

University of Pretoria Yearbook 2016

BScHons Biostatistics (10244010)

Duration of study 1 year

Programme information

The following requirements are set:

- Advanced instruction by means of self-tuition, lectures and seminars.
- Students must pass the module TNM 800 Applied research methodology 800.
- Students must pass the module PHM 770 Learning in public health 770.
- Students must pass a research report (or project) that carries at least 30 credits.

Admission requirements

- A candidate must hold a bachelor's degree deemed acceptable by the head of department for the proposed field of study or an equivalent qualification deemed acceptable by the Senate of the University for the proposed field of study with at least one applicable biological subject as major subject.
- Admission to the study for an honours degree is subject to the approval of the head of department: with the proviso that a candidate who has obtained an average of less than 60% in the modules of his or her major subject in the final year of the bachelor's degree study may only be admitted with the **Dean's approval** on the recommendation of the head of department. Additional requirements may be set by the head of department.

Additional requirements

In order to be eligible to enrol for the BScHons in Biostatistics, candidates must have a bachelor's degree with Statistics as a major subject on 100, 200 and 300 level.

Examinations and pass requirements

- i. The individual modules in each field of study must all be passed with a mark of at least 50% in each module, before a student may graduate in that field of study.
- ii. Each field of study has a specified, externally moderated, summative assessment that must also be passed before the student may graduate.

Pass with distinction

The degree is conferred with distinction on a student who has obtained an average of at least 75% in the summative assessment, as well as an average of at least 75% for the remaining components of the curriculum (i.e. excluding the summative assessment mark).

Curriculum: Year 1

Minimum credits: 120

Core modules

Introduction to Biostatistics 770 (BOS 770)

Module credits	10.00
Prerequisites	No prerequisites.
Contact time	5 lectures per week, 10 practicals per week
Language of tuition	English
Academic organisation	School of Health Syst & Public
Period of presentation	Year

Module content

Basic introduction to biostatistical theory and use of Stata software to perform basic data analysis.

Epidemiology 1 770 (HME 770)

Module credits	10.00
Prerequisites	No prerequisites.
Contact time	10 practicals per week, 4 lectures per week
Language of tuition	English
Academic organisation	School of Health Syst & Public
Period of presentation	Year

Module content

The principles of epidemiology including applied epidemiology (eg infectious disease epidemiology, clinical epidemiology and operational research). The use of EpiData software for questionnaire design and data collection.

Multivariate analysis 710 (MVA 710)

Module credits	15.00
Service modules	Faculty of Health Sciences
Prerequisites	WST 311, WST 312, WST 321and WST 322
Contact time	1 lecture per week
Language of tuition	English
Academic organisation	Statistics
Period of presentation	Semester 1

Module content

Matrix algebra. Some multivariate measures. Visualising multivariate data. Multivariate distributions. Samples from multivariate normal populations. The Wishart distribution. Hotelling's T^2 statistic. Inferences about mean vectors.

Multivariate analysis 720 (MVA 720)

Module credits 15.00

Service modules Faculty of Natural and Agricultural Sciences

Prerequisites MVA 710

Contact time 1 lecture per week

Language of tuition English

Academic organisation Statistics

Period of presentation Semester 2

Module content

The matrix normal distribution, correlation structures and inference of covariance matrices. Discriminant analysis. Principal component analysis. The biplot. Multidimensional scaling. Exploratory factor analysis. Confirmatory Factor analysis and structural equation models.

Learning in public health 770 (PHM 770)

Module credits 5.00

Prerequisites No prerequisites.

Contact time 50 hours per week

Language of tuition English

Academic organisation School of Health Syst & Public

Period of presentation Year

Module content

Special introduction to fundamentals in Executive Leadership in health

The emerging student will be taught the fundamentals in executive leadership in healthcare systems which will form the basic platform or foundation for understanding the challenges for application of leadership modalities at the different levels of healthcare service delivery in the public health service and how to begin to think and analyse how the principles of executive leadership at their level of appointment can improve health service delivery.

Regression analysis 780 (RAL 780)

Module credits 15.00

Service modules Faculty of Health Sciences
Faculty of Natural and Agricultural Sciences

Prerequisites STK 310 and STK 320

Contact time 1 lecture per week, 1 web-based period per week

Language of tuition English

Academic organisation Statistics

Period of presentation Semester 1

Module content

Matrix methods in statistics. Simple and multiple regression models. Sums of squares of linear sets. Generalised t- and F-tests. Residual analysis. Diagnostics for leverage, influence and multicollinearity. Indicator variables. Regression approach to analysis of variance. Weighted least squares. Ridge regression. Theory is combined with practical work.

Applied research methodology 800 (TNM 800)

Module credits 5.00

Prerequisites BOS 870

Language of tuition English

Academic organisation School of Health Syst & Public

Period of presentation Year

Module content

*Attendance module only

Seminars in Biostatistics 774 (BOS 774)

Module credits 5.00

Prerequisites No prerequisites.

