

## Liverpool John Moores University

Title: Wireless Sensor Networks  
Status: Definitive  
Code: **6008ELE** (120062)  
Version Start Date: 01-08-2019

Owning School/Faculty: Electronics and Electrical Engineering  
Teaching School/Faculty: Electronics and Electrical Engineering

Team	Leader
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**Academic Level:** FHEQ6      **Credit Value:** 10      **Total Delivered Hours:** 38  
**Total Learning Hours:** 100      **Private Study:** 62

### Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	12
Practical	24

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	Report	Wireless Sensor Project	30	
Exam	Exam	Wireless Exam	70	2

### Aims

*Develop embedded systems for wireless sensing applications. Implement routing protocols using a RTOS.*

### Learning Outcomes

After completing the module the student should be able to:

- 1 Evaluate various wireless routing protocols
- 2 Choose appropriate radio technologies for a given engineering problem
- 3 Design, implement and evaluate wireless hardware solutions for a given engineering problem
- 4 Design and develop a wireless embedded software project
- 5 Examine Wireless embedded solution and performance metrics

### **Learning Outcomes of Assessments**

The assessment item list is assessed via the learning outcomes listed:

Wireless Sensor Project	3	4	5
Wireless Exam	1	2	3

### **Outline Syllabus**

*Routing Protocols: AODV, DSR, DSDV, etc.*

*Radio Technologies: 802.15.4, 802.11, bluetooth and Other proprietary systems.*

*Hardware Platforms: Module selection, driver development.*

*Software: RTOS wireless development, simulation.*

*Testing: RSSI for various environments. Energy, Battery/Network Lifetime*

### **Learning Activities**

Lecture, demonstration and practical activities applying topics discussed.

### **Notes**

This module introduces the importance of wireless technology to embedded systems.