MATLAB® Training Course
February/March 2018 (24 hours)

Dates: February 2018: 5th, 8th, 12th, 15th, 19th, 22nd, 26th
March 2018: 1st
Time: 5.00p.m. – 8.00pm
Venue: Training Room 108, Level 1, IT Services Building, University of Malta
Registration Fee: €250/UoM students €230

Aim and contents of course: The course is designed to provide training in **MATLAB®** with special reference to programming, data analysis and visualisation to participants from a variety of academic backgrounds working or studying in various sectors including engineering, finance, social sciences, health services and higher education. No prior knowledge is required, however, some familiarity with scientific computing will be useful.
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Course outline: A typical training course in MATLAB® will typically cover the following topics, but its content could be tailor-made to meet the specific needs and the requirements of a group of professionals.

- Starting with MATLAB®
- Creating arrays. Mathematical operations with arrays
- Script files. Functions and Function files
- Programming in MATLAB® including relational and logical operations and built-in functions, a variety of looping techniques and conditional operators
- User interfaces for data input and output
- Reading and writing of data files
- Basic MATLAB® methods for data processing: graphing, curve fitting in two dimensions, plotting data in three dimensions
- Analysing multidimensional data using data fitting and interpolation

Participants will be given the opportunity to analyse and visualise their own datasets and/or to use MATLAB® for other specialized applications which might be related to their employment or studies.

Learning outcomes: By the end of this course, besides consolidating your understanding of MATLAB® fundamentals, you will be able to perform complex calculations, produce original models using appropriate programming techniques, manipulate data and employ a range of graphical techniques for presenting data clearly and with impact so that real world situations can be analysed and critically evaluated, use of a range of numerical techniques for data analysis and interpolation and compare these methodologies with regard to their suitability for different tasks.

Delivery style: Face-to-face lectures covering the theoretical content and explaining the programming skills and supervised practical classes. An assessment in the form of a practical working example shall be included.

Course Tutor: Prof Cristiana Sebu is an Associate Professor in Biomathematics in the Faculty of Sciences, University of Malta, and she has been delivering numerous MATLAB® training courses for 11 years to undergraduate and postgraduate students, researchers, and professionals in industry. Prof Sebu obtained a BSc in Theoretical Physics in 2000, followed by an MSc in Theoretical Physics in 2002 at the University of Bucharest, Romania, and a PhD in Applied Mathematics in 2004 at University of Montpellier II, France. Between 2004-2015, Prof Sebu was employed by Oxford Brookes University, United Kingdom, where she held several positions: Postdoctoral Research Fellow, Lecturer, Senior Lecturer and Reader in Mathematics. For the last 14 years Prof Sebu has produced internationally recognised research in two main fields: Biomedical Instrumentation and Imaging Techniques, and Mathematical Modelling, and she extensively uses MATLAB® in her research.

Certification:

Participants who attend at least 80% of the sessions will be awarded a Certificate of Attendance issued by Malta University Consulting Ltd. The assessment grade will be included on the certificate.

General Information:

Cheques are to be made payable to Malta University Consulting Ltd

For further information kindly contact: Malta University Consulting Ltd, Robert Mifsud Bonnici Street, Lija.

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website: www.muhc.com.mt

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Course Programme

Monday 5th February   **Session 1**

- Starting MATLAB®, MATLAB® windows
- Using Matlab as a calculator
- Display formats
- Defining scalar variables
- One-dimensional arrays (vectors)
- Practical exercises

Thursday 8th February   **Session 2**
- Two-dimensional arrays (matrices)
- Mathematical operations with arrays
- Script files
- Practical exercises

Monday 12th February   **Session 3**
- Functions and function files
- Relational operators
- Logical operators
- Practical exercises

Thursday 15th February   **Session 4**
- Built-in logical functions
- Conditional statements
- For-end loops
- Practical exercises

Monday 19th February   **Session 5**
- For-end loops
- While-end loops
- Two-dimensional graphics
- Practical exercises

Thursday 22nd February   **Session 6**
- Three-dimensional graphics
- Importing and exporting data
- Data fitting and interpolation
- Practical exercises

Monday 26th February   **Session 7**
- Use MATLAB®, for specialized applications (analyse and visualise your own datasets and/or to use MATLAB® for other specialized applications which might be related to their employment or studies)

Thursday 1st March   **Session 8**
- Revision
- Assessment