School of Interdisciplinary Engineering and Sciences (SINES)
National University of Sciences & Technology (NUST)

Title : SYSTEM ARCHITECTURE AND DESIGN

Pre-requisite: Nil

Objectives: The purpose of the course is to provide the students with knowledge on engineering design of systems through various models and methods.

Outcomes: The students would learn basic mathematical knowledge for the system engineering design, understanding elements of engineering design and requirements, architectures (functional, physical and allocated), interfaces & qualification and also methods for data, process and decision analysis.

Course Code: SYSE-802

Credit Hours:3-0

Course Contents with proposed contact Hours (Weekly plan):

1. Overview of the Systems Engineering Design Process
2. Modeling and Sys ML Modeling
3. Discrete Mathematics: Sets, Relations and Functions
4. Graphs and Directed Graphs (Digraphs)
5. Requirements and Defining the Design Problem
6. Functional Architecture Development
7. Physical Architecture Development
8. Allocated Architecture Development
9. Interface Design
10. Integration and Qualification
11. Supplemental Topics.
12. Graphical Modeling Techniques
13. Decision Analysis for Design Trades

Details of lab work/workshop practice, if applicable:

Nil

Recommended reading, including textbooks, reference books with dates

1. Buede, D. M., The Engineering Design of Systems – Models and Methods, 2nded. Wiley Series, New Jersy, 2009.
2. Blanchard, Benjamin S., Fabrycky, Walter J., Systems Engineering and Analysis, 5th ed. Prentice Hall International Series, 2010.
3. Several handouts and papers.

Nature of Assessments

Assessment will be carried out as per NUST statutes