

## Medical Statistics and Epidemiology (D012649)

Due to Covid 19, the education and evaluation methods may vary from the information displayed in the schedules and course details. Any changes will be communicated on Ufora.

<b>Course size</b>	<i>(nominal values; actual values may depend on programme)</i>		
<b>Credits</b> 6.0	<b>Study time</b> 180 h	<b>Contact hrs</b>	52.5 h

### Course offerings and teaching methods in academic year 2020-2021

A (semester 2)	Dutch	Gent	lecture	10.0 h
			demonstration	2.5 h
			integration seminar	2.5 h
			seminar: coached exercises	7.5 h
			seminar: practical PC room classes	30.0 h

### Lecturers in academic year 2020-2021

Coorevits, Pascal	GE39	lecturer-in-charge
Cosyn, Jan	GE36	co-lecturer

### Offered in the following programmes in 2020-2021

<a href="#">Bachelor of Science in Dentistry</a>	<b>crdts</b>	<b>offering</b>
	6	A

### Teaching languages

Dutch

### Keywords

Medical statistics, Epidemiology, Research Methodology, Evidence based-dentistry, Research datamanagement

### Position of the course

This course is situated between basic skills in information management and epidemiology and the skills to make a master thesis. The aim is to give an overview of the key elements in a research plan, including the analysis and interpretation of data. Skills are developed to search for and critically analyse research papers leading to an evidence-based clinical decision.

### Contents

In the **part evidence-based dentistry** there is a focus on the following topics:

- What is evidence-based decision making?
- Formulating the correct research question.
- Study design and levels of evidence.
- Searching for evidence on the basis of PICO.
- Research setup.
- Measures of association.
- Critically evaluating RCTs.
- Systematic review.

In the **part medical statistics** the following topics are discussed:

- Introduction to SPSS & exploratory data-analysis
- Theoretical distributions & central limit theorem
- Statistical tests for mean values and confidence intervals (CI): one-sample t-test and t-test for unpaired and paired data, ANOVA
- Non-parametric alternatives: Mann-Whitney U test, Wilcoxon Signed Rank Test, Kruskal Wallis test, Friedman test
- Statistical tests for proportions and CI: Pearson Chi<sup>2</sup> & Fisher's Exact Test, McNemar

Test

- Introduction to power
- Introduction to regression models: correlation, linear regression, binary logistic regression
- Multiple linear and logistic regression with focus on interpretation
- PC-exercises on abovementioned topics

**Important:** given aforementioned content, exemptions can only be considered when earlier study programs clearly included aspects of evidence-based dentistry and medical statistics.

### Initial competences

Basics of epidemiology (Oral health and community I and II in 1st and 2nd year Bachelor in Dentistry) and information management (1st Bachelor).

### Final competences

- 1 Understand the key elements of evidence-based decision making.
- 2 Perform a focused literature search.
- 3 Formulate a research question correctly.
- 4 Know the different study designs and make a proper selection for a given research question.
- 5 Describe research findings and make suitable graphical representations.
- 6 Understand the key elements of inferential statistics.
- 7 Select the proper statistical tests when dealing with a data set on a study conducted in the dental field.
- 8 Analyze data using SPSS.
- 9 Correctly interpret the research findings.

### Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

### Conditions for exam contract

This course unit cannot be taken via an exam contract

### Teaching methods

Demonstration, lecture, integration seminar, seminar: coached exercises, seminar: practical PC room classes

### Learning materials and price

- Handsouts of the courses.
- Evidence-based dentistry: an introduction. Allan Hackshaw, Elizabeth Paul, Elizabeth Davenport (2006) Blackwell Munksgaard. ISBN 978-1-4051-2496-6.
- Evidence-based decision making: a translational guide for dental professionals. Jane Forrest, Syrene Miller, Pamela Overman, Michael Newman (2009) Wolters Kluwer. ISBN 978-0-7817-6533-6.
- Statistische Gegevensverwerking met behulp van IBM SPSS Statistics, E. Deschepper et al (+/- 20 euro)

### References

- Oral health epidemiology: principles and practice. Amit Chattopadhyay (2011) Jones and Bartlett Publishers. ISBN 978-0-7637-5409-9.
- Health literacy: from reference to review. Mira Meeus and Nick Gebruers. Acco Belgium. ISBN 9789462927520.
- Statistical and methodological aspects of oral health research. Emmanuel Lesaffre, Jocelyne Feine, Brian Leroux, Dominique Declercq (2009) John Wiley and Sons Ltd. ISBN 978-0-470-51792-5.
- Inleiding in de toegepaste biostatistiek. JWR Twisk (2014). Reed business. Derde druk. ISBN: 978-90-352-3638-7.

### Course content-related study coaching

Via the electronic learning platform Ufora

### Evaluation methods

end-of-term evaluation

### Examination methods in case of periodic evaluation during the first examination period

Written examination, skills test

**Examination methods in case of periodic evaluation during the second examination period**

Written examination, skills test

**Examination methods in case of permanent evaluation**

**Possibilities of retake in case of permanent evaluation**

examination during the second examination period is possible in modified form

**Extra information on the examination methods**

Written exam, skills examination

**Calculation of the examination mark**

- 2/3 of the final score is determined by the part medical statistics.
- 1/3 of the final score is determined by the part evidence-based dentistry.