# Wrexham Glyndŵr UNIVERSITY

**MODULE SPECIFICATION PROFORMA**

| **Module Title:** | Live Systems | **Level**: | 6 | **Credit Value**: | 20 |
|---|---|---|---|---|---|

| **Module code**: | CMT603 | **Is this a new module?** | No | **Code of module being replaced**: | N/A |
|---|---|---|---|---|---|

| **Cost Centre**: | GACT | **JACS3 code**: | J930 |
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| **Trimester(s) in which to be offered:** | 2 | **With effect from:** | September 16 |
|---|---|---|---|

| **School:** | Creative Arts | **Module Leader:** | Colin Heron |
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| Scheduled learning and teaching hours | 48hrs |
| Guided independent study | 152hrs |
| Placement | 0hrs |
| **Module duration (total hours)** | 200hrs |

| **Programme(s) in which to be offered** | Core | Option |
|---|---|---|
| BSc (Hons) Sound Technology | ☑ | ☐ |
| BSc (Hons) Music Technology | ☑ | ☐ |
| BSc (Hons) Professional Sound & Video | ☑ | ☐ |

| **Pre-requisites** |
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| None |

| Module Aims |
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| The aim of this module is to equip the student with the necessary skill set and knowledge to design and optimise large scale installed and touring sound systems. This will be delivered by investigating the science of building speaker systems at component level.  The focus of the module will then address DSP driven systems that rely heavily on new and emerging network/software protocols for the delivery of high quality audio. The module will take the underlying theories and apply them to real world scenarios such as arena and festival sound systems. |

| Intended Learning Outcomes |
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| Key skills for employability |

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| KS1 | Written, oral and media communication skills |
| KS2 | Leadership, team working and networking skills |
| KS3 | Opportunity, creativity and problem solving skills |
| KS4 | Information technology skills and digital literacy |
| KS5 | Information management skills |
| KS6 | Research skills |
| KS7 | Intercultural and sustainability skills |
| KS8 | Career management skills |
| KS9 | Learning to learn (managing personal and professional development, self-management) |
| KS10 | Numeracy |

| At the end of this module, students will be able to | | Key Skills | |
|---|---|---|---|
| **1** | Analyse the fundamental science of loudspeaker design and operating principles as applied to small scale systems | KS1 | KS3 |
| | | KS4 | KS6 |
| | | KS10 | |
| 2 | Conceptualise and define large scale sound systems with reference to environmental and quality criteria | KS1 | KS3 |
| | | KS5 | KS6 |
| | | KS10 | |
| 3 | Critically evaluate a broad range of approaches and technologies to synthesise solutions to real world scenarios with regard to high-quality audio systems | KS1 | KS6 |
| | | KS9 | KS10 |
| | | | |
| 4 | Apply relevant  research from sources such as the Audio Engineering Society to inform the formulation of a working solution | KS5 | KS6 |
| | | KS10 | |
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| Transferable/key skills and other attributes |
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| Project management<br>Technical Analysis<br>Research Skills |

| **Derogations** |
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| None |

| **Assessment:** |
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| Assignment 1: The project will be the evaluation of a broad range of research materials regarding large-scale sound system design and implementation. The work will evaluate the possible theoretical approaches adopted by the industry and will be supported by detailed analysis of the technological and environmental factors that influence the design process for given scenarios.  During this exercise the student will also discuss the role of digital signal processing (DSP) solutions that have evolved to optimise the performance of the system.<br><br>Assignment 2: The poster presentation will demonstrate the results of an experiment regarding the performance of a speaker system. It will demonstrate the predicted performance of the system and then compare this data to the actual measured values. |

| Assessment number | Learning Outcomes to be met | Type of assessment | Weighting (%) | Duration (if exam) | Word count (or equivalent if appropriate) |
|---|---|---|---|---|---|
| 1 | 2, 3, 4 | Project | 70% | | 2000 |
| 2 | 1, 4 | Poster Presentation | 30% | | Single A2 Sheet |

| **Learning and Teaching Strategies:** |
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| The module will be presented as a series of lectures.<br>Seminars will be conducted to explore the use of associated software. |

| **Syllabus outline:** |
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| Thiele Small parameters<br>Enclosure design and principles<br>Transmission Principles<br>Environmental Factors<br>Evaluation<br>Principles of Prediction<br>Variance<br>Advanced System Specification |

System Optimisation
Calibration and Verification

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**Bibliography:**

**Essential reading**

Everest, F Alton. (2009) Master Handbook of Acoustics. New York: McGraw-Hill

McCarthy, Bob. (2016) Sound System Design and Optimization: Modern Techniques and Tools for Sound System Design and Alignment. 2nd Edition. Oxford: Focal Press

Toole, Floyd. (2008) Sound Reproduction: The Acoustics and Psychoacoustics of Loudspeakers and Rooms. New York: Elsevier

Grimes, B. (2014) Networked AV systems: McGraw Hill Education

**Other indicative reading**

Eargle, John.(2003) Loudspeaker Handbook. Massachusetts: Kluwer Academic Publishers

Forman, John Eargle Chris. (2002) Jbl Audio Engineering for Sound Reinforcement. Milwaukee: Hal LeonardAudio Engineering Society – Journal and e-Library
http://www.aes.org