

Introduction to the course

Basics statistics for biomedical research course

UEB – VHIR

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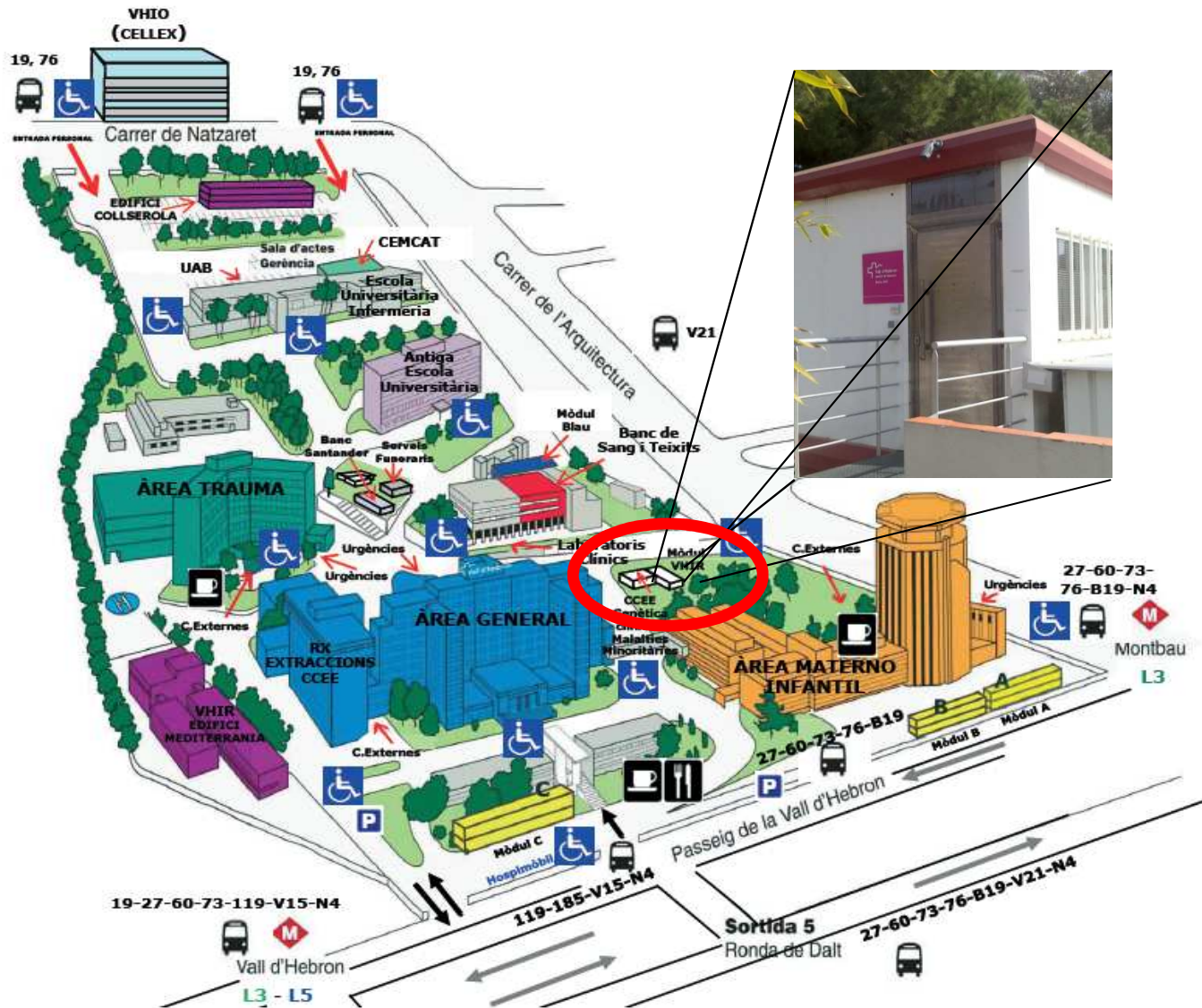
1 Unitat d'Estadística i Bioinformàtica (UEB) VHIR

2 Departament d'Estadística. UB

Contingut

- Where are we? What do we do?
- Why this course
- Objectives
- Methods
- Contents
- Logistics

Unitat d'estadística i Bioinformàtica



Where we are

What we do

SERVICES

How may we assist you today?



