



# ECE3502 \_ IoT Domain Analyst

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# Course Objectives

- To impart knowledge on the infrastructure, sensor technologies and networking technologies of IoT.
- To analyse, design and develop IoT solutions.
- To explore the entrepreneurial aspect of the Internet of Things
- To apply the concept of Internet of Things in the real world scenarios

# Expected Course Outcome

- After successfully completing the course the student should be able to
- Identify the main component of IoT
- Program the controller and sensor as part of IoT
- Assess different Internet of Things technologies and their applications

# Student Learning Outcomes (SLO)

- 2) Having a clear understanding of the subject related concepts and of contemporary issues
- 5) Having design thinking capability
- 6) Having an ability to design a component or a product applying all the relevant standards and with realistic constraints
- 17) Having an ability to use techniques, skills and modern engineering tools necessary for engineering practice.

# Project Component Rubrics

- **Review 1 - 20 marks**
- **Review 2 - 30 marks**
- **Review 3 - 50 marks**

# Syllabus

- 1) **IoT Solution Models:** Models applied in IoT solutions, Semantic models for data models, Application of semantic models, information models, information models to structure data, and relationships between data categories
- 2) **Data Models :** Tags to organize data, tag data to pre-process large datasets, predictive models for forecasting, Application of predictive models  
*consumer*  
*capture, storage, use, act*
- 3) **Simulation Scenarios:** Models to simulate real-world scenarios, Application of the models, stages of data lifecycle, reuse existing IoT solutions, reusability plan *→*
- 4) **Use Case Development :** Approaches to gather business requirements, defining problem statements, business requirements for use case development, Assets for development of IoT solutions *⇒*
- 5) **Value engineering and Analysis:** Principles and phases of Value Engineering and Analysis, Frameworks for Value Engineering in IoT solutions, cost-function analysis of IoT solution components, action plans to incorporate Value Engineering, Data modelling requirements, Development models: Waterfall, Agile, Spiral, V models, monetization models for IoT use cases - 'Outcomes As A Service' model  
*SDLC ⇒*

## Cont..

**6) Data Analytics for IoT Solutions:** Data generation, Data gathering, Data Pre-processing, data analyzation, application of analytics, vertical-specific algorithms, Exploratory Data Analysis

**7) Deployment of Analytics Solutions:** Anomaly Detection and Data Clustering, Predictive Analytics and Streaming Analytics, cloud/edge methods, integrating analytics models, performance of analytical models, Templates for data insights, deriving insights.

white box → prog  
Black box → tester testing  
main

BFS → SFS  
↓  
Design →  
HLD → LLD → prog

### References:

- Arshdeep Bahga, Vijay Madisetti, "Internet of Things: A hands-on Approach", University Press, 2015.
- Adrian McEwen & Hakim Cassimally, "Designing the Internet of Things", Wiley, Nov 2013, (1 st edition)
- Claire Rowland, Elizabeth Goodman, Martin Charlier, Ann Light, Algreed Lui, " Designing Connected Products: UX for the consumer internet of things", O'Reilly, (1 st edition), 2015