**Rural Innovation and Sustainable Startups-II**

Course Code: KG21MS617 L T P C

B.Tech. III Year II –Semester 1   0 4  3

**Course Objectives:**

* Enhance product performance by analyzing user feedback, identifying improvements, and implementing design changes, focusing on Rural Development.
* Educate on the demonstration of system prototypes in Rural environments.
* Prepare students to refine and finalize systems for commercial deployment, focusing on solutions that drive rural development.
* Teach effective project management techniques and strategies for securing funding.
* Highlight the importance of community engagement and methods for assessing the social, economic, and environmental impacts of the project.

**Course Outcomes:**

After completion of the course, the students will be able to

* Build a fully operational and ready-to-use prototype of the community innovation using hardware tools.
* Test the prototype to validate its functionality which suits for community as per the criteria and constraints set.
* Demonstrate the designed prototype in intended operational rural environments and exhibit readiness for market adoption.
* Design and implement a rural deployment plan for the innovation while considering issues of handover and sustainability of the innovation.
* Showcase effective project management through the timely completion and deployment of the community project while continuously engaging with all stakeholders involved.

**Assessment: Course grading breakdown**

| **Deliverable** | **Marks** |
| --- | --- |
| Presentation on the understanding of the project after the field visit and its PoC.  {Presentation of the Project after the field visit and Its PoC (10M) + Concept of the current Proof of Concept (10M) + Plan for the progress of the project along with presentation document(10M)} | MID-I  (30 Marks:10M+10M+10M) |
| Presentation of Prototype and its validation  {Prototype Effectiveness and Validation (15 Marks) + Presentation Quality along with presentation document (15 Marks)} | MID-II  (30 Marks:15M+15M) |
| Testing of Prototype and changes to the final design (20M) | SEM  (70 Marks: 20M+20M+20M+10M) |
| Design Report of the Final Product (20M) |
| Presentation of the final product and its deployment (20M) |
| Student reflection on the product deployment and challenges (10M) |

* **Note:** Mid exams 30 marks is the average of MID-I and MID-II

**Course Structure: Rural Innovation and Sustainable Startups– II**

| **Week** | **Course Content** | **Delivery Content** |
| --- | --- | --- |
| Week 1 - 2 | Introduction to the course | * Selection of project, understanding of Project and its PoC * Field visits for user interaction and collecting feedback |
| Week 3 - 6 | Development of prototype | * Developing laboratory-scale prototypes (breadboards) * Laboratory testing and validation of individual components * Data collection, analysis, and refinement of technology * Scaling prototypes to relevant operational environments |
| Week 7 - 8 | Prototype improvement | * Modifying the product according to feedback given by the users * Integration and testing of components in relevant settings * Iterative testing and design refinement * Presentation on modified project |
| Week 9 | Introduction to EntrepreneurshipMarket viability | * Understanding Entrepreneurship: Definitions and Significance * Types of Entrepreneurs: Innovators, creators, and imitative entrepreneurs * Entrepreneurial Mindset * Confirm user interest in the product * Affordability * Competency * Case Studies |
| Week 10 - 11 | Product Demonstration in an Operational Environment | * Finalizing Product * Conducting rigorous operational testing * Performance validation and reliability assessment * Environment feasibility and sustainability |
| Week 12-15 | Deployment of innovation in the community  Business Planning | * Deployment of Product in the Community * Preparing documentation and reports for stakeholders * BMC and Team Building |
| Week 16 | Group presentations | * Group presentations of projects along with submission of Project report * Reflections by students on processes followed and lessons learned |

**RUBRICS**

**Rural Innovation and Sustainable Startups– II**

1. **Presentation on the understanding of the project after the field visit and its PoC**

| **RUBRICS** | | | | |
| --- | --- | --- | --- | --- |
| **Criteria** | **Excellent (10M)** | **Good (8M)** | **Average (5M)** | **Poor (3M)** |
| **Presentation of the Project after the field visit and Its PoC (10M)** | * Demonstrates a comprehensive understanding of the current project stage. * identifies and accurately describes the key characteristics and objectives of the current stage. * Provides a clear and innovative conceptualization plan from the current stage onwards. * Proposes realistic and achievable goals and milestones for the project's progression including user feedback. * Presents findings confidently and engages the audience effectively. | * Shows a good understanding of the current project stage. * Identifies and describes the main characteristics and objectives of the current stage. * Provide a clear conceptualization plan from the current stage onwards. * Proposes achievable goals and milestones for the project's progression including user feedback. * Presents findings clearly and maintains audience engagement. | * Demonstrates a basic understanding of the current project stage. * Identifies some characteristics and objectives of the current stage but may lack detail or clarity. * Provides a basic conceptualization plan from the current stage onwards. * Proposes some goals and milestones but may lack detail or feasibility of user interaction. * Presents findings adequately but with limited audience engagement. | * Shows limited or incorrect understanding of the current project stage. * Fails to accurately identify or describe the characteristics and objectives of the current stage. * Lacks a clear conceptualization plan from the current stage onwards. * Fails to propose realistic or achievable goals and milestones. * Presents findings unclearly and fails to engage the audience. |

