Syllabus for IOT

1) The Internet of Things (IoT) is a course about the new paradigm of objects interacting with people, with information systems, and with other objects. The course will focus on creative thinking and on hands-on project development.
2) The duration of the course is 30 hours. Will be a mix of 75 minutes session and 2 hours session. Lab will be for 5 hours.
3) **Introduction:**. The students will learn:
   a) IOT concepts
   b) IOT Standards
   c) Components of IOT System.
   d) Relevance of IOT for the future.
   e) IOT Applications.
   f) IOT for smart cities (Case study Smart city Barcelona)
   g) IOT in Indian Scenario
   h) Challenges in IOT implementation.
4) This subject does not have the intention of being a comprehensive course about the technologies involved in IOT. The focus will be more on the possibilities offered by the different technologies, and on the creative thinking techniques to find innovative applications of combinations of such technologies in real-life scenarios. Some presentations will also be scheduled in which people from industry will make presentations about selected topics related to the IoT.
5) **Prerequisites of the subject**: The students will be require to participate actively in creative thinking exercises. IOT is futuristic and will require students to understand other technologies and current uses where IOT can be integrated to make a make a quantum jump in the in the efficiencies in application. A willingness to be creative and participate in open discussions is a must.
6) **Lab Requirements**: For the lab project the students will have to be able to develop a simple IOT applications. The total lab time will be 10 hours.
7) Syllabus in Detail
   a) IOT concepts
      i) Technologies that led to evolution of IOT
      ii) IOT and SCADA
      iii) IOT and M2M
      iv) IOT and Big Data
   b) IOT Standards
      i) Requirement of international standard (case study)
      ii) IOT standards in practice.
      iii) Operating platforms /systems
   c) Components of IOT System.(Lab)
      i) Design of IOT systems
      ii) Development of prototypes.
   d) Relevance of IOT for the future.
      i) IOT in everyday life
      ii) Internet of Everything
      iii) IOT and Individual Privacy.

e) IOT Applications.
   i) Lighting as a service (case study)
   ii) Intelligent Traffic systems (case study)
   iii) Smart Parking (case study)
   iv) Smart water management (case study)
f) IOT for smart cities (Case study Smart city Barcelona)
g) IOT in Indian Scenario
   i) IOT and Aadhaar
   ii) IOT for health services.
   iii) IOT for financial inclusion.
   iv) IOT for rural empowerment.
h) Challenges in IOT implementation.
   i) Big Data Management.
   ii) Connectivity challenges.
   iii) Mission critical applications.

8) Reference text book :
   a) **The Internet of Things: How Smart TVs, Smart Cars, Smart Homes, and Smart Cities Are Changing the World** http://www.amazon.in/Internet-Things-Smart-Cities-Changing/dp/0789754002/ref=sr_1_9?ie=UTF8&qid=1474003280&sr=8-9&keywords=internet+of+things+book .. The kindle version is cheaper at Rs 483.
   b) In addition relevant material related to the topic will be circulated.