University of Pretoria Yearbook 2022

BScHons (Epidemiology and Biostatistics) (10244016)

Department	School of Health Systems and Public Health
Minimum duration of study	1 year
Total credits	120
NQF level	08

Programme information

The following requirements are set:

- Students must pass the module TNM 700 Applied research methodology 700.
- Students must pass the module PHM 779 Learning in public health 779.
- Students must pass a research report (or project) that carries 30 credits. This research report will be a protocol for a quantitative research project.

Admission requirements

1. Bachelor's degree

Additional requirements

Registration as a special student in the Faculty in order to pass a status examination
Candidates will be required to first register as a special student in the Faculty, in order to pass in a status examination, in the following instances:

- A three-year bachelor's degree with less than five years' applicable practical (work) experience; or
- A four-year bachelor’s degree with less than two years’ applicable practical (work) experience; or
- Any applicant in possession of an approved bachelor’s degree, who the School’s Selection Committee deems fit to register as a special student.

NB:
In accordance with the criteria of the Senate of the University, the applications for admission of all such candidates must, apart from any Faculty requirements, also be submitted to the University Senate for approval. All candidates accepted for postgraduate study (MPH or the Postgraduate Diplomas) must be in possession of a National Senior Certificate with admission for degree purposes.

Pass requirements for the status examination

- At least 60% must be obtained in the status examination.
- The status examination will be written in June.

Other selection criteria
Academic merit (an average mark of at least 60% for the final-year subjects of the bachelor's degree will be required)

- National/International need for epidemiologists and biostatisticians
- Under-represented groups in epidemiology and biostatistics
- Epidemiology and/ biostatistics-related employment
- Track record – e.g. employment, academic, etc.

Examinations and pass requirements

Students must attend all lectures and practical classes (as may be required), and should successfully complete all online tasks, as required, to the satisfaction of the head of department or the Chairperson of the School before they will be admitted to the examinations. Written, oral and/or practical examinations must be passed in all the modules. Both exit examinations will be externally moderated. The minimum pass mark for the modules and the exit examinations is 50%. Only with the approval of the Chairperson of the School, on the recommendation of the head of department, will a student be allowed to continue his or her studies after having failed two modules (or the same module twice). A second examination in a module (including the BScHons-specific exit examinations) is arranged in conjunction with the head of department for any student obtaining less than 50% and more than 39% for any module or exit examination.

Pass with distinction

The BScHons (Epidemiology and Biostatistics) degree is awarded with distinction to a student who has obtained a mark of at least 75% for the externally moderated assessment components as well as a simple (unweighted) average of at least 75% of all the marks for the other required modules for the degree; excluding PHM 779 Learning in public health 779.

General information

Concurrent registration for two study programmes

i. In accordance with the stipulations of the General Regulations, which is mutatis mutandis applicable in the case of postgraduate diploma study, the permission of the Dean is required for concurrent registration, subject to the regulations applicable to the fields of study in question and to any other stipulations the Dean may prescribe. Such a concession may be withdrawn by the Dean if the student does not perform satisfactorily – all assignments and coursework must be completed on time. Concurrent registration will not be accepted as a reason for poor performance or not meeting deadlines for both study programmes.
ii. In the case of registering concurrently for two study programmes in the School of Health Systems and Public Health and elsewhere, students must obtain the written consent of both the coordinator of their current programme and the coordinator of the second programme (or the track co-ordinator in the case of the MPH), and submit it with a substantiating letter to the School's Academic Programme Committee, for recommendation by the Chairperson of the School, after which the application is submitted to the Dean for approval.
iii. The School of Health Systems and Public Health states that concurrent registration for two study programmes is a privilege and not a right.
iv. Concurrent registration must be applied for annually and is granted based on academic performance in the primary degree/diploma programme. If the current field of study is a master's degree, then the second field of

study can be a postgraduate diploma.

v. If the current field of study is a postgraduate diploma, then the second field of study can be another postgraduate diploma.

Curriculum: Final year

Minimum credits: 120

Core modules

Biostatistics 1 751 (BOS 751)

Module credits	15.00
NQF Level	08
Prerequisites	PHM 773
Contact time	2 practicals per week, 32 lectures per week
Language of tuition	Module is presented in English
Department	School of Health System and Public Health
Period of presentation	Year

Module content

Types of data; Probability sampling distributions;Summary measures for data; Confidence intervals for point estimates; Normal approximations for Binomial and Poisson distributions; Graphics; Single sample and two sample hypothesis tests, both parametric and non parametric. T-tests; Welch tests; Paired t-tests; F-tests; Chi square tests; Tests of association and tests of agreement; sign tests; median tests; MWW tests; Signed ranks tests (paired data). How to perform/ obtain all the above using Stata statistical software. Estimating sample size using PS and G*Power software.

Biostatistics 2 752 (BOS 752)

Module credits	15.00
NQF Level	08
Prerequisites	PHM 773, BOS 751, HME 751
Contact time	10 lectures per week, 4 practicals per week
Language of tuition	Module is presented in English
Department	School of Health System and Public Health
Period of presentation	Year

Module content

One-way ANOVA; Simple linear regression, classical and correlational; modelling strategies for multilinear regression; post regression diagnostic tests (residuals analysis) following linear regression. Kruskal-Wallis test. Mantel-Haenszel test; Revision of confounding and effect modification and M-H test; the logistic regression model; Interpretation of logistic regression Stata output; logistic regression modelling strategies; Post-regression testing and residuals analysis. How to perform/obtain all the above using Stata statistical software. Estimating sample size using PS and G*Power statistical software.

Conducting surveys 700 (EPM 700)

Module credits	10.00

NQF Level	08
Prerequisites	BOS 751, HME 751
Contact time	2 weeks
Language of tuition	Module is presented in English
Department	School of Health System and Public Health
Period of presentation	Year

Module content

The design of questionnaires and mode of delivery of questionnaires; Sampling with attention to complex sampling (stratification and or clustering); Examples and case studies based on South African examples of surveys with complex sampling. The design effect and sample size determination for complex samples. The analysis of data taking into account the sampling structure where this is not simple random sampling.

Epidemiology 1 751 (HME 751)

Module credits	15.00
NQF Level	08
Prerequisites	PHM 773
Contact time	2 weeks
Language of tuition	Module is presented in English
Department	School of Health System and Public Health
Period of presentation	Year

Module content

To learn to “think epidemiologically”. The principles of epidemiology including applied epidemiology. The use of EpiData software for questionnaire design, data data capturing and data cleaning. Rates ratios and proportions; Basic study designs used in epidemiology (include cross-sectional, cohort, case-control, ecological, randomised controlled trials. Also sub-groups such as Matched case control, Historical cohort, Nested Case Control). Concepts such as validity, repeatability, confounding, effect modification; Sources and types of bias; sampling methods, probabilistic and non-probabilistic; stratified and cluster sampling; designing questionnaires and questionnaire items; calculating odds ratios, relative proportions relative risks and incidence rate ratios and the correct interpretation of these. infectious disease epidemiology (host/agent/environment model, R0, attack rates, outbreak investigations). Clinical epidemiology (sensitivity specificity predictive values). Operational research principles.

Epidemiology 2 752 (HME 752)

Module credits	15.00
NQF Level	08
Prerequisites	PHM 773, HME 751, BOS 752
Contact time	2 weeks
Language of tuition	Module is presented in English

Department	School of Health System and Public Health
Period of presentation	Year

Module content

Intermediate epidemiological concepts and topics building upon learning that has taken place in the introductory epidemiology module; further study design (including different types of trials); Consort guidelines; Stratification and standardisation of rates; Good clinical practice principles; DAGs; Structural equation modelling; systematic reviews including meta-analysis techniques and methods; Principle components analysis; Propensity score matching; case-cross-over designs; polytomous regression; exact logistic regression; predictive models; repeated measurements (GEE and also fixed/random effects models).

Part I Integrative assignment 753 (HME 753)

Module credits	5.00
NQF Level	08
Prerequisites	PHM 773, HME 751, BOS 751
Language of tuition	Module is presented in English
Department	School of Health System and Public Health
Period of presentation	Year

Module content

This assignment will task the students to integrate both epidemiology and biostatistics in their responses. It will take the nature of an interactive case-based seminar that demonstrates the interrelatedness of epidemiological methods and biostatistical methods. It builds on learning in the modules: Epidemiology 1 and Biostatistics 1.

Part II integrative assignment 754 (HME 754)

Module credits	5.00
NQF Level	08
Prerequisites	BOS 752, HME 752
Language of tuition	Module is presented in English
Department	School of Health System and Public Health
Period of presentation	Year

Module content

Like the Part 1 integrative assignment, his assignment will task the
students to integrate further epidemiology and biostatistics in their responses. It will take the nature of a case-based seminar that demonstrates the interrelatedness of epidemiological methods and biostatistical methods. It will build on learning that has taken place in the modules: Biostatistics 2 and Epidemiology 2

Epidemiology and biostatistics research project 750 (PHM 750)

Module credits	30.00
NQF Level	08

Prerequisites	No prerequisites.
Language of tuition	Module is presented in English
Department	School of Health System and Public Health
Period of presentation	Year

Module content

A protocol for a quantitative epidemiological study, or a mixed methods study, that is suitable for presentation to the ethics committee at the start of the MSc programme should the student proceed to the MSc Epidemiology and biostatistics. A protocol for secondary analysis of data or a systematic review that incorporates an appropriate meta-analysis would also be acceptable.

Part I Epidemiology and biostatistics examination 751 (PHM 751)

Module credits	0.00
NQF Level	08
Prerequisites	Must have passed the Part I coursework modules with the exception of the Part I integrative assignment.
Language of tuition	Module is presented in English
Department	School of Health System and Public Health
Period of presentation	Year

Module content

Examination of Part I learning.

Part II Epidemiology and biostatistics examination 752 (PHM 752)

Module credits	0.00
NQF Level	08
Prerequisites	Must have passed the Part II coursework modules with the exception of the Part II integrative assignment.
Language of tuition	Module is presented in English
Department	School of Health System and Public Health
Period of presentation	Year

Module content

Examination of Part II learning.

Learning in public health 779 (PHM 779)

Module credits	10.00
NQF Level	08
Prerequisites	No prerequisites.

Contact time	10 lectures, 4 practicals
Language of tuition	Module is presented in English
Department	School of Health System and Public Health
Period of presentation	Year

Module content

The history and scope of public health. The importance of self-motivated deep learning as opposed to passive learning. Learning the value of group work. The use of the internet and the library to research areas of study. The writing of literature reviews and assignments. The avoidance of plagiarism. Students will also learn how to use the UP online learning platforms.
In addition, students will be introduced to two online Statistical packages, namely Stata and EpiData. This online learning will assist them on where to obtain the software, install it, and navigate the panels and views (Stata) or between the different sub-programmes (EpiData). They will also learn the basic syntax, and, for Stata, how to log one's work, create and use "do" files and also to create basic graphic outputs. For EpiData they will learn how to create QES CHK and REC files and also how to export their work in Stata format, ready for analysis.

Applied research methodology 700 (TNM 700)

Module credits	0.00
NQF Level	08
Language of tuition	Module is presented in English
Department	School of Medicine
Period of presentation	Semester 1

Module content

*Attendance module only.