Clinical Data Analysis

Biostatistical Analysis

Clinical Trials

CRF development (Redcap)

Epidemiological studies

Data Management for
Clinical Research



Omics Data Analysis & Bioinformatics

Transcriptomics

Methylation

Metagenomics

Exome variants

Integrative Omics

Database / applications
development



Training

Short Workshops

Courses

Official training (MSc)

Students in practice



Consulting

Sample size

Experimental design

GRANT review

Statistical writing

Why this course

- A huge quantity of information is generated in clinical or lab research
- A lot of people think statistics is complex or just ignore it
- Other people think they can do by themselves
- But what it is important is just:
 - Solve basics situations
 - Identify more complex situations and be able to communicate with an expert

“Hiring a statistician after the data has been collected is like hiring a physician when a patient is in the morgue: He might be able to tell you what went wrong , but he is unlikely to be able to fix it”

R.A. Fisher

Objectives

- Main objective of the course is to provide a general overview of the principal statistical methods that can be useful in biomedical research and daily practise
- At the end of the course the Student should
 - Recognize the main problems from a statistical point of view
 - Identify the basic methods to solve these problems
 - To use basic tools to carry out properly their own analysis
 - Identify when to apply each method
 - To be able to ask a professional statistician using the proper terminology to understand the solutions when problems increase their complexity

Statistics & Bioinformatics Unit

SERVICES WE DO TOOLS TEAM LOCATION CONTACT

Welcome To UEB!

STATISTICS AND BIOINFORMATICS UNIT

SERVICE REQUEST

TEACHING

Statistics and Bioinformatics Unit @ VHIR



Teaching Activities at the UEB

Welcome to the Statistics and Bioinformatics Unit Teaching Activities web site. This page links with the web pages of different curses we are teaching right now or have taught in the past. In these pages you will find all the materials we use for the courses -unless of course they are copyrighted or under some type of confidentiality.

Current Courses (2019)

- **Basic Statistics for Biomedical Research**

Past courses (before 2019)

- **Bioinformatics for clinical and biomedical research**
- **Data Management, Programming and Graphics with R**
- **Advanced Statistics for Biomedical Research**
- *We are progressively incorporating new course materials. If interested in anything specific just contact us : ueb_at_vhir_dot_org*

Materials del curs

Sessió 0 : Presentació del curs

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Sessió 1 : Introducció a R i R commander

- Presentation

Sessió 2 : Estadística descriptiva I: Resums numèrics, taules i gràfics

- Univariate Descriptive_analysis

Sessió 3: Estadística descriptiva II: Bivariant.

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Sessió 4: Introducció a la inferència estadística. Intervals de confiança.

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Sessió 5: Disseny i mida mostral..

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Sessió 6: Proves d'hipòtesis I: Conceptes bàsics.

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Sessió 7: Proves d'hipòtesis II: Variables quantitatives.

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Sessió 8: Proves d'hipòtesis III: Taules de contingència, χ^2

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Sessió 9: Tests diagnòstics: Sensibilitat, especificitat i corbes ROC.

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Sessió 10: Exercici de anàlisis de dades reals.

