerations, and cultural sensitivity in community engagement.

Developing Community-Driven Evaluation Metrics: Establishing appropriate evaluation metrics and criteria based on community input, Implementing iterative processes for continuous product improvement based on community feedback, and Case studies on successful and unsuccessful community-driven product evaluations.

Cultural and Social Impact Assessment: Assessing the cultural and social impact of products on communities, analyzing the role of products in shaping local identities and practices, Integrating user-centered design principles into community-driven evaluations.

Design and Transition Documentation: Preparing design and transition documents for delivering products to the community, Collaborative design sessions with community members for seamless transition, Empowering communities through participatory decision-making.

Community Inclusiveness and Startup Evaluation: Evaluating the success or failure of startups based on community inclusiveness, Promoting sustainable practices and environmental considerations in product evaluation, Final collaborative community-driven product evaluation project, and reflections.

4. Books and Materials

Reference Books:

1. Alice McIntyre, Participatory Action Research, 1st Edition, SAGE Publications, 2008.
2. Ezio Manzini , Design, When Everybody Designs, 1st Edition, The MIT Press, 2015.