# AMRUTVAHINI COLLEGE OF ENGINEERING, SANGAMNER
## DEPARTMENT OF ELECTRONICS ENGINEERING
## COURSE OUTCOMES (CO)
## BE 2019 Course

**VLSI Design (404201), BE-Sem-VII, 2022-23**

After successfully completing the course students will be able to,

| Co. No. | Description | Bloom's Taxonomy Level |
|---|---|---|
| C401.1 | **Describe** the Fundamentals of CMOS Technology in Digital Domain &**Implement** CMOS digital logic design for various functions. | 1,3 |
| C401.2 | **Develop** HDL code to make model ofdigital circuit in Various Types of descriptions. | 6 |
| C401.3 | **Describe**knowledge about Basics of memory chip Design and **Explain** knowledge about RAM and DRAM Design. | 1,2 |
| C401.4 | **Describe** the concepts of Physical design Process such as floorplanning, placement and routing. | 2 |
| C401.5 | **Develop** digital circuit using PLD & FPGA and**Understand** the importance of testability in chip design. | 6,2 |
| C401.6 | **Apply** the Lambda based design rules for subsystem design. | 3 |

**Advanced Power Electronics (404202), BE- Sem-VII, 2022-23**

After successfully completing the course students will be able to,

| Co. No. | Description | Bloom's Taxonomy Level |
|---|---|---|
| C402.1 | **Understand** operation and **implementation** of dual converters and power factor improvement techniques for controlled rectifiers. | 1,2 |
| C402.2 | **Understand** operation and **implementation** of Multilevel inverters, cycloconverters | 1,2 |
| C402.3 | **Select and Design** a suitable power converter to meet the demand of DC drive system. | 3,6 |
| C402.4 | **Select and Design** a suitable power converter to meet the demand of 3 phase inductor motor drive. | 3,6 |
| C402.5 | **Understand** working of BLDC, Stepper, and Servo drive system. **Analyze** and **Select** a suitable motor for different applications | 1,2,3 |
| C402.6 | **Understand** implementation of Solar and Wind Power System | 1,2 |

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## <u>BE 2019 Course</u>

**Electronics System Design (404203), BE-Sem-VII, 2022-23**

After successfully completing the course students will be able to,

| Co. No. | Description | Bloom's Taxonomy Level |
|---|---|---|
| C403.1 | **Explain** various stages of product design &**apply** various concept to **evalua**te the product. | 2,3,5 |
| C403.2 | **Describe** various signal conditioning circuit and **discuss** their error budget **analysis.** | 1,2,4 |
| C403.3 | **Explain** interfacing of various peripheral to microcontroller & its selection criteria for particular application. Also **compare** buses/protocol used in electronic product. | 1,2 |
| C403.4 | **Discuss** various approaches for development of application software for electronic product and various tools/techniques required for testing & debugging. | 2 |
| C403.5 | **Discuss** PCB design practices for analog & mixed signal circuits. Also explain EMI/EMC testing standards and compliance for PCB design | 2 |
| C403.6 | **Interpret** the need of environmental testing & propose different testing tools for fault finding in electronic products. | 3 |

**Elective- III** Internet **of Things (404204),BE-Sem-VII, 2022-23**

After successfully completing the course students will be able to,

| Co. No. | Description | Bloom's Taxonomy Level |
|---|---|---|
| C404.1 | **Explain** the emerging trends in IoT , **Define** technical building blocks in IoT along with physical and Logical design of IoT, **Illustrate**IoT protocols, **Describe** IoT enabling technologies, **Diagnose**IoT security and Privacy, **Develop** application based on IoT. | 1,2,3,6 |
| C404.2 | **Describe**SCADA, RFID, IEEE802.15.4, Bacnet, Modbus, HART, Zigbee Protocol, **discuss** the security requirements and **illustrate** secure model for IoT . | 2,3 |
| C404.3 | **Explain** the basic components of WSN along with features and architecture of cloud computing with its types, **Develop** application based on WSN. | 2,6 |
| C404.4 | **Explain**Arduino and Raspberry Pi along with its board and Programming Environment, **Compose** simple assignment using Arduino and Raspberry Pi, **Analyze** data using IoT Platform | 2.4,6 |
| C404.5 | **Describe** Big Data , Data Analytics and Hadoop Technology ,**Estimate** prototyping with any development board. | 2,3 |
| C404.6 | **Discuss** modern trends in IoT, **Explain**data management and API, **Develop** case studies based on Real life/Thematic areas. | 2,6 |

# AMRUTVAHINI COLLEGE OF ENGINEERING, SANGAMNER
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## COURSE OUTCOMES (CO)
## BE 2019 Course

**Elective –IV Mobile Communication (404205), BE-Sem-VII, 2022-23**

After successfully completing the course students will be able to,

| Co. No. | Description | Bloom's Taxonomy Level |
|---------|-------------|------------------------|
| C405.1 | Students can **summarize** various generations of mobile communications. | 2 |
| C405.2 | **Illustrate** the fundamentals of cellular system & radio propagation. | 3 |
| C405.3 | **Design** mobile communication system by appropriately selecting necessary techniques. | 6 |
| C405.4 | **Compare** the GSM mobile communication standard, its architecture, logical channels, advantages and limitations. | 4 |
| C405.5 | **Analyse** of 3G and 4G mobile standards and their **comparison**. | 4 |
| C405.6 | **Define** different wireless networking & communication systems & standards. | 1 |