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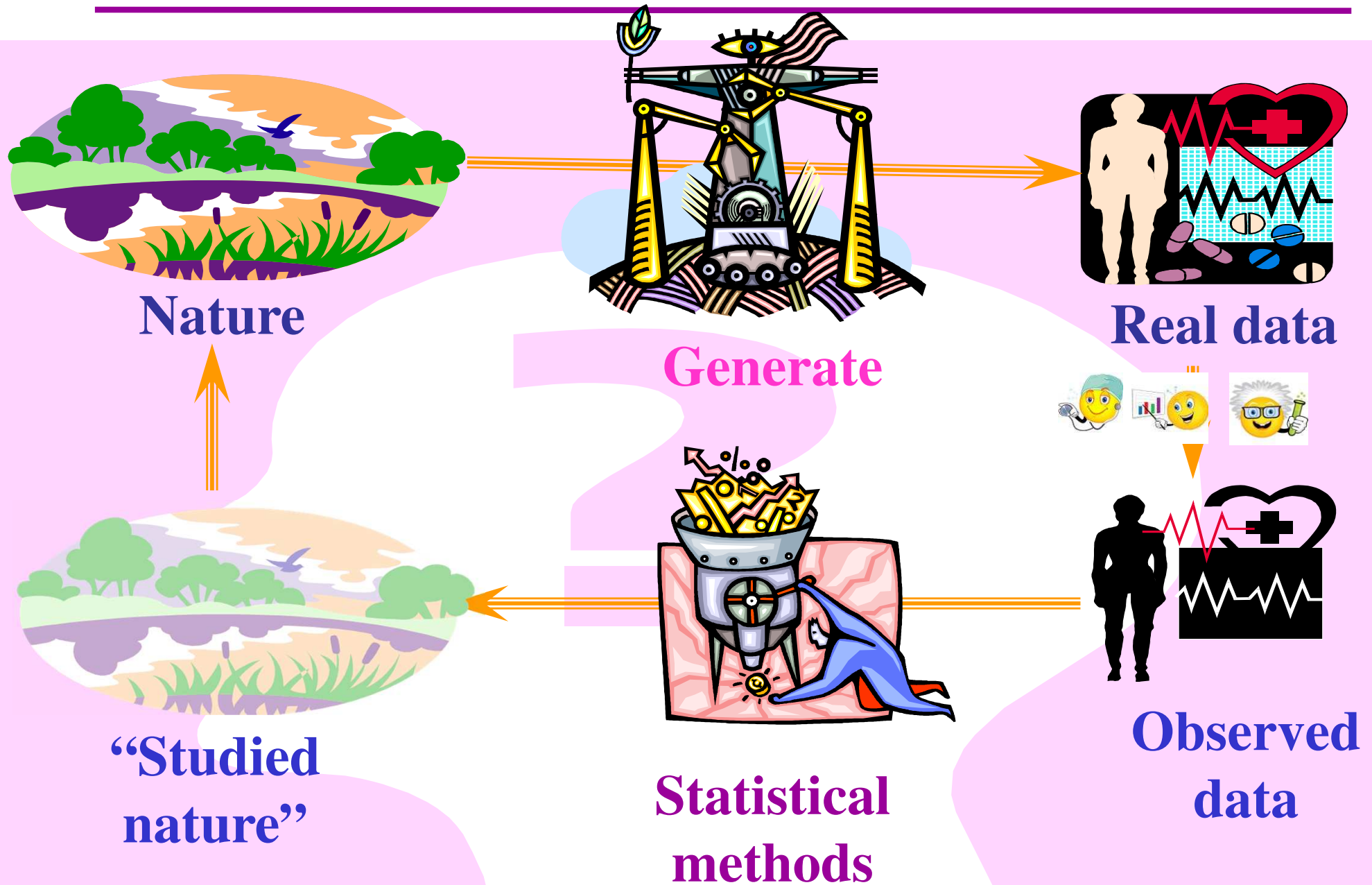
Bases de Dades per exercicis

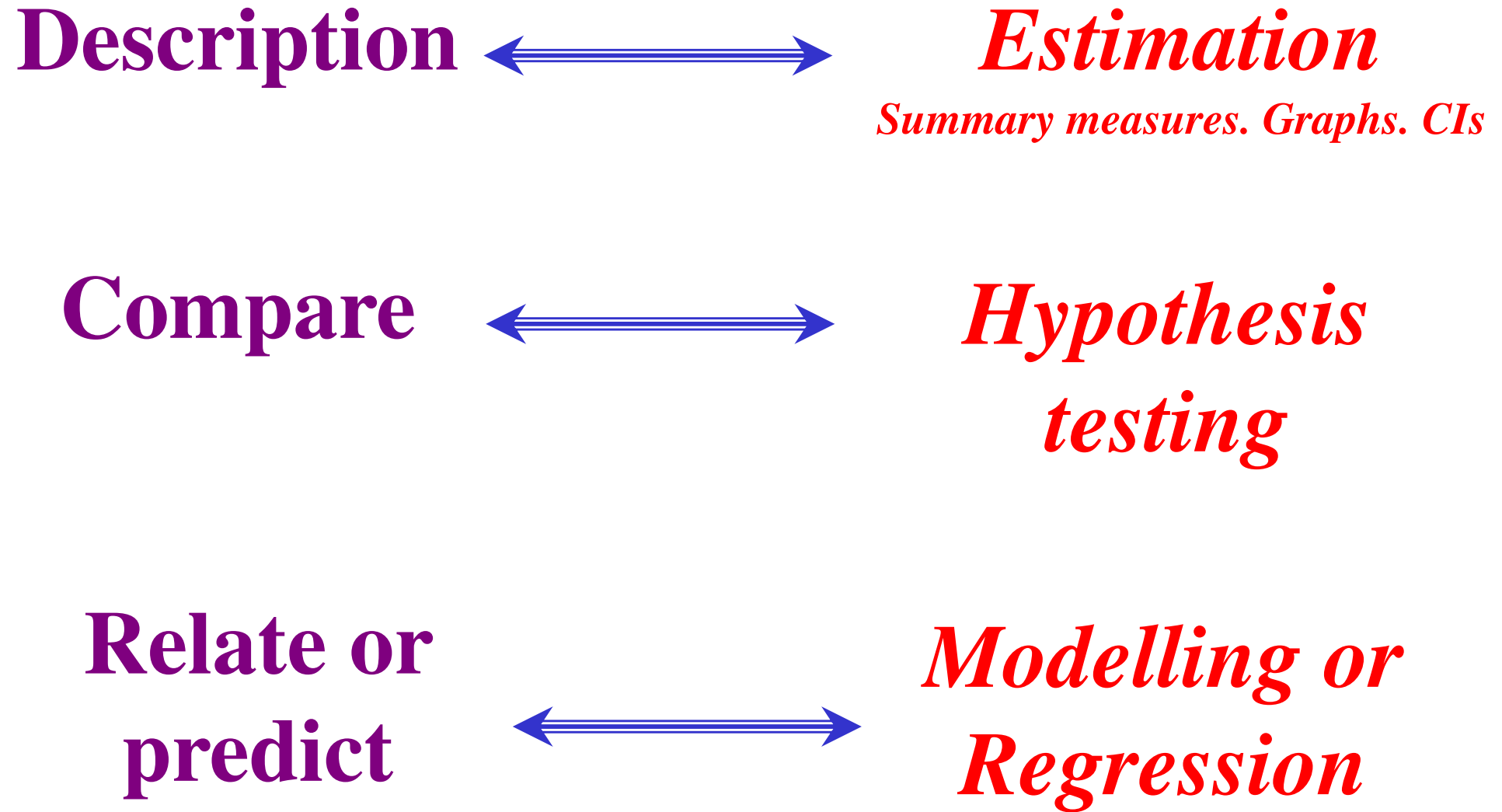
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Methodology



