



DEVI AHILYA VISHWAVIDYALAYA, INDORE

School of Electronics

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Program outcome and course outcome



School of Electronics
Devi Ahilya University, Indore

M.Tech Mobile Computing Technology

Programme Objectives

Mobile computing is human computer interaction by which computer is expected to be transported during normal usage. Mobile Computing involves mobile and wireless communication, mobile hardware and mobile software. Following are the programme objectives

1. Addresses the modern data communication architecture evolution from several aspects
2. Learn the hardware and software requirement for Mobile Computing
3. Gain practical knowledge and theoretical insights in field of application, services and mobile networking
4. Exposure to the emerging field of Internet of Things

M.Tech Mobile Computing Technology

Course Outcomes

EL71109 Wireless Networks

1. To appreciate the contribution of Wireless Communication networks to overall technological growth. 2. To understand the various terminology, principles, devices, schemes, concepts, algorithms and different methodologies used in Wireless Communication Networks.
3. To gather knowledge about wireless communication networks and 5G mobile networks
4. To acquire knowledge about 5G architecture

EL71101 Database Management Systems

1. Differentiate database systems from file systems by enumerating the features provided by database systems and describe each in both function and benefit.
2. Define the terminology, features, classifications, and characteristics embodied in database systems.
3. Analyze an information storage problem and derive an information model expressed in the form of an entity relation diagram and other optional analysis forms, such as a data dictionary.
4. Demonstrate an understanding of the relational data model.
5. Transform an information model into a relational database schema and to use a data definition language and/or utilities to implement the schema using a DBMS.
6. Formulate, using relational algebra, solutions to a broad range of query problems.
7. Formulate, using SQL, solutions to a broad range of query and data update problems.

EL71104 Digital Signal Processing

1. To learn the theory and practice of Digital Signal Processing
2. To design and implement FIR and IIR digital filters
3. To study the architecture and features of DSP Processor
4. To learn practical applications of Digital Signal Processing

EL71105 Embedded Microcontroller

1. Understanding microcontroller, microcomputer, embedded system.
2. Understand different components of a micro-controller and their interactions.
3. Become familiar with programming environment used to develop embedded systems
4. Understand key concepts of embedded systems like IO, timers, interrupts, interaction with peripheral devices

EL71102 Linux Scripting and Networking

1. Understand Linux Operating System
2. Use command substitution to capture program output in Linux Operating System
3. Use conditional statements to control the execution of shell scripts.
4. Able to do shell, Awk and perl Programming
5. Understand Embedded Linux System

EL71103 System Programming

1. Understand Object Oriented Principles.
2. Understand need and importance of JAVA Language
3. Understand and develop Core JAVA Programs.
4. Able to create packages, API and jar files.
5. Develop application using Swing, Applets, AWT and IO Package, database connectivity
6. Develop GUI Application using swing.
7. Develop minor project having GUI front end which fetches the data from backend.

EL72108 Mobile Computing

1. Define Mobile Computing and look at current trends
2. Acquire solid knowledge on mobile networks and mobile computing
3. Understanding different Operating Systems for Mobile Devices
4. Mobile device programming using Python
5. Study service discovery, networking, clients.

EL72102 Real Time Systems

1. Real-time scheduling and schedulability analysis
2. Formal specification and verification of timing constraints and properties
3. Design methods for real-time systems

4. Development and implementation of new techniques to advance the state-of-the-art realtime systems research

EL72103 Wireless Ad hoc Networks

1. Understand basic sensor network concepts
2. Know physical layer issues, understand and analyze Medium Access Control Protocols
3. Comprehend network and transport layer characteristics and protocols and implement conventional protocols
4. To enable the understanding the functioning of different access and routing protocols
5. Understand the network management and Middleware services

EL72104 Advanced Embedded Microcontroller - ARM

1. To provide in-depth knowledge about ARM Architecture and its instruction set.
2. To explain the systems development using ARM target boards.
3. To explain the Memory hierarchy, ARM CPU cores & its applications.
4. To design the system applications using Embedded C programming

EL72101 Mobile System Programming

1. Build your own Android apps
2. Explain the differences between Android and other mobile development environments Understand Android applications work, their life cycle, manifest, Intents, and using external resources
3. Design and develop useful Android applications with compelling user interfaces by using, extending, and creating your own layouts and Views and using Menus.
4. Take advantage of Android's APIs for data storage, retrieval, user preferences, files, databases, and content providers
5. Tap into location-based services, geocoder, compass sensors, and create rich map-based applications

EL72111 Wireless Computer Networks & Internet of Things

1. Understand the principles behind the Modern Network approaches such as IoT
2. Ability to analyze topologies and architectures in IoT environment
3. Understand the data traversal over virtualized environment for IoT
4. Design algorithms for enabling IoT 5. Understand the various types of key techniques used in modern networks.