**Project Stage I (404208) , BE- Sem- VII, 2022-23**

After successfully completing the course students will be able to,

| Co. No. | Description | Bloom's Taxonomy Level |
|---------|-------------|------------------------|
| C408.1 | **Conduct** literature search to **identify** and **formulate** the engineering problem | 2 |
| C408.2 | **Engage** in independent study and **apply** the mathematical, science, engineering concepts and management principles necessary to **solve** the identified engineering problem | 3,4 |
| C408.3 | **Identify** the community that shall benefit through the solution to the identified engineering problem and also **demonstrate** concern for environment | 2 |
| C408.4 | **Select** the engineering tools/components for **solving** the identified engineering problem | 3 |
| C408.5 | **Engage** in effective written communication through the project report, engage in effective oral communication through presentation of the project work | 6 |
| C408.6 | **Perform** in the team, **contribute** to the team and mentor/lead the team | 6 |

# AMRUTVAHINI COLLEGE OF ENGINEERING, SANGAMNER
## DEPARTMENT OF ELECTRONICS ENGINEERING
### COURSE OUTCOMES (CO)
### BE 2019 Course

**Process Instrumentation (404210), BE-Sem-VIII, 2022-23**

After successfully completing the course students will be able to,

| Co. No. | Description | Bloom's Taxonomy Level |
|---------|-------------|------------------------|
| C410.1 | **Describe** types of processes, **identify** time constant, dead time and dynamic elements for a given process control loop. | 1,2,3 |
| C410.2 | **Design** PID Controllers to achieve desired performance for various processes. | 6 |
| C410.3 | **Compare** different PID controller tuning methods, **estimate** tuning parameters and **examine** the system response. | 2,4 |
| C410.4 | **Compare** advanced control schemes | 2 |
| C410.5 | **Analyze** multivariable systems using block diagram analysis technique. | 4 |
| C410.6 | **Define** the process control design problem and **understand** the steps in design process. | 1,2 |

**Elective -V Artificial Intelligence and Neural Network (404211), BE- Sem- VIII, 2022-23**

After successfully completing the course students will be able to,

| Co. No. | Description | Bloom's Taxonomy Level |
|---------|-------------|------------------------|
| C411.1 | **Summarize** the neural networks working and its types | 1 |
| C411.2 | **Discuss** introduction to deep learning along with the libraries used for different applications of DL | 2 |
| C411.3 | **Design** and implement feed forward neural network. | 1,2 |
| C411.4 | **Apply** CNN to solve diversified complex real world problems | 3 |
| C411.5 | **Apply** RNN to solve diversified complex real world problems | 3 |
| C411.6 | **Analyze** the applications of deep learning | 4 |

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## COURSE OUTCOMES (CO)
## BE 2019 Course

**Elective –VI Wireless Sensor Network (404212), BE-Sem-VIII, 2022-23**

After successfully completing the course students will be able to,

| Co. No. | Description | Bloom's Taxonomy Level |
|---------|-------------|------------------------|
| C412.1 | **Explain** various concepts and terminologies used in WSN. | 2 |
| C412.2 | **Describe** importance and use of radio communication and link management in WSN. | 2 |
| C412.3 | **Describe** various wireless standards, **explain** protocols associated with WSN. | 1,2 |
| C412.4 | **Describe** the importance of localization, **illustrate** routing techniques used in WSN. | 2,3 |
| C412.5 | **Understand** techniques of data aggregation, **explain** importance of security in WSN. | 2, |
| C412.6 | Design and deploy WSN application, **identify** the issues involved in design and deployment of WSN. | 2,6 |

**Innovation & Entrepreneurship (404193), BE-Sem-VIII, 2022-23**

After successfully completing the course students will be able to,

| Co. No. | Description | Bloom's Taxonomy Level |
|---------|-------------|------------------------|
| C403.1 | **Understand** Innovation, Entrepreneurship and characteristics of an entrepreneur. | 2 |
| C403.2 | **Develop** a strong understanding of the Design Process and its application in variety of business settings. | 6 |
| C403.3 | **Generate** sustainable ideas. | 6 |
| C403.4 | **Explore** various processes required to be an entrepreneur. | 3 |
| C403.5 | **Understand** patents and its process of filing. | 2 |
| C403.6 | **Choose** and use appropriate social media for marketing. | 3 |

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## <u>COURSE OUTCOMES (CO)</u>
### <u>BE 2019 Course</u>

**Project Stage II (404217), BE- Sem- VIII, 2022-23**

After successfully completing the course students will be able to,

| Co. No. | Description | Bloom's Taxonomy Level |
|---------|-------------|------------------------|
| 415.1 | **Engage** in independent study and **apply** the mathematical, science, engineering concepts and management principles necessary to **solve** the identified engineering problem | 3,4 |
| 415.2 | **Apply** the identified concepts and engineering tools to arrive at **design** solution(s) for the identified engineering problem | 6 |
| 415.3 | **Analyze** and **interpret** results of experiments conducted on the designed solution(s) to arrive at valid conclusions | 4 |
| 415.4 | **Engage** in effective written communication through the project report, research paper, poster presentation and engage in effective oral communication through presentation of the project work. | 6 |
| 415.5 | **Perform** in the team, contribute to the team and mentor/lead the team | 6 |
| 415.6 | **Abide** by the norms of professional ethics | 5 |