University of Pretoria Yearbook 2020

BScHons Medical Physics (10243003)

Minimum duration of study	1 year
Total credits	205
NQF level	08
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Programme information

The following requirements are set for completing the programme:

- Advanced instruction by means of self-tuition and four compulsory seminars of which at least one must be read to and defended before the department in question, on topics assigned to the student.
- Practical experience of the laboratory techniques used in the particular subsections of the subject.
- Attendance at the compulsory faculty module (TNM 700) Applied research methodology 700.
- Successful completion of the prescribed module (MBS 700) Medical biostatistics 700.
- Taking part in a research project and presentation of an independent research report.
- Satisfactory attendance at a library-user course.

Admission requirements

- 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.
- At least one applicable biological subject as major subject.
- Admission 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 be admitted only 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

The prerequisites for admission to the honours degree in certain fields of study are indicated in the syllabuses of the specific department.

Also consult General Regulations.

Other programme-specific information

Modules to be taken in the Department of Physics, Faculty of Natural and Agricultural Sciences:

- FSK 710 Mathematical methods 710
- FSK 711 Classical dynamics 711
- FSK 713 Quantum mechanics 713
- FSK 714 Electrodynamics 714

Modules to be taken in the School of Medicine:

- GNF 700 Medical physics: Practical work 700
- GNF 701 Medical physics: Nuclear medicine 701
- GNF 702 Medical physics: Diagnostic radiology 702
- GNF 703 Medical physics: Radiation physics 703
- GNF 704 Medical physics: Radiotherapy 704
- GNF 705 Medical physics: Radiation protection 705

Examinations and pass requirements

i. The examination at the end of the programme will consist of two written papers of three hours each as well as an oral examination of 30 minutes.
ii. For the field of specialisation Medical Physics, one examination of three hours is required in each of the theoretical modules. The mark awarded to the practical work will also be taken into account when the final mark is calculated.
iii. To comply with the pass requirements for the degree, a student must obtain a final mark of at least 50% in each division as indicated, as well as a pass mark of at least 50% for the essay/work assignment (if applicable). The stipulations regarding pass requirements for dissertations in the General Regulations apply mutatis mutandis to essays.
iv. Also consult General Regulation G.18 regarding Renewal of registration.

Pass with distinction

The degree is conferred with distinction on a student who has obtained an average of at least 75% in the examination (written, oral, practical, etc).

Curriculum: Final year

Minimum credits: 170

Core modules

Mathematical methods 710 (FSK 710)

Module credits	15.00
Prerequisites	No prerequisites.
Contact time	6 lectures per week
Language of tuition	Module is presented in English
Department	Physics
Period of presentation	Semester 1

Module content

Series; complex analysis; Bessel and other special functions; integral transforms; Green functions

Classical dynamics 711 (FSK 711)

Module credits	15.00
Prerequisites	No prerequisites.
Contact time	6 lectures per week
Language of tuition	Module is presented in English
Department	Physics
Period of presentation	Semester 1

Module content

Advanced problems in classical dynamics; Hamilton formalism; canonical transformations; continuum mechanics

Quantum mechanics (I) 713 (FSK 713)

Module credits	15.00
Prerequisites	No prerequisites.
Contact time	4 lectures per week
Language of tuition	Module is presented in English
Department	Physics
Period of presentation	Semester 1

Module content

Measurement process, General indefinite relations, Harmonic ossilator, symmetry, invariants and conservation laws, angular momentum, spin, perturbation theory, Schrödinger-Heisenberg and interaction pictures

Electrodynamics (I) 714 (FSK 714)

Module credits	15.00
Prerequisites	No prerequisites.
Contact time	4 lectures per week
Language of tuition	Module is presented in English
Department	Physics
Period of presentation	Semester 1

Module content

Poisson equation, Green functions, Maxwell equations.

Medical physics: Practical work 700 (GNF 700)

Module credits	15.00
Prerequisites	No prerequisites.
Contact time	1 practical per week
Language of tuition	Module is presented in English
Department	Radiation Oncology
Period of presentation	Year

Medical physics: Nuclear medicine 701 (GNF 701)

Module credits	15.00
Prerequisites	No prerequisites.
Contact time	2 discussion classes per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Radiation Oncology
Period of presentation	Year

Medical physics: Diagnostic radiology 702 (GNF 702)

Module credits	15.00
Prerequisites	No prerequisites.
Contact time	2 discussion classes per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Radiation Oncology
Period of presentation	Year

Medical physics: Radiation physics 703 (GNF 703)

Module credits	15.00

Prerequisites	No prerequisites.
Contact time	2 lectures per week
Language of tuition	Module is presented in English
Department	Radiation Oncology
Period of presentation	Year

Medical physics: Radiotherapy 704 (GNF 704)

Module credits	15.00
Prerequisites	No prerequisites.
Contact time	2 lectures per week
Language of tuition	Module is presented in English
Department	Radiation Oncology
Period of presentation	Year

Medical physics: Radiation protection 705 (GNF 705)

Module credits	15.00
Prerequisites	No prerequisites.
Contact time	2 discussion classes per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Radiation Oncology
Period of presentation	Year

Medical biostatics 700 (MBS 700)

Module credits	20.00
Contact time	1 lecture per week
Language of tuition	Module is presented in English
Department	Statistics
Period of presentation	Semester 1

Applied research methodology 700 (TNM 700)

Module credits	0.00
Language of tuition	Module is presented in English
Department	School of Medicine
Period of presentation	Year

Module content

*Attendance module only.

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.