

**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**B. Tech 4/4, II-SEMESTER**

**Course Outcomes**

Upon completion of the course, students will be able to:

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| **CO#** | **Course Outcomes** | **Blooms Taxonomy level** |
| **CO1** | Identify the problem by applying acquired knowledge. | Remember |
| **CO2** | Use literature to identify the objective, scope and the concept of the work. | Apply |
| **CO3** | Analyse and categorize executable project modules after considering risks. | Analyse |
| **CO4** | Choose efficient tools for designing project modules. | Evaluate |
| **CO5** | Integrate all the modules through effective team work after efficient testing. | Create |
| **CO6** | Explain the completed task and compile the project report. | Understand |

**CO-PO/PSO MATRIX:**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO**  **10** | **PO**  **11** | **PO**  **12** | **PSO**  **1** | **PSO**  **2** |
| **CO1** | 2 | 2 | 2 |  | 2 |  |  |  |  |  |  |  | 2 | 2 |
| **CO2** | 2 | 2 | 2 | 2 |  |  |  | 2 | 2 |  |  |  | 2 | 2 |
| **CO3** | 2 |  | 2 | 2 |  |  |  | 2 | 2 |  |  |  | 2 | 2 |
| **CO4** | 2 |  |  |  | 2 |  |  |  |  |  | 2 |  |  | 2 |
| **CO5** |  |  |  | 2 | 2 |  |  |  | 2 | 2 |  |  | 2 | 2 |
| **CO6** |  |  |  |  |  |  |  |  | 2 | 2 | 2 |  |  | 2 |
| **Course** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Signature of the Guide**

**CO-PO Justification**

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|  | PO/PSO |  |  |
| CO1 | PO1 | 2 | Understanding the principles of VLSI design and the fundamentals of RCA design using Mentor Graphics. |
| PO2 | 2 | Recognizing the drawbacks and limitations of the existing RCA design based on Quantum Dot Cellular Automata. |
| PO3 | 2 | Recalling the steps involved in designing and implementing an RCA using QCA. |
| PO5 | 2 | Remembering the utilization of contemporary VLSI design tools for simulation and verification purposes in the project. |
| PSO1 | 2 | Our project trains students in ECE and IoT fields by implementing the RCA using QCA tool, crucial for modern electronics applications. |
| PSO2 | 2 | Our project utilizes well-equipped laboratory infrastructure to mentor students in developing innovative electronics projects, exemplified by the implementation of an RCA using Quantum Dot Cellular Automata. |
| CO2 | PO1 | 2 | Applying the knowledge of VLSI design principles to implement the RCA using Quantum Dot Cellular Automata. |
| PO2 | 2 | Applying problem-solving skills to address the drawbacks identified in the existing RCA design. |
| PO3 | 2 | Applying the design methodologies to develop an optimized RCA solution using QCA. |
| PO4 | 2 | Applying investigative skills to analyze the performance improvements achieved through the QCA technique. |
| PO8 | 2 | Applying ethical principles in adhering to professional conduct and intellectual property rights during the project. |
| PO9 | 2 | Applying teamwork skills to collaborate effectively within the project team. |
| PSO1 | 2 | Moderately mapped as we conducted tests in basic operations in QCA. |
| PSO2 | 2 | Our project utilizes well-equipped laboratory infrastructure to mentor students in developing innovative electronics projects, exemplified by the implementation of an RCA using Quantum Dot Cellular Automata. |
| CO3 | PO1 | 2 | Analyzing the effectiveness of the QCA technique in enhancing RCA performance. |
| PO3 | 2 | Moderately mapped as we need to design basic gates by using QCA  technology. |
| PO4 | 2 | Analyzing the results of simulations and experiments to evaluate the performance of the QCA based RCA. |
| PO8 | 2 | Analyzing ethical considerations related to research integrity and professional conduct. |
| PO9 | 2 | Analyzing team dynamics and individual contributions towards project goals. |
| PSO1 | 2 | Our project trains students in ECE and IoT fields by implementing the RCA using Quantum Dot Cellular Automata, crucial for modern electronics applications. |
| PSO2 | 2 | Our project utilizes well-equipped laboratory infrastructure to mentor students in developing innovative electronics projects, exemplified by the implementation of an RCA using Quantum Dot Cellular Automata. |
| CO4 | PO1 | 2 | Evaluating the impact of the QCA technique on RCA performance compared to traditional methods and existing RCA’s. |
| PO5 | 3 | Evaluating the effectiveness of VLSI design tools in optimizing the RCA design. |
| PO11 | 3 | Evaluating the project's progress and resource management throughout its lifecycle. |
| PSO2 | 2 | Our project utilizes well-equipped laboratory infrastructure to mentor students in developing innovative electronics projects, exemplified by the implementation of an RCA using Quantum Dot Cellular Automata. |

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| CO5 | PO4 | 2 | Creating experimental setups to test and validate the performance of the RCA using QCA. |
| PO5 | 2 | Creating design implementations using modern VLSI design tools. |
| PO9 | 2 | Creating a collaborative environment within the team to faster innovation and productivity. |
| PO10 | 2 | Creating comprehensive reports and presentations to communicate project findings effectively. |
| PSO1 | 2 | Our project trains students in ECE and IoT fields by implementing an RCA using Quantum Dot Cellular Automata,crucial for modern electronics applications. |
| PSO2 | 2 | Our project utilizes well-equipped laboratory infrastructure to mentor students in developing innovative electronics projects, exemplified by the implementation of an RCA using Quantum Dot Cellular Automata. |
| CO6 | PO9 | 2 | Understanding the importance of teamwork and collaboration in achieving project objectives. |
| PO10 | 2 | Understanding the significance of clear communication in conveying ideas and progress updates. |
| PO11 | 3 | Understanding the principles of project management and financial considerations in executing the project successfully. |
| PSO2 | 2 | Our project utilizes well-equipped laboratory infrastructure to mentor students in developing innovative electronics projects, exemplified by the implementation of an RCA Quantum Dot Cellular Automata. |

**Signature of the Guide**