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M.Tech Embedded Systems

Programme Objectives

An Embedded System is a programmed controlling and operating system with a dedicated function within a larger mechanical or electrical system, often with real-time computing constraints. It is embedded as part of a complete device often including hardware and mechanical parts. Following are the programme objectives:

1. To practically apply gained theoretical knowledge in order to design, analyse and implement embedded systems
2. To acquire knowledge of and be able to use tools for the development and debugging of programs implemented on microcontrollers and DSPs.
3. To apply formal method, testing, verification, validation and simulation techniques and tools in order to engineer reliable and safe embedded systems
4. To acquire knowledge of sensor properties and apply these in the design of Electronic systems which integrate measurement and actuation in different industrial production contexts.
5. Exposure to the emerging field of Internet of Things

M.Tech Embedded Systems

Course Outcomes

EL71105 Embedded Microcontrollers

1. Understand the hardware and software components as well as their development cycles,
2. Understand the deployment of embedded processors and supporting devices in real-world applications
3. Interpret application specifications and make practical recommendations on resource selection for embedded systems.
4. Understand key concepts of embedded systems like IO, timers, interrupts, interaction with peripheral devices

EL71106 Advanced Logic Design

To understand:

1. VHDL basics
2. Design of Combinational and Sequential Circuits
3. Modelling styles of VHDL and their advantages
4. FPGA Architecture

EL71102 Linux Scripting and Networking

1. Understand Linux Operating System
2. Use command substitution to capture program output in Linux Operating System
3. Use conditional statements to control the execution of shell scripts.
4. Able to do shell, Awk and perl Programming
5. Understand Embedded Linux System

EL71103 System Programming

1. Understand Object Oriented Principles.
2. Understand need and importance of JAVA Language
3. Understand and develop Core JAVA Programs.
4. Able to create packages, API and jar files.

5. Develop application using Swing, Applets, AWT and IO Package, database connectivity
6. Develop GUI Application using swing.
7. Develop minor project having GUI front end which fetches the data from backend.

EL71104 Digital Signal Processing

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EL72105 VLSI Design Methodologies

1. Be able to use mathematical methods and circuit analysis models in analysis of CMOS digital electronics circuits, including logic components and their interconnect.
2. Be able to create models of moderately sized CMOS circuits that realize specified digital functions.
3. Be able to apply CMOS technology-specific layout rules in the placement and routing of transistors and interconnect, and to verify the functionality, timing, power, and parasitic effects.
4. Have an understanding of the characteristics of CMOS circuit construction.
5. Be able to complete a significant VLSI design project having a set of objective criteria and design constraints.
6. To provide experience designing integrated circuits using Computer Aided Design (CAD) Tools

EL72102 Real Time Systems

1. Real-time scheduling and schedulability analysis
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3. Design methods for real-time systems
4. Development and implementation of new techniques to advance the state-of-the-art realtime systems research

EL72104 Advanced Embedded Microcontroller - ARM

1. To provide in-depth knowledge about ARM Architecture and its instruction set.
2. To explain the systems development using ARM target boards.
3. To explain the Memory hierarchy, ARM CPU cores & its applications.

4. To design the system applications using Embedded C programming

EL72106 Digital Image Processing

1. To study the image fundamentals and mathematical transforms necessary for image processing.
2. To study the image enhancement techniques
3. To study image restoration procedures.
4. To study the image compression procedures

EL72101 Mobile System Programming

1. Build your own Android apps
2. Explain the differences between Android and other mobile development environments Understand Android applications work, their life cycle, manifest, Intents, and using external resources
3. Design and develop useful Android applications with compelling user interfaces by using, extending, and creating your own layouts and Views and using Menus.
4. Take advantage of Android's APIs for data storage, retrieval, user preferences, files, databases, and content providers
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