EMQAL syllabus and learning outcomes

All parts of the programme (modules, internship, and research project) contribute to the 8 EMQAL learning outcomes:

Upon successful completion of the programme, graduates will be able to:

1. design, implement and manage a quality system in an analytical laboratory;
2. implement suitable internal and external quality control activities in an analytical laboratory;
3. understand, select and apply a set of instrumental analytical techniques appropriate for a given problem;
4. develop and validate new methods of analysis;
5. plan a validation program for a given method of analysis;
6. critically analyse and evaluate data using statistical tools and software;
7. prepare and compile a scientific report and communicate the findings orally;
8. seek employment and be a valuable asset in a professional environment.

Proposed study programme element	Learning outcomes
QM01 Introduction to Quality Management	1
QM02 Laboratory Quality Systems: ISO/IEC 17025	1, 2
QM03 Good Laboratory and Manufacturing Practice	1,2
QM04 Quality Systems Documentation	1
QM05 Risk Assessment in analytical laboratories	1
QM06 Calibration and Verification	2, 4, 5, 6
QM07 Proficiency testing schemes and Reference Materials	2, 4, 5, 6
QM08 Method validation	4, 5, 6, 7
QM09 Internal Quality Control	1, 2, 6
QM10 Laboratory Audits (EN ISO 19011)	1, 7, 8
PS01 Technical writing and scientific communication	7, 8
PS02 IT Tools	6,8
PS03 Project management	8
PS04 Job search strategies	7, 8
PS05 Enterpreneurship and Leadership skills	7, 8
AM01 Water analysis	3
AM02 Food Analysis	3

AM03 Environmental Analysis	3
AM04 Sampling and sample treatment	3
AM05 Advanced Instrumental Analysis in practice	3
AM06 Biological analysis	3
AM07 Molecular Spectroscopy	3
AM08 Vibrational Spectroscopy	3
AM09 Atomic Spectroscopy	3
AM10 Mass spectrometry and Hyphenated techniques	3, 6
AM11 Electroanalytical Techniques	3
AM12 Gas Chromatography	3
AM13 Liquid Chromatography	3
AM14 Extraction methods in analytical chemistry	3
AM15 Quality Parameters and Optimization in Chromatography	3 6
DA01 Statistics	6
DA02 Statistical Decision and Analysis of Variance	6
DA03 Uncertainty Measurement	3, 6
DA04 Experimental Design and Optimization	3, 6
DA05 Pattern Recognition and Classification	6
DA06 Multivariate data analysis	6
Internship	1- 8
Research Master Thesis (RMT)	1 -8

In addition to this, extra modules will be offered by visiting scholars and other experts each edition.