

Lecture 1 - Introduction

Open Data Management & the Cloud

(Data Science & Scientific Computing / UniTS – DMG)



- Lecturers

- Istituto Nazionale di AstroFisica (INAF) staff

- Sara Bertocco
- Andrea Bignamini
- Marco Frailis
- Marco Molinaro
- Giuliano Taffoni

- Information/Communication means

- Mailing list
 - DSSC Google group
 - We can create a dedicated one
- Telegram group

➔ Send me/us your contact details

Lecture “blocks”



- Introduction
- Data and Metadata Models and Structures
 - Bignamini/Frailis
- Data Cloud and Cloud Computing
 - Bertocco/Taffoni
- Data Resource Interoperability and Access
 - Molinaro

Description of the course & lessons (1)



- Introduction
 - Big Data
 - Open Data
 - FAIR principles

- Data and Metadata Models and Structures
 - data models
 - definitions and design
 - data structures and metadata
 - UML, ORM, XSD, JSON, data structure formats, tabular formats, images, hierarchical structures, including metadata query-ability.

Description of the course & lessons (2)



- Data Cloud and Cloud Computing

- Introduction on computing and cloud computing
- Cloud computing main concepts and architecture
- Virtualization
- Containers and orchestration
- Infrastructure as a Service: theory and examples
- Platform as a Service: theory and examples
- Service orchestration and cloudnomics
- Cloud storage and data cloud

- Interoperability

- (Persistent) Identifiers
- (Resource) Catalogues
- Data models for Discovery
- Data Curation & Preservation
- Interfaces & Dataset Access

Lessons' Calendar



October

M	T	W	T	F	S	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

November

M	T	W	T	F	S	S
						1
	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Mondays: 14:00-16:00
Tuesdays: 11:00-13:00
Thursdays: 14:00-16:00

December

M	T	W	T	F	S	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

January

M	T	W	T	F	S	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

- Introduction
- Data and Metadata Models and Structures
- Data Cloud and Cloud Computing
- Data Resource Interoperability and Access
- backup

- Calendar is not kind to us
- Do you prefer avoiding January lessons?
 - Means squeezing lessons
- November spare days are reserved due to lecturer's constraints
- December 7 & 9?

Lessons' format

- The course will be held remotely/online
 - We plan to use Google Meet as the platform
 - Lessons will be recorded and made available on Moodle
- The UniTS Moodle page for the course will provide all details and materials
 - <https://moodle2.units.it/course/view.php?id=6386>
 - But ***do not hesitate*** to contact lecturers
- We'll try to stick, for each lesson, to
 - ~1 hour presentation (in real time or pre-registered)
 - ~30'-40' Q&A and discussion on lesson's topics

Knowledge verification

- Preparation of a small “project” on data management and interoperability
 - Using what’s been learned during the course
 - Including cloud solution identification
 - Possibly showing some real snippets or ideas of implementation
- Presentation of the project to the lecturers (students can attend)
 - With dedicated Q&A time

Survey & Discussion



- {fill in the survey form}
 - Link available here:
 - <https://moodle2.units.it/course/view.php?id=6386>
 - (or direct link):
 - <https://moodle2.units.it/mod/questionnaire/view.php?id=183279>
- Open discussion on the expectations
- (and/or) insights on the course content