

NATIONAL DIPLOMA: FIRE TECHNOLOGY

Qualification code: NDFY01 - NQF Level 6

Campus where offered: Arcadia Campus

Important notification to new applicants:

Students who intend to enrol for this qualification for the first time in 2017 or thereafter, should note that it will not be possible to continue with any Baccalaureus Technologiae as from 2020, since it is being replaced by qualifications aligned with the newly-implemented Higher Education Qualification Sub-Framework. Potential students are advised to consult the University's website for any new qualifications which might not be published in this Prospectus.

REMARKS

a. *Admission requirement(s) and selection criteria:*

• FOR APPLICANTS WHO OBTAINED A SENIOR CERTIFICATE BEFORE 2008:

Admission requirement(s):

A Senior Certificate or an equivalent qualification with an E symbol at Standard Grade for Mathematics and Physical Science and a D symbol at Standard Grade for English, or an E symbol at Higher Grade. Prospective students must be employed by an approved fire or emergency service.

A number of applicants not employed by the emergency services will also be considered, subject to the availability of training space at the Tshwane Metropolitan. These applicants will be required to pass the physical and medical fitness tests prescribed by the emergency services.

Selection criteria:

Applicants without Mathematics and Physical Science will be selected for admission based on the successful completion of a potential assessment and a science skills knowledge test.

• FOR APPLICANTS WHO OBTAINED A NATIONAL SENIOR CERTIFICATE IN OR AFTER 2008:

Admission requirement(s):

A National Senior Certificate with a bachelor's degree or a diploma endorsement, or an equivalent qualification, with an achievement level of at least 3 for English (home language or first additional language) and 3 for Mathematics or 4 for Mathematical Literacy and 3 for Physical Sciences.

Selection criteria:

To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least **18** (with Mathematics) or **19** (with Mathematical Literacy).

Assessment procedures:

Applicants who are employed by an approved fire or emergency service will be considered for admission to the National Diploma, provided that they meet the minimum APS requirements.

A number of applicants not employed by the emergency services will also be considered, subject to the availability of training space at the Tshwane Metropolitan. These applicants will be invited for an interview with a departmental selection panel and will be required to pass the physical and medical fitness tests prescribed by the emergency services, provided that they meet the minimum APS requirements.

b. *Minimum duration:*
Three years.

c. *Presentation:*
Block-mode classes.



- d. *Intake for the qualification:*
January only.
- e. *Exclusion and readmission:*
See Chapter 2 of Students' Rules and Regulations.
- f. *Recognition of Prior Learning (RPL), equivalence and status:*
See Chapter 30 of Students' Rules and Regulations.
- g. *Textbooks:*
Textbooks and other educational material will be required.
- h. *Subject credits:*
Subject credits are shown in brackets after each subject.

Key to asterisks:

- * Information does not correspond to information in Report 151.
(Deviations approved by the Senate in May 2011.)

CURRICULUM

FIRST YEAR

CODE	SUBJECT	CREDIT	PREREQUISITE SUBJECT(S)
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FIRST SEMESTER

EMR101T	Emergency Management I	(0,143)	
FBH111T	Fire Hydraulics I	(0,143)	
FBO111T	Fire Construction I	(0,143)	

TOTAL CREDITS FOR THE SEMESTER: 0,429

SECOND SEMESTER

CEM101T	Chemistry: Emergency Services I	(0,143)	
FBT111T	Fire Technology I	(0,143)	
PHV101T	Physics: Emergency Services I	(0,143)	

TOTAL CREDITS FOR THE SEMESTER: 0,429

TOTAL CREDITS FOR THE FIRST YEAR: **0,858**

SECOND YEAR

CODE	SUBJECT	CREDIT	PREREQUISITE SUBJECT(S)
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FIRST SEMESTER

EXP1FTC	Fire Technology: Practical I (offered in both semesters)	(0,071)*	
FBC211T	Fire Chemistry II	(0,214)*	Chemistry: Emergency Services I
FBO211T	Fire Construction II	(0,143)	Fire Construction I
FBP211T	Fire Physics II	(0,214)*	Fire Hydraulics I Physics: Emergency Services I

