Course Title: Embedded System Programming
Course no: CSC-362 Full Marks: 70+10+20
Credit hours: 3 Pass Marks: 28+4+8

Nature of course: Theory (3 Hours) + Lab (3 Hrs.)

Course Synopsis: This course explores the system integration and its issues.

Goal: To allow the student to study the design and development process for dedicated computer systems in relation to the environment in which they operate.

Unit 1. Introduction: 8 Hrs.

Overview of dedicated and automated systems and their specific requirements (robust design, environmental issues, temporal constraints, technological constraints, software systems); the product design cycle.

Unit 2. System Specification and Integration: 12 Hrs.

Development of a system specification, including case studies, Evaluation and justification of the available levels of system integration (custom chipdesign through to turnkey-systems) and technological choice.

Unit 3. Software Issues: 11 Hrs.

Development environment: compilers, linkers, debuggers, emulators, real time operating systems and kernels, Designing and implementing code for dedicated systems

Unit 4. Hardware Issues: 14 Hrs.

Choice of processor: I/O, memory, speed, integration, development facilities, economics; DSP devices, Interfacing to commonly used peripheral devices, Backplane Bus standards, Transducers: sensors for measuring physical phenomena, output devices such as power actuators and motors, Data transformation, signal conditioning and data conversion. The impact of EMC regulations on design practice.

Laboratory works: The laboratory exercises should cover all the features mentioned above.

Text / Reference books:

1 S Heath, **Embedded System Design**, Butterworth-Heinemann 1997, ISBN0-75063-237-2
2 David E. Simon, **An Embedded Software Primer**, Pearson Education, 2001

