**University of Management and Technology**

**School of Engineering**

**Department of Electrical Engineering**

**Course Outline**

**Course code:** EE 453 **Course title:** Internet of Things (IoT)

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| --- | --- |
| Program | BSEE |
| Credit Hours | 3+1 |
| Duration | One semester |
| Prerequisites | Computer Networks |
| Resource Person(s) | T.B.A |
| Counseling Timing | T.B.A |
| Contact | T.B.A  |

**Chairman/Director signature………………………………….**

**Dean’s signature…………………………… Date………………………………………….**

**Learning Objective:**

This course focuses on a new emerging topic the Internet of Things (IoT). IoT envisions an extraordinary extension of the Internet mankind has ever seen with over 20 billion "things" to be added to the Internet by 2020.

The course includes a small amount of background review material to get all students to an equivalent level, before we start exploring transport, network, MAC and physical standards for IOT. In the laboratory part we develop an IoT based application based on the material covered in the theory.

**Learning Methodology:**

Interactive and participative

**Grade Evaluation Criteria**

Following is the criteria for the distribution of marks to evaluate final grade in the semester.

**Marks Evaluation Marks in percentage**

Quizzes 15

Assignments 10

Mid Term 25

Final exam 50

Total 100

**Calendar of Course contents to be covered during semester**

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| --- | --- | --- |
| **Week** | **Course Contents**  | **Reference Chapter(s)** |
| 1 | Introduction & Motivation (challenges, opportunities and Applications) | Recommended and mandatory readings for “discussion” style lectures will be made available on lms at least three days before the scheduled lecture |
| 2 |
| 3 | Wireless communication – fundamentals |
| 4 | MAC protocols – state of the art |
| 5 | Networking – the anatomy of IoT networking |
| 6 | Routing protocols – state of the art |
| 7 | Network architectures – flat/tiered |
| 8 | **MID TERM EXAMINATION** |
| 9 | Data Aggregation |
| 10 | Time Synchronization |
| 11 | Localization |
| 12 | IoT Security |
| 13 | Energizing IoT devices: battery/harvesting/wirelessly |
| 14 | Operating systems for IoT |
| 15 | Future Research and Development Opportunities |