# INTRODUCTION TO ECC 811

ECC 811 – SOFTWARE ENGINEERING

FEBRUARY 2020

# COURSE OBJECTIVE

The purpose of this course is to provide students with the following:

- Principles of suitable structured high level language programming techniques,
- Software planning,
- Design,
- Development,
- Implementation,
- Testing
- maintenance required for problem solving in electrical/computer engineering applications.

# EXPETECTED LEARNING OUTCOMES

At the end of the course the student should be able to:

1. Solve electrical/computer engineering problems using suitable structured high level language programing methodologies.

2. Plan, design, develop, test, implement and maintain software applied to solving related electrical/computer engineering problems.

# COURSE CONTENT /01

1. Software Engineering Description
2. Introduction of structured High-Level Language Programming (e.g. using the C-language)
3. Introduction of real-time virtual machine
4. Inter-process communication mechanisms. Implementing the virtual machine
5. Table driven software: the finite state machine (FSM)
6. state transition diagrams
7. application to Real Time (RT.) systems and protocol handling

# COURSE CONTENT /02

8. Software Life cycle and reliability.
9. Requirements definition and software specification.
10. Software design: top-down design; Introduction to object-oriented software design.
11. Software validation.
12. Software test: test plan, documentation.
13. Software maintenance: waterfall model.

# COURSE CONTENT /03

14. Introduction to formal methods of program specification
15. program construction and proof of correction
16. Software Processes
17. Software Requirements
18. Analysis and Specification
19. Software Architecture
20. Planning a Software Project
21. Function-Oriented Design
22. Object-Oriented Design. Detailed Design
23. Coding
24. Testing

# TEXTBOOKS

**Prescribed Textbook**

1. Pankaj Jalote, An integrated approach to software engineering, 3rd Edition (2005 or Later Edition), Springer, ISBN: 81-7319-702-4.