**Liverpool** John Moores University

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Title:                        MOBILE AND WIRELESS SYSTEMS
Status:                       Definitive
Code:                         **6057COMP**   (117470)
Version Start Date:           01-08-2018

Owning School/Faculty:        Computer Science
Teaching School/Faculty:      Computer Science

| Team | Leader |
|------|--------|
| Robert Askwith | Y |

| **Academic Level:** | FHEQ6 | **Credit Value:** | 24 | **Total Delivered Hours:** | 72 |
|---|---|---|---|---|---|
| **Total Learning Hours:** | 240 | **Private Study:** | 168 | | |

**Delivery Options**
Course typically offered: Standard Year Long

| Component | Contact Hours |
|-----------|---------------|
| Lecture | 24 |
| Practical | 12 |
| Seminar | 12 |
| Tutorial | 24 |

**Grading Basis:** 40 %

**Assessment Details**

| Category | Short Description | Description | Weighting (%) | Exam Duration |
|----------|------------------|-------------|---------------|---------------|
| Report | AS1 | Design of a Wireless Networking Infrastructure supporting specific application requirement. | 50 | |
| Report | AS2 | Design of a mobile telecommunications system and applying proper techniques in achieving the network requirements. | 50 | |

**Aims**

*To provide an in-depth study of the application and network requirements of wireless and mobile communications systems.*
*To develop an understanding of the theory and practice of building modern mobile and wireless systems.*
*To develop an advanced understanding of the technical concepts for the design, modeling, implementation and optimisation of mobile and wireless systems.*

**Learning Outcomes**

After completing the module the student should be able to:

| | |
|---|---|
| 1 | Critically review and identify the technical requirements of applications and network infrastructures supporting modern wireless systems. |
| 2 | Apply creative skills in the development of applications and network infrastructures of modern wireless systems. |
| 3 | Critical evaluate and identify the technical requirements of applications and network infrastructures supporting modern mobile telecommunication systems. |
| 4 | Apply knowledge in the development of applications and network infrastructures of modern mobile telecommunications systems |

**Learning Outcomes of Assessments**

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

| | | |
|---|---|---|
| Wireless Networking | 1 | 2 |
| Mobile telecommunications | 3 | 4 |

**Outline Syllabus**

*Wireless Networking Infrastructures:*
*Application and Network Requirements*
*Wireless Network Architectures; WLAN infrastructure, Bluetooth ad hoc*
*Protocols and Internetworking issues; wireless Internet, Mobile IP, MIPv6, Cellular IP, WAP, Wireless QoS, Middleware for wireless, adaptation, security, MAC schemes, TDMA/CDMA/FDMA*
*Applications; location-based services, networked appliances, sensor networks*

*Mobile Telecommunication Systems:*
*Application and Network Requirements*
*Mobile Communication Systems: Cellular concept, spectrum management, voice communications, power and energy control*
*GSM network design and optimization*
*UMTS, GPRS, networks and data connectivity.*

**Learning Activities**

Lectures, tutorials, seminar/group work, and practical/lab sessions.


**Notes**

The course will provide advanced understanding of modern mobile and wireless systems. It will provide the fundamental technical concepts for the design, modeling, implementation and optimisation of mobile and wireless systems including GSM, UMTS, WLAN and WiMAX systems. It will cover concepts including architectures, design and implementation, mobility and network management, network evolution and development, rollout, adaptation and optimisation.