



Data Analysis with Python for Medical Physicists

~~28th – 30th May 2020~~

5th – 7th November 2020

Malta

Endorsed by:



EFOMP

www.mamp.org.mt | mamp.malta@gmail.com

V/O 1715

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Course Overview

Course Aim

The aim of this course is for participants to learn skills in Python that a medical physicist should know. By the end of the course, participants will be competent to implement data analysis using this programming language and use them in different applications.

Target Group

Attendants should be clinical or academic medical physicists who are interested in learning and develop new skills in the programming language, Python. Individuals who have limited to no background of Python, or would like to refresh their skills are encouraged to apply.

Local Organizers

Malta Association of Medical Physics (V/O 1715)

Course Lecturer

Eric Pace, Medical Physics Expert, Medical Imaging Department, Mater Dei, Malta.

Course Content

- Overview of programming basics and control flow
- Classes and methods as the building blocks of object oriented programming. Explain how these may be applied in the context of managing typical medical physics data. This will help develop skills beyond a simple linear execution of code.
- Reading unstructured data that is often produced by CT, MRI and other modalities
- Structure data in a more machine readable format for storage and retrieval – this assists in preparing data for fast insertion into databases (although databases themselves will not be discussed)
- Using an Integrated Development Environment (IDE) such as PyCharm
- Introduce the concept of panels as a wrapper over matrix data. Medical physicists often have columnar data (2D matrix) which needs to be cleaned, filtered, processed and plotted.
- Plotting of data as line, bar, box and scatter plots.
- Use PyDICOM package to work with DICOM files (extract information from DICOM headers and write any modifications back to DICOM files).

This course will not:

- Explore the use of databases and SQL
- Cover numerical methods or statistical techniques

Methods of assessment

At the end of the course participants have an option to participate in an exam.

Teaching methods

3 days of lectures and practical sessions. The course is practice based participants will also have the opportunity to practice during the course in which they can discuss any questions or problems that they may have in a friendly environment.

Accreditation

This course will be accredited by European Board for Accreditation in Medical Physics (EBAMP).

Course Fee

~~Early Registration Fee (until 31st January, 2020) – €300~~

~~Late Registration Fee (from 1st February onwards) – €350~~

Registration fee (until 4th November, 2020) - €350

How to Apply

Visit www.mamp.org.mt/courses/python to register online. Payment should be made within 10 days from registration to the following bank address:

Bank Name: Bank of Valletta

Account Holder Name: Malta Association of Medical Physics

IBAN: MT59 VALL 2201 3000 0000 4002 6129 488

Bank's BIC: VALLMTMT

Location: Siggiewi, Malta

Scientific Programme

The course will start on Thursday morning, ~~28th May~~ **5th November** 2020 at 09:00, registrations starting at 08:30. Course will finish on Saturday 30th May around 14:00. The draft programme can be found below.

Day 1-Thursday, ~~28th May~~ **5th November**

Time	Lecture
08:30 - 09:00	Registration
09:00 - 10:00	Introduction to basic concepts in Python – data types, data structures, string manipulation
10:00 - 10:30	Coffee Break
10:30 - 12:00	Structured Programming
12:00 - 13:00	Lunch Break
13:00 - 15:00	Working with files – Reading/writing CSV, EXCEL, JSON, Building and traversing directories (e.g. from medical physics QA Excel reports; data output from DoseWatch or other dose platforms)
15:00 - 15:30	Coffee Break
15:30 – 16:00	The integrated development environment – breakpoints, debugging, variable inspection, runtime configurations
16:00 – 17:00	Data extraction from unstructured files using regular expressions (with e.g. from PET/CT data)

Day 2-Friday, ~~29th May~~ **6th November**

Time	Lecture
09:00 - 10:00	Data Processing 1 – Series, DataFrames, building DataFrames from files
10:00 - 10:30	Coffee Break
10:30 - 12:00	Data Processing 2 – Filters and queries, sorting, data aggregation, pivot tables, table joins
12:00 - 13:00	Lunch Break
13:00 - 17:00	Practicals (with open coffee from 15:00 onwards)

Day 3-Saturday, ~~30th May~~ **7th November**

Time	Lecture
09:00 - 10:00	Visualisation – Plotting from DataFrames, plot adjustments
10:00 - 10:30	Coffee Break
10:30 - 12:00	Dicom file manipulation – Reading/writing DICOM, modifying DICOM tags, extending to batch DICOM modifications
12:00 - 13:00	Lunch Break
13:00 - 14:00	Optional exam