1. **Presentation of Prototype and its validation:**

| **Criteria** | **Excellent (5M)** | **Good (3M)** | **Average(2M)** | **Poor(1M)** |
| --- | --- | --- | --- | --- |
| **Prototype Effectiveness and Validation (5 Marks)** | The prototype is highly effective in addressing the defined societal problem. The design is innovative, practical, and fully functional. A comprehensive validation process is presented, including thorough testing and real-world data that demonstrate the prototype’s reliability and effectiveness. | The prototype effectively addresses the societal problem. The design is practical and mostly functional. A solid validation process is presented, with some real-world data supporting the prototype’s effectiveness. | The prototype addresses the societal problem but may have some limitations in design or functionality. The validation process is adequate but lacks depth or comprehensive real-world data. | The prototype partially addresses the societal problem. The design or functionality is significantly limited. The validation process is presented but lacks thoroughness or real-world data. |
| **Presentation Quality (5 Marks)** | The presentation is exceptionally clear, well-organized, and engaging. Visual aids are effectively used, and the presenters communicate confidently and professionally. The content is thorough and persuasive | The presentation is clear, well-organized, and engaging. Visual aids are used effectively, and the presenters communicate confidently. The content is comprehensive and well-presented. | The presentation is clear and organized but may lack some engagement. Visual aids are used but may not be fully effective. The presenters communicate adequately, and the content is satisfactorily presented. | The presentation is somewhat clear but lacks organization and engagement. Visual aids are minimal or not effectively used. The presenters communicate with some difficulty, and the content is not thoroughly presented |

1. **Testing of Prototype and changes to the final design**

| **Criteria** | **Excellent (5M)** | **Good (4M)** | **Average (3M)** | **Poor (2M)** |
| --- | --- | --- | --- | --- |
| **Thoroughness of Testing (5M)** | Conducted comprehensive testing using a wide range of methods, thoroughly validating the POC's functionality and performance. | Conducted adequate testing covering most aspects of the design, with minor gaps in coverage. | Conducted basic testing, covering only essential aspects of the design, with significant gaps in coverage. | Conducted minimal testing, lacking depth and breadth in coverage, with significant oversights. |
| **Effectiveness of Test Results Analysis**  **(5M)** | Analyzed test results rigorously, identifying strengths, weaknesses, and opportunities for improvement with precision. | Analyzed test results effectively, identifying key insights and trends, with minor oversights or gaps in analysis. | Conducted basic analysis of test results, identifying some key findings but lacking depth or insight. | Analysis of test results was superficial, with limited insights or conclusions drawn. |
| **Appropriateness of Changes to Design**  **(5M)** | Proposed and justified design changes thoroughly, demonstrating creativity, innovation, and alignment with project objectives. | Proposed design changes appropriately, with sound justifications and alignment with project objectives, though lacking in creativity or innovation. | Proposed design changes were somewhat appropriate but lacked depth in justification or alignment with project objectives. | Proposed design changes were minimal or inappropriate, with little to no justification or alignment with project objectives. |
| **Documentation and Communication**  **(5M)** | Documentation was thorough, and well-organized, and communicated findings and recommendations clearly and professionally. | Documentation was adequate, with minor organizational issues or inconsistencies in communication. | Documentation was basic, lacking in detail or organization, with significant communication issues. | Documentation was minimal or poorly organized, with major communication deficiencies. |

1. **Design Report of the Final Product**

| **Criteria** | **Excellent** | **Good** | **Average** | **Poor** |
| --- | --- | --- | --- | --- |
| **Quality of Final Design (15M)** | The final design is highly effective, and innovative, and fully incorporates user feedback and necessary changes. It demonstrates excellent functionality and feasibility for real-world application.(15M) | The final design is effective and incorporates user feedback and necessary changes. It demonstrates good functionality and feasibility (10M) | The final design is adequately effective, with some incorporation of user feedback and changes. It demonstrates satisfactory functionality and feasibility. (5M) | The final design is minimally effective, with limited incorporation of user feedback and changes. It demonstrates basic functionality and feasibility. (3M) |
| **Thoroughness of Report Content (10 Marks)** | The design report is exceptionally clear, comprehensive, and detailed, providing thorough insights into the product design process.(10M) | The design report is clear and detailed, covering most aspects of the product design process with minor gaps.  (8M) | The design report provides basic information on the product design process but lacks depth or clarity in certain areas.  (5M) | The design report is unclear and lacks detail, providing minimal information on the product design process.  (2M) |

1. **Student reflection on the product deployment and challenges**

| **Criteria** | **Excellent** | **Good** | **Average** | **Poor** |
| --- | --- | --- | --- | --- |
| **Insight and Depth of Reflection**  **(10 Marks)** | The reflection is highly insightful and demonstrates a deep understanding of the deployment process and challenges. The student provides thoughtful analysis and critical evaluation of their experiences.  (10M) | The reflection is insightful and demonstrates a good understanding of the deployment process and challenges. The student provides a clear analysis and evaluation of their experiences. (8M) | The reflection shows some insight and understanding of the deployment process and challenges. The analysis and evaluation of experiences are basic.  (5M) | The reflection is superficial with limited insight and understanding of the deployment process and challenges. The analysis and evaluation of experiences are minimal. (3M) |