

## ADVANCED DIPLOMA IN COMPUTER SCIENCE

AdvDip (Computer Science) - NQF Level 7 (120 credits)

Qualification code: **ADRS20**

SAQA ID: 115935, CHE NUMBER: H/H16/E167CAN

Campus where offered: Soshanguve South, eMalahleni and Polokwane campuses

### REMARKS

*a. Admission requirement(s):*

A National Diploma: Information Technology in the field of