Venue and Accommodation



Course Venue

The course will take place at the following address:

Dolmen Hotel Malta,
St Pauls Bay
Malta
SPB 2402

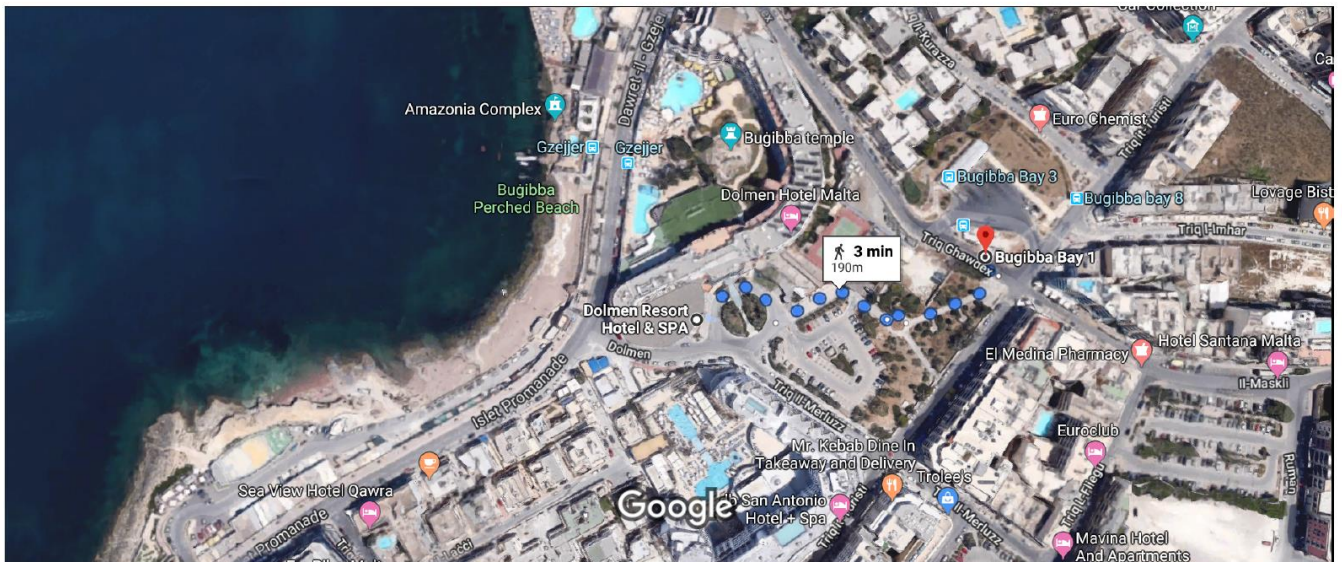
More information can be found [here](#).

Transport to/from airport

To arrive at Dolmen Hotel you can either catch a bus or use taxis. The cheapest option is a bus.

Catch Bus Route X3 as soon as you exit the Arrivals Terminal of the airport and disembark at the final Bus Stop (which is a Bus Terminus). The hotel is opposite the Bus Terminus. The trip should take around 1 hour but it may take longer during rush hour. More information can be found [here](#).

Google Maps Dolmen Resort Hotel & SPA to Bugibba Bay 1, St Paul's Bay Walk 190 m, 2 min



Taxis are also another option, especially if you land at the airport between 22:30 and 04:30. The following taxi services are a few options, although there are more taxi services:

- Ecabs (download app)
- BOLT (download app)
- Any.cab

Accommodation

Participants are asked to book their own accommodation. MAMP will not be providing any accommodation for this course. Nonetheless, should you wish to stay at the Dolmen Hotel, MAMP arranged for a discount at the Dolmen Hotel. You can redeem this discount by contacting us before booking the accommodation.

Insurance and cancellation

MAMP does not accept liability for individual medical, travel or personal insurance. Participants are strongly advised to take out their own personal insurance policies.

In case an unforeseen event would force MAMP to cancel the meeting, the Association will reimburse the participants fully the registration fees. MAMP will not be responsible for the refund of travel and accommodation costs.

In case of cancellation, full refund of the registration fee minus 10% for administrative costs may be obtained up to three months before the course and 30% of the fee up to one month before the course. No refund will be made if the cancellation request is postmarked less than one month before the start of the course.