DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Design and Implementation Lab (EC67L)

Lab Location: Communication Lab   - AB202b

Prepared by

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Vision of JSS Science and Technology University

● **Advancing JSS S&T University as a leader in education, research and technology on the International arena.**

● **To provide the students a universal platform to launch their careers, vesting the industry and research community with skilled and professional workforce.**

● **Accomplishing JSS S&T University as an epicenter for innovation, center of excellence for research with state of the art lab facilities.**

● **Fostering an erudite, professional forum for researchers and industrialist to coexist and to work cohesively for the growth and development of science and technology for betterment of society.**

Mission of JSS Science and Technology University

1. **Education, research and social outreach are the core doctrines of JSS S&T University that are responsible for the accomplishment of in-depth knowledge base, professional skill and innovative technologies required to improve the socio economic conditions of the country.**

2. **Our mission is to develop JSS S&T University as a global destination for cohesive learning of engineering, science and management which are strongly supported with interdisciplinary research and academia.**

3. **JSS S&T University is committed to provide world class amenities, infrastructural and technical support to the students, staff, researchers and industrial partners to promote and protect innovations and technologies through patents and to enrich entrepreneurial endeavors.**

4. **JSS S&T University's core mission is to create knowledge led economy through appropriate technologies, and to resolve societal problems by educational empowerment and ethics for better living.**

Vision of Department of E&CE

Be a leader in providing globally acceptable education in electronics and communication engineering with emphasis on fundamentals-to-applications, creative-thinking, research and career- building.

Mission of Department of E&CE

1. **To provide best infrastructure and up-to-date curriculum with a conducive learning environment.**

2. **To enable students to keep pace with emerging trends in Electronics and Communication Engineering.**

3. **To establish strong industry participation and encourage student entrepreneurship.**

4. **To promote socially relevant eco-friendly technologies and inculcate inclusive innovation activities.**

Program Outcomes (POs)

1. **Engineering Knowledge**: Apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

2. **Problem Analysis**: Identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences

3. **Design/ Development of Solutions**: Design solutions for complex engineering problems and design system components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations.

4. **Conduct investigations of complex problems**: Using research based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions.

5. **Modern Tool Usage**: Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations

6. **The Engineer and Society**: Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice.

7. **Environment and Sustainability**: Understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development.

8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.

9. **Individual and Team Work**: Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.

11. **Lifelong Learning**: Recognize the need for and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.

12. **Project Management and Finance**: Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

Program Specific Outcomes (PSOs)

1. Analyze, design and provide engineering solutions in the areas of electronic circuits and systems.

2. Demonstrate the mathematical modeling techniques, nurture analytical and computational skills to provide engineering solutions in the areas of electronics and communication.

3. Ability to address multidisciplinary research challenges and nurture entrepreneurship

Program Educational Objectives (PEOs)

1. To enable the graduates to have strong Engineering fundamentals in Electronics & Communication, with adequate orientation to mathematics and basic sciences.

2. To empower graduates to formulate, analyze, design and provide innovative solutions in Electronics & Communication, for real life problems.

3. To ensure that graduates have adequate exposure to research and emerging technologies through industry interaction and to inculcate professional and ethical values.

4. To nurture required skill sets to enable graduates to pursue successful professional career in industry, higher education, competitive exams and entrepreneurship.

EC67L: Design and Implementation Lab

Course Plan:

Sl no.	Particulars		
1.	Course title & code	Design and Implementation Lab **EC67L**	
2.	Credits	0:0:1 (L: T: P)	
3.	Class & Section	6th semester E & C (A & B sections)	
4.	Staff	Dr. Sudarshan Patilkulkarni(coordinator) Prof. A.Thyagaraja Murthy (coordinator)	
5.	Schedule	According to Time table	
6.	Instruction class	As per Time Table	
7.	Course website		

Introduction :

In this course, students are advised to conduct an extensive literature survey, explore society relevant issues and define a problem. This followed by analysing the problem and creating a solution.

Students are instructed to design and implement the solution; initially as a set of subsystem modules, finally integrate the modules and test the system as a whole. Students are required to document their work regularly in an observation book, prepare a final report as well as an article and give a demonstration at the end of semester.

Course Objectives :

1. To generate new innovative interdisciplinary ideas/concepts in groups
2. To generate a methodology to realise the ideas.
3. To create a mathematical design and implement the same (prototype development)
4. To carry out tests and Analysis (functionality test, performance analysis)
5. To prepare a Report and write an article on the work for publishing(Local news print / Magazines)

Course Outcomes :

Students are able to,
CO1: Develop orientation to solve society relevant problems using technology.

CO2: Conduct literature survey, list out the objectives and outcomes, prepare synopsis and Prototype design (Mathematical model, circuit design etc.)

CO3: Use modern tools to build/realise modules and Present mid-results Integrate, test and perform demo as per specifications, write technical report & article

General Guidelines for conducting Design and Implementation Lab(EC67L) :

1. Generate the Ideas according to market/societal needs, the idea to implementable within 4-months .
2. Refine the ideas suitably, create methodology, to materialise the ideas.
3. Design the complete circuit model
4. Develop a prototype from the design
5. Testing the functionality of the designed circuit(Testing)
6. Performance analysis of the circuit (Performance analysis)

NOTE :

1. To promote group activity
2. Group will not have more than 3 students.
3. Group to generate project idea giving importance to its practicability
4. Project can fall into any broad areas viz. Analog-Digital electronics/Digital signal processing/Microcontrollers and embedded systems/communication and networking Sensors and controls etc.

Evaluation scheme for "DESIGN and IMPLEMENTATION LAB (EC67L):

Outcome Based Evaluation :

Phase 1: Synopsis *evaluation, --------------------[CO1 to be covered]*

Phase 2: *Mid-term evaluation*
              Part (a) Design evaluation ---[CO2 to be covered]
              Part(b) Mid results)

Phase 3: *Final evaluation   -----------------------[CO3 to be covered]*

Phase -1 (CO1)	Literature survey & Synopsis Preparation	10 marks	
Phase -2 (CO2)	a) Design evaluation b) Mid results	20 marks 20 marks	
Phase -3 (CO3)	Final Demo	20 marks	
Report preparation (CO3)	Final Copy	20 marks	
Article Writing/ Technical Paper (CO3)	Final copy	10 marks	
TOTAL		100 marks	Reduced to 50 marks

Phase1: (3rd week)

1. Introduction and Litt. survey
2. Synopsis preparation and feasibility study
3. Synopsis evaluation
   - Concept
   - Block diagram with brief description
   - Power requirements
   - Input/output diagrams
   - Applications
   - Mode of final demo   ------- 10marks (CO1)
   - Pert chart

Phase2:

Design evaluation: (7th week)

- Specifications of the project
- Design calculations
- Output waveforms and graphs   --------------20marks (CO2)

Midterm Evaluation: (12th week)

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- Attendance 85% criterion to be fulfilled
- Individual contribution
- Overall progress
- Demo of various submodules   -------------20 marks (CO2)

Phase 3 :(16th week)

     Final evaluation :

- Attendance 85% citerion to be fulfilled
- Individual contribution
- Demo and comitment to specifications
- Viva + Draft report   ---20 marks (CO3)

    Final Report   ---20 marks (CO3)
    Article writing ---10 marks (CO3)

15th week: Open-day exhibition & marks finalisation

Department of Electronics and Communication,
SJCE, Mysuru:

Progress Sheet for 'Design and Implementation Lab(EC67L)' :

Batch /Group :	Title :
Day/Time :	
staff :	
Group members:	
1)	
2)	
3)	
4)	

Week	Date	Progress	Remarks
1 Literature survey			
2 Litterature Survey			
3 Literature survey			**PHASE -1 Evaluation**
4 Design process			
5 Design process			
6 Design process			
7 **Design Process – Evaluation**			**PHASE-2 (Part-1) Design evaluation**
8			

Implement ation			
9 Implement ation			
10 Implement ation			
11 Implement ation			
12 Phase -2 Evaluation			**PHASE-2(Part -2)**
13 System integration and testing			
14 System integration and testing			
15 Final Demonstrat ion			**PHASE-3**
16 Open-Day exhibition at department Level			

Coordinators   **staff in charge**   **HOD**

Evaluation Sheet for Design and Implementation Lab (EC67L) :

Course outcomes :

CO1 : Develop orientation to solve society relevant problems using technology.

CO2 : Conduct literature survey, listing out the objectives prepare synopsis and Prototype design

CO3 : Modern tool usage and mid results, perform demo as per specifications, Report writing & Article writing

Title :	Teachers Remarks :
Batch/Group	

Date	Name	phase-1 CO1 (10 marks)	phase-2 CO2 (40 Marks)	phase-3 CO3 (20 Marks)	Report and Article CO3 (20+10)	Marks obtained

Coordinator :   HOD   Staff-in-charge