- This course is about applied statistics
- Work with real data examples
- Data analysis with **R** and **R commander**.
- Theory is important , but dicusssion of real problems could help to understand statistics. Program is flexible and may be adapted to student neeed

How statistics do?





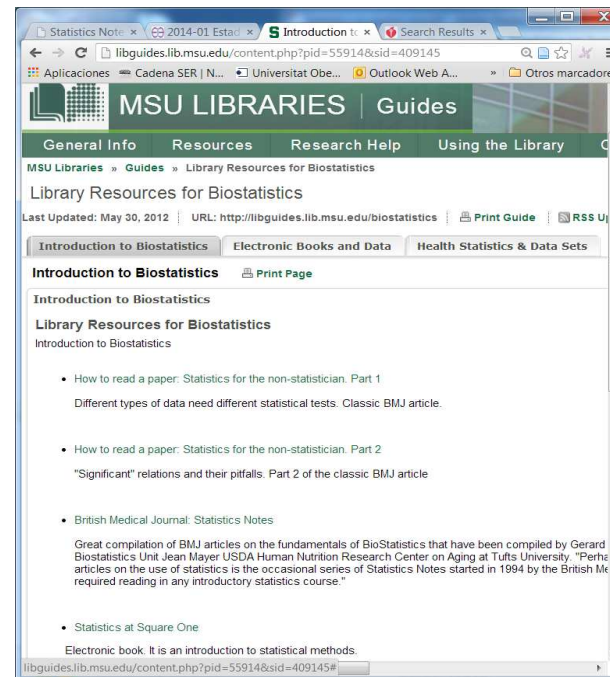
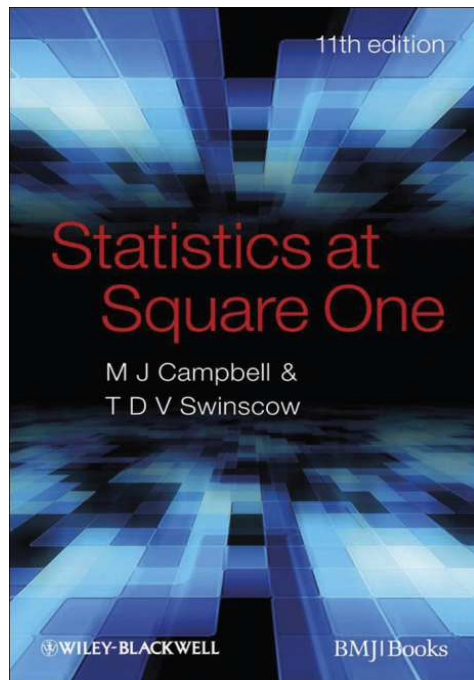
Materials

 BioStatFLOSS
 dades



Resources

- R and R-commander: Free software
- Resources about basic statistics
 - Course slides and exercise *datasets*
 - *Some text or reference material*



Have a good course !!!!



“Data don’t make any sense,
we will have to resort to statistics.”