

SHORT & CERTIFICATE COURSES

**WITS PLUS**

# STATISTICS FOR RESEARCH AND DESIGN

Join Wits Plus, the Centre for Part-Time Studies at Wits University for the *Statistics for Research and Design* short course.

This programme will be taught by lecturers from the Wits School of Statistics and Actuarial Science.

Classes will be offered on Saturdays to make the programme accessible to working participants. Students who complete the course successfully will be awarded a Certificate of Competence.

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W [www.wits.ac.za/part-time](http://www.wits.ac.za/part-time)

## TARGET MARKET

The course is offered at a postgraduate level to those who require statistical knowledge or skills. This course will assist participants in the collection of and analysis of quantitative data for study, work or private purposes. It is also suitable to lecturers who need to improve their background in statistics for research purposes.

Although some participants may have completed other statistical courses, no statistical knowledge will be assumed. Therefore, all concepts will be introduced. It will also build competency in the use of statistical software.

## ENTRANCE REQUIREMENTS

An undergraduate degree.

## STRUCTURE OF COURSE

This short course can also be done as a full course for non-degree purposes, in which case occasional students will have to do a formalised research project in the second semester as part of the course requirements.

## COURSE CONTENTS

1. Introduction and descriptive techniques.
2. Confidence intervals and hypothesis tests.
3. Sample size determinations.
4. Sampling techniques.
5. Test for categorical data.
6. Nonparametric tests.
7. Hypothesis tests for more than two groups (Analysis of variance).
8. Hypothesis tests for two or more factors (Multifactor ANOVA).
9. Principles of experimental design.
10. Factorial and fractional factorial designs.
11. Other types of designs.
12. Correlation.
13. Simple linear regression.
14. Multiple regression.
15. Analysis of covariance.
16. Response surface designs.

17. Models for categorical data.
18. Survival analysis.
19. Multivariate analysis.
20. Analysis of time series data.

## OUTCOMES AND COMPETENCIES

On completion of the course, participants should be able to:

- Phrase the aims of a study in such a way that one can collect data and analyse it in order to fulfill the aims.
- Identify what issues are important in designing a study.
- Design a study.
- Identify the most appropriate statistical methods to apply to the data to answer the questions posed and to check the relevant assumptions of those methods.
- Consolidate the results obtained from different statistical analysis in terms of the aims of the study, and to identify problems with the study.
- Recognise situations beyond their expertise, for which expert help will be necessary.
- Identify and understand in broad terms the important statistical issues and problems addressed in literature of their research area.
- Understand how the statistical software (SAS Enterprise Guide 5.1) is used to analyse a data set and how to interpret the software results in statistical terms.

## EXAMINATION AND ASSESSMENTS

Assignments and an open book examination.

## COMMENCEMENT DATE

**Semester 1 only:**

**February:** Saturdays 09:00 – 12:00

## FEES & METHOD OF PAYMENT

R13 990.

The fees for all courses are the responsibility of the individual attending the course. All fees must be paid prior to registration. Payment can be made by electronic payment or bank deposits. You will then need to bring your original proof of payment to Registration day, dates will be provided in your acceptance letter.

## CANCELLATION OF THE COURSE

Wits Plus courses offered over one semester:

- Cancellation before commencement of lectures will result in an administration fee of 15% of the total course fee regardless of the reason.
- Cancellation after commencement of lectures will result in liability for the full amount of the course fees regardless of the reason.

## CAMPUS ACCESS

All short course participants must obtain a Visitors Access Card at a cost of ±R140 per year. Parking disc fees also apply: arrangements need to be made with the parking office. You may park in student parking on the Braamfontein Campus West.

Note: Wits Plus, University of the Witwatersrand, reserves the right to withdraw a course from its programme should registrations not reach viable numbers. In this event a full refund will be made. Refund requests will take a minimum of 30 working days to be processed after all documentation has been received.