

**11.00 - 12.30 Spatial Data Base Principles: Lab1**

Alessia Movia, UniUd

**12.30 - 15.00 Transfer/Lunch**

**15.00 - 16.30 Spatial Data Base Principles (part 3)**

Alessia Movia, UniUd

**16.30 - 17.00 Coffee break**

**17.00 - 18.30 Data Base Principles (part 4)**

Alessia Movia, UniUd

**Friday, 31st August**

**8.30 - 9.00 Transfer**

**9.00 - 10.30 Spatial Data Base Principles: Lab2 (part 1)**

Alessia Movia, UniUd

**10.30 - 11.00 Coffee break**

**11.00 - 12.30 Spatial Data Base Principles: Lab2 (part 2)**

Alessia Movia, UniUd

**12.30 - 15.00 Transfer/Lunch**

**15.00 - 16.30 Case Study No. 1: Remote Sensing Analysis**

Alessia Movia

**16.30 - 17.00 Coffee break**

**17.00 - 18.30 Case Study No. 2: Network Analysis**

Alessia Movia

**Saturday, 1st September**

**8.30 - 10.00 Case Study: No. 3: Spatial Database for the Built Environment**

Maria Vittoria Santi

**10.00 - 10.30 Coffee break**

**10.30 - 12.00 Case Study: No. 4: Spatial Database for Cultural Heritage**

Anna Frangipane, UniUd

**12.00 - 12.30 Coffee Break**

**12.30 - 13.30 Final test**

**13.30 Farewell buffet**

**GENERAL INFORMATION**

CISM is located in the centre of the town of Udine, and during the School a tour focused on historical buildings will be scheduled.

Lodging is available at our Guest House at the rate of Euro 30,00 per person/night. In due time detailed information will be sent by e-mail.

Complimentary bag, welcome and farewell buffets, coffee breaks, downloadable lecture notes, bus tickets and wi-fi internet access will be provided.

A message of confirmation will be sent to all participants.

At the end of the School a final certificate of attendance will be issued.

For travel information please visit <http://www.cism.it/about/travel/>

*For further information please contact:*

CISM

Palazzo del Torso

Piazza Garibaldi 18

33100 Udine (Italy)

tel. +39 0432 248511 (6 lines)

fax +39 0432 248550

e-mail: [cism@cism.it](mailto:cism@cism.it)



**UNIVERSITÀ  
DEGLI STUDI  
DI UDINE**



Centro Internazionale  
di Scienze Meccaniche  
*International Centre  
for Mechanical Sciences*

**ISD  
Introduction  
to Spatial Database**

**UniUD-CISM Summer School**  
coordinated by

**Anna Frangipane**  
University of Udine  
Italy



**Udine August 27 - September 1 2018**

## ISD – INTRODUCTION TO SPATIAL DATABASE

The summer school aims in introducing fundamentals in spatial database topics. It is organised in 3 stages.

The first stage will provide a basic introduction to the world of relational databases. An outline about the conceptual design of databases, required to model in efficient way real world scenarios, will be offered. The lectures will cover a brief introduction to the entity relation model, its translation into a relational schema, and some basic relational algebra. Theoretical issues will be integrated by a laboratory part, which will offer the possibility to work with a common relational Database Management System (DBMS). The hands on lessons will consist in the actual design of a small, realworld database, using the concepts taught in the theoretical lessons. Moreover, students will implement the database by learning how to write actual SQL code on the popular open source software MySQL, a popular DBMS widely used all around the world (e.g. by Wordpress and Facebook).

The second stage will deal with Geospatial Information Systems (GIS). They represent fundamental computer tools for the analysis and management of a wide range of activities related to the territory, since they provide the user the ability to capture, store, display, analyse and manage spatially referenced data efficiently. Uses of GIS, together with the availability of large datasets of spatial data, are growing among research institutions, land planners, government agencies, and professionals for a wide range of purposes, involving environment, cultural heritage, health, natural resources, transports, agriculture, hydrology and water management. This part aims in introducing the School attendants to the essential GIS functions, as project management, data types, datasets import, export, and merging, geo referencing, spatial queries, editing, report production. The theoretical issues will be presented first in the classroom and will be followed by an individual computer lab activity in which the students will perform by themselves specific tutorials suggested by the teacher.

The third stage will focus on 4 case studies, describing the use of spatial database in Engineering applications, as referred to: Remote Sensing Analysis, Network Analysis, Spatial Database for the Built Environment and Spatial Database for Cultural Heritage.

The acquired knowledge will be verified through a final test.

### LECTURERS

**Anna FRANGIPANE** (Udine University, Polytecnic Department of Engineering and Architecture)

**Alberto BEINAT** (Udine University, Polytecnic Department of Engineering and Architecture)

**Linda ANTICOLI** (Udine University, Department of Mathematic, Informatics and Physical Sciences)

**Marco BASALDELLA** (Udine University, Department of Mathematic, Informatics and Physical Sciences)

**Alessia MOVIA** (Udine University, Polytecnic Department of Engineering and Architecture)

**Maria Vittoria SANTI** (Udine University, Polytecnic Department of Engineering and Architecture)

### PROGRAMME

#### *Monday, 27th August*

**8.30 - 9.00 Registration**

**9.00 - 9.30 Welcome address**

- Paolo Gardonio, UniUd - CISM referent
- Anna Frangipane, UniUd - Course Organiser

**9.30 - 11.00 Data Base Principles: Introduction to Relational Databases (part 1)**

Linda Anticoli, UniUd

**11.00 - 11.30 Coffee break**

**11.30 - 13.00 Data Base Principles: Introduction to Relational Databases (part 2)**

Linda Anticoli, UniUd

**13.00 - 15.00 Lunch**

**15.00 - 16.30 Data Base Principles: The Relational Model (part 1)**

Linda Anticoli, UniUd

**16.30 - 17.00 Coffee break**

**17.00 - 18.30 Data Base Principles: The Relational Model (part 2)**

Linda Anticoli, UniUd

**18.30 Welcome buffet**

#### *Tuesday, 28th August*

**8.30 - 9.00 Transfer**

**9.00 - 10.30 Data Base Principles: Lab1 (part 1)**  
Marco Basaldella, UniUd

**10.30 - 11.00 Coffee break**

**11.00 - 12.30 Data Base Principles: Lab1 (part 2)**  
Marco Basaldella, UniUd

**12.30 - 15.00 Transfer/Lunch**

**15.00 - 16.30 Data Base Principles: Introduction to Relational Algebra (part 1)**  
Linda Anticoli, UniUd

**16.30 - 17.00 Coffee break**

**17.00 - 18.30 Data Base Principles: Introduction to Relational Algebra (part 2)**  
Linda Anticoli, UniUd

#### *Wednesday, 29th August*

**8.30 - 9.00 Transfer**

**9.00 - 10.30 Data Base Principles: Lab2 (part 1)**  
Marco Basaldella, UniUd

**10.30 - 11.00 Coffee break**

**11.00 - 12.30 Data Base Principles: Lab2 (part 2)**  
Marco Basaldella, UniUd

**12.30 - 15.00 Transfer/Lunch**

**15.00 - 16.30 Spatial Data Base Principles (part 1)**  
Alberto Beinat, UniUd

**16.30 - 17.00 Coffee break**

**17.00 - 18.30 Data Base Principles (part 2)**  
Alberto Beinat, UniUd

#### *Thursday, 30th August*

**8.30 - 9.00 Transfer**

**9.00 – 10.30 Data Base Principles: Lab3**  
Marco Basaldella, UniUd

**10.30 - 11.00 Coffee break**