Lecture 1 - Course Overview

Lecturers & contacts

- Lecturers
  - Istituto Nazionale di Astrofisica (INAF)
    - Andrea Bignamini - andrea.bignamini@inaf.it
    - Marco Molinaro - marco.molinaro@inaf.it
    - Marco Frailis - marco.frailis@inaf.it
  - AREA Science Park
    - Federica Bazzocchi - federica.bazzocchi@areasciencepark.it
- Moodle@UniTs → Lecture materials
- Microsoft Teams → Live recordings

Lecture Blocks

- Introduction
- Data and Metadata Models & Structures
- Data Infrastructures
- Data Resource Interoperability and Access

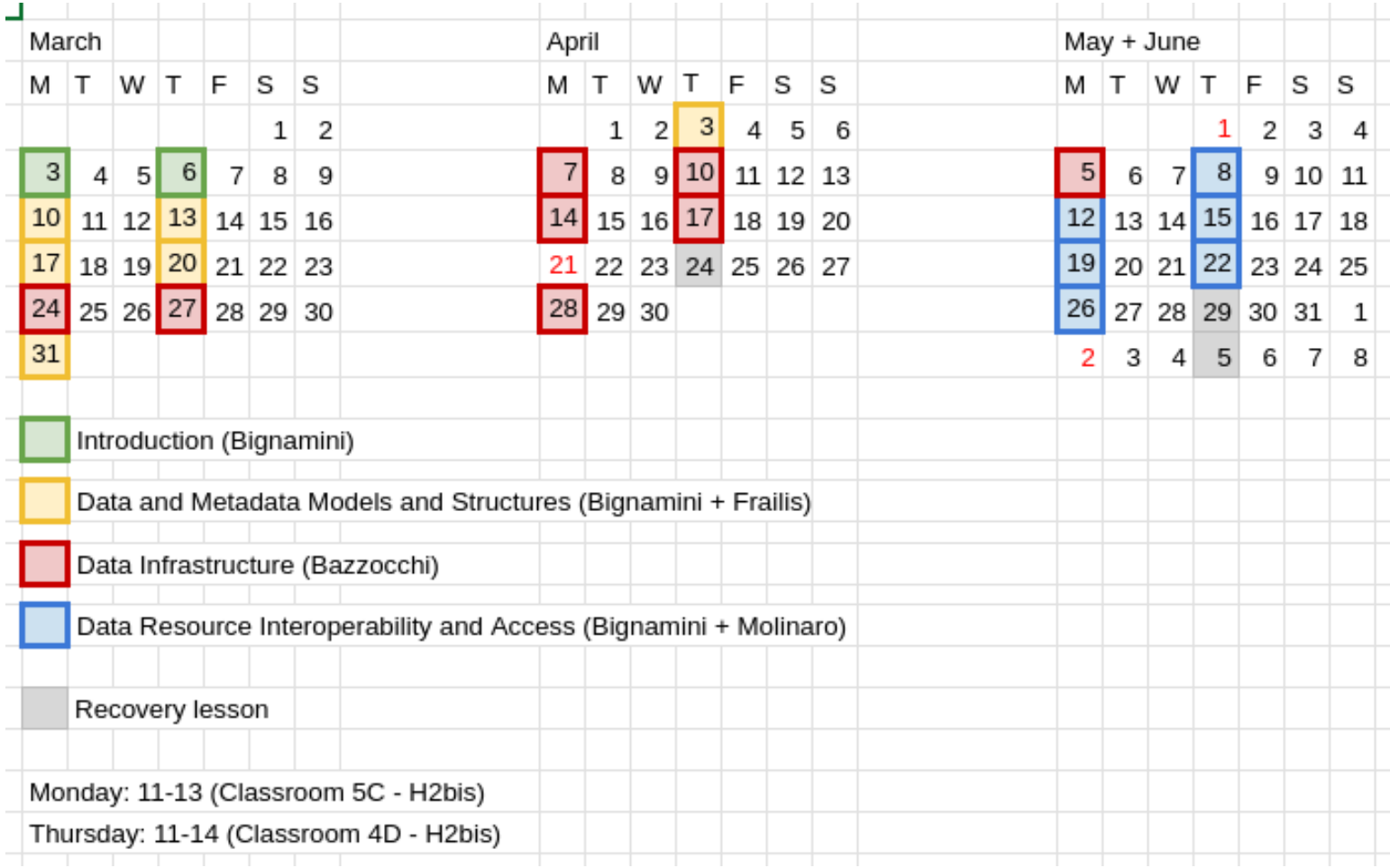
Description of the course & lessons (1)

- Introduction
  - Big Data
  - Open Data
  - FAIR principles
- Data and Metadata Models and Structures
  - data model definitions and design
  - data structures and metadata
  - UML, ORM, XML, XSD, JSON, data structure formats, tabular formats, images, hierarchical structures, including metadata query-ability.

Description of the course & lessons (2)

- Data Infrastructure
  - Large scale data infrastructure and hardware/software stack for large data management
  - Parallel and distribute storage
  - Cloud storage and associated services
- Interoperability
  - (Persistent) Identifiers
  - (Resource) Catalogues
  - Data models for Discovery
  - Data Curation & Preservation
  - Interfaces & Dataset Access

Lesson Calendar



March

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						

April

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				

May + June

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	1
2	3	4	5	6	7	8

Introduction (Bignamini)

Data and Metadata Models and Structures (Bignamini + Frailis)

Data Infrastructure (Bazzocchi)

Data Resource Interoperability and Access (Bignamini + Molinaro)

Recovery lesson

Monday: 11-13 (Classroom 5C - H2bis)

Thursday: 11-14 (Classroom 4D - H2bis)

Knowledge Verification

- Preparation of a small *project* on data management
  - Using everything that has been learned during the course
    - Definition of data model and data structure
    - Interoperability
    - Possible solutions of distributed data infrastructure
    - Data storage and long term preservation
    - Data access
    - ...
  - Critical approach to the project with respect to the themes addressed during the lessons
  - Possibly showing some real snippets or ideas of implementation
    - ... but do not focus only on the demo!
- Presentation of the project to the class & lecturers
  - Slides in English
  - With dedicated Q&A time
- There are no fixed date for the exams
  - Contact us to agree on the project details
  - Send us an email to agree on a date

Survey & Discussion

- Organisational set-up
  - Register on Moodle@UniTs
  - Join on Microsoft Teams (code gtre9el)
  - Do you have any requests?
- Fill in the survey form
  - Discuss it
- Open discussion on the expectations
- (and/or) insights on the course content