TOTAL CREDITS FOR THE SEMESTER: 0,642

SECOND SEMESTER

EMR201T	Emergency Management II	(0,143)	Emergency Management I
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EXP2FTC	Fire Technology: Practical II (offered in both semesters)	(0,071)*	Fire Technology: Practical I
FBH211T	Fire Hydraulics II	(0,143)	Fire Hydraulics I Physics: Emergency Services I
FBT211T	Fire Technology II	(0,143)	Fire Technology I Physics: Emergency Services I
TOTAL CREDITS FOR THE SEMESTER:		0,500	
TOTAL CREDITS FOR THE SECOND YEAR:		1,142	

THIRD YEAR

CODE	SUBJECT	CREDIT	PREREQUISITE SUBJECT(S)
FIRST SEMESTER			
FBH311T	Fire Hydraulics III	(0,167)	Fire Hydraulics II Fire Physics II
FBO311T	Fire Construction III	(0,167)	Fire Construction II
FBT311T	Fire Technology III	(0,167)	Fire Physics II Fire Technology II
TOTAL CREDITS FOR THE SEMESTER:		0,501	
SECOND SEMESTER			
EMR301T	Emergency Management III	(0,167)	Emergency Management II
FBC311T	Fire Chemistry III	(0,166)	Fire Chemistry II
FBP311T	Fire Physics III	(0,166)	Fire Hydraulics II Fire Physics II
TOTAL CREDITS FOR THE SEMESTER:		0,499	
TOTAL CREDITS FOR THE THIRD YEAR:		1,000	
TOTAL CREDITS FOR THE QUALIFICATION:		3,000	

SUBJECT/MODULE INFORMATION (OVERVIEW OF SYLLABUS)

The syllabus content is subject to change to accommodate industry changes. Please note that a more detailed syllabus is available at the Department or in the study guide that is applicable to a particular subject/module. On 01 August 2017, the syllabus content was defined as follows:

C

CHEMISTRY: EMERGENCY SERVICES I (CEM101T)

1 X 3-HOUR PAPER

(Subject custodian: Department of Chemistry)

Matter and energy: atomic theory, the periodic table. Reaction equations and stoichiometry. Solutions, acids, bases and salts. Chemical equilibrium, electrochemistry and the redox theory. Descriptive chemistry of selected elements, organic chemistry. (Total tuition time: ± 45 hours)

E

EMERGENCY MANAGEMENT I (EMR101T)

1 X 3-HOUR PAPER

(Subject custodian: Department of Management and Entrepreneurship)

Personnel management: recruitment, selection, placing, maintenance. Communication, problem-solving, conflict management. (Total tuition time: ± 45 hours)



EMERGENCY MANAGEMENT II (EMR201T) **1 X 3-HOUR PAPER**
(Subject custodian: Department of Physics)
Legislation, regulations, codes, ventilation. (Total tuition time: ± 45 hours)

EMERGENCY MANAGEMENT III (EMR301T) **1 X 3-HOUR PAPER**
(Subject custodian: Department of Physics)
Vision, mission and objectives. Procedures. Socio-economic systems. Basic tasks of managers. (Total tuition time: ± 45 hours)

F

FIRE CHEMISTRY II (FBC211T) **1 X 3-HOUR PAPER**
(Subject custodian: Department of Chemistry)
Solutions, chemical kinetics, flammable liquids, gases and vapours. (Total tuition time: ± 45 hours)

FIRE CHEMISTRY III (FBC311T) **1 X 3-HOUR PAPER**
(Subject custodian: Department of Chemistry)
Chemical incident management, organic chemistry, chemical radioactivity, fire retardants, plastics, poisonous materials. (Total tuition time: ± 45 hours)

FIRE CONSTRUCTION I (FBO111T) **1 X 3-HOUR PAPER**
(Subject custodian: Department of Physics)
Construction principles. Construction technology: building process, building drawings, construction elements. (Total tuition time: ± 45 hours)

FIRE CONSTRUCTION II (FBO211T) **1 X 3-HOUR PAPER**
(Subject custodian: Department of Physics)
Fixed installations: sprinklers, standpipe systems, fire pumps. Portable fire extinguishers, special extinguishing systems. Fire detection systems, extinguishing procedures, extinguishing equipment. Fire behaviour. Ventilation methods. High-rise structures. (Total tuition time: ± 45 hours)

FIRE CONSTRUCTION III (FBO311T) **1 X 3-HOUR PAPER**
(Subject custodian: Department of Physics)
Management and administration. National building regulations: administration, public safety, stairways, glazing, fire, water. Architectural plan evaluation. (Total tuition time: ± 45 hours)

FIRE HYDRAULICS I (FBH111T) **1 X 3-HOUR PAPER**
(Subject custodian: Department of Physics)
Emphasise basic mathematics to be used in Fire Physics and Fire Hydraulics: Arithmetic, equations, graphs, basic algebra, trigonometry, mensuration and SI units. Introduction to hydraulics, properties of fluids, hydrostatics, hydrodynamics. (Total tuition time: ± 45 hours)

FIRE HYDRAULICS II (FBH211T) **1 X 3-HOUR PAPER**
(Subject custodian: Department of Physics)
Hydrodynamics, nozzles, energy loss in pipelines, water relaying, field calculations. (Total tuition time: ± 45 hours)

FIRE HYDRAULICS III (FBH311T) **1 X 3-HOUR PAPER**
(Subject custodian: Department of Physics)
Hydrostatics, hydrodynamics, pumps. (Total tuition time: ± 45 hours)

FIRE PHYSICS II (FBP211T) **1 X 3-HOUR PAPER**
(Subject custodian: Department of Physics)
Waves and sound, rotational motion, electricity, magnetism. (Total tuition time: ± 45 hours)

FIRE PHYSICS III (FBP311T) **1 X 3-HOUR PAPER**
(Subject custodian: Department of Physics)
Transfer of heat, diffusion flames and fire plumes, thermal physics, laws of thermodynamics. Application of effects of heat on forces in roof trusses and in materials; radioactivity, fire detectors. (Total tuition time: ± 45 hours)



FIRE TECHNOLOGY I (FBT111T)**1 X 3-HOUR PAPER****(Subject custodian: Department of Physics)**

Fire apparatus maintenance, fleet administration, air devices, fire boats and explosions. (Total tuition time: ± 45 hours)

FIRE TECHNOLOGY II (FBT211T)**1 X 3-HOUR PAPER****(Subject custodian: Department of Physics)**

Incident management: air, sea, rescue, fire suppression, communication. (Total tuition time: ± 45 hours)

FIRE TECHNOLOGY III (FBT311T)**1 X 3-HOUR PAPER****(Subject custodian: Department of Physics)**

Fire suppression techniques. Risk management for fire services. Fire department occupational safety: OHSA, NFPA 1001 and 1521. (Total tuition time: ± 45 hours)

FIRE TECHNOLOGY: PRACTICAL I (EXP1FTC)**WORK-INTEGRATED LEARNING****(Subject custodian: Department of Physics)**

Various tasks related to fire and rescue emergency services are performed. These are listed in Task Book I. Expected competencies and behaviours are assessed in these tasks. These tasks should be performed under supervision at designated fire stations. Assigned tasks are based on classroom, simulation, daily job, incident, prescribed fire and managerial tasks. (Total tuition time: ± 50 hours)

FIRE TECHNOLOGY: PRACTICAL II (EXP2FTC)**WORK-INTEGRATED LEARNING****(Subject custodian: Department of Physics)**

Competencies and behaviours will be assessed from given fire and rescue emergency service tasks, as in Task Book II. Assigned tasks are based on Incidents managed under the Incident Command System (ICS). Examples include veld fire, structural fire, oil spill, search and rescue, hazardous material, and an emergency or non-emergency (planned or unplanned) event such as a vehicle accident. (Total tuition time: ± 50 hours)

P**PHYSICS: EMERGENCY SERVICES I (PHV101T)****1 X 3-HOUR PAPER****(Subject custodian: Department of Physics)**

Remedial mathematics, basic units, vectors and scalars. Kinetics, momentum, moments, work, energy and power. Pressure, density, optics. (Total tuition time: ± 45 hours)