Contact time 1 seminar per week

Language of tuition English

Academic organisation School of Health Syst & Public

Period of presentation Year

Module content

Seminar to be written up on a selected topic in Biostatistics and presented before the Epidemiology and Biostatistics track staff.

Biostatistics project 775 (BOS 775)

Module credits 30.00

Prerequisites No prerequisites.

Language of tuition English

Academic organisation School of Health Syst & Public

Period of presentation Year

Module content

A project agreed to with the head of the sub-track: Biostatistics. This project should be written up in the format described in the School's postgraduate brochure. It will be subject to external moderation.

Curriculum: Final year

Minimum credits: 120

Core modules

Introduction to Biostatistics 770 (BOS 770)

Module credits	10.00
Prerequisites	No prerequisites.
Contact time	5 lectures per week, 10 practicals per week
Language of tuition	English
Academic organisation	School of Health Syst & Public
Period of presentation	Year

Module content

Basic introduction to biostatistical theory and use of Stata software to perform basic data analysis.

Epidemiology 1 770 (HME 770)

Module credits	10.00
Prerequisites	No prerequisites.
Contact time	10 practicals per week, 4 lectures per week
Language of tuition	English
Academic organisation	School of Health Syst & Public
Period of presentation	Year

Module content

The principles of epidemiology including applied epidemiology (eg infectious disease epidemiology, clinical epidemiology and operational research). The use of EpiData software for questionnaire design and data collection.

Multivariate analysis 710 (MVA 710)

Module credits	15.00
Service modules	Faculty of Health Sciences
Prerequisites	WST 311, WST 312, WST 321and WST 322
Contact time	1 lecture per week
Language of tuition	English
Academic organisation	Statistics
Period of presentation	Semester 1

Module content

Matrix algebra. Some multivariate measures. Visualising multivariate data. Multivariate distributions. Samples from multivariate normal populations. The Wishart distribution. Hotelling's T^2 statistic. Inferences about mean vectors.

Multivariate analysis 720 (MVA 720)

Module credits 15.00

Service modules Faculty of Natural and Agricultural Sciences

Prerequisites MVA 710

Contact time 1 lecture per week

Language of tuition English

Academic organisation Statistics

Period of presentation Semester 2

Module content

The matrix normal distribution, correlation structures and inference of covariance matrices. Discriminant analysis. Principal component analysis. The biplot. Multidimensional scaling. Exploratory factor analysis. Confirmatory Factor analysis and structural equation models.

Learning in public health 770 (PHM 770)

Module credits 5.00

Prerequisites No prerequisites.

Contact time 50 hours per week

Language of tuition English

Academic organisation School of Health Syst & Public

Period of presentation Year

Module content

Special introduction to fundamentals in Executive Leadership in health

The emerging student will be taught the fundamentals in executive leadership in healthcare systems which will form the basic platform or foundation for understanding the challenges for application of leadership modalities at the different levels of healthcare service delivery in the public health service and how to begin to think and analyse how the principles of executive leadership at their level of appointment can improve health service delivery.

Regression analysis 780 (RAL 780)

Module credits 15.00

Service modules Faculty of Health Sciences
Faculty of Natural and Agricultural Sciences

Prerequisites STK 310 and STK 320

Contact time 1 lecture per week, 1 web-based period per week

Language of tuition English

Academic organisation Statistics

Period of presentation Semester 1

Module content

Matrix methods in statistics. Simple and multiple regression models. Sums of squares of linear sets. Generalised t- and F-tests. Residual analysis. Diagnostics for leverage, influence and multicollinearity. Indicator variables. Regression approach to analysis of variance. Weighted least squares. Ridge regression. Theory is combined with practical work.

Applied research methodology 800 (TNM 800)

Module credits 5.00

Prerequisites BOS 870

Language of tuition English

Academic organisation School of Health Syst & Public

Period of presentation Year

Module content

*Attendance module only

Seminars in Biostatistics 774 (BOS 774)

Module credits 5.00

Prerequisites No prerequisites.

Contact time 1 seminar per week

Language of tuition English

Academic organisation School of Health Syst & Public

Period of presentation Year

Module content

Seminar to be written up on a selected topic in Biostatistics and presented before the Epidemiology and Biostatistics track staff.

Biostatistics project 775 (BOS 775)

Module credits 30.00

Prerequisites No prerequisites.

Language of tuition English

Academic organisation School of Health Syst & Public

Period of presentation Year

Module content

A project agreed to with the head of the sub-track: Biostatistics. This project should be written up in the format described in the School's postgraduate brochure. It will be subject to external moderation.

The information published here is subject to change and may be amended after the publication of this information. The [General Regulations \(G Regulations\)](#) apply to all faculties of the University of Pretoria. It is expected of students to familiarise themselves well with these regulations as well as with the information contained in the [General Rules](#) section. Ignorance concerning these regulations and rules will not be accepted as an excuse for any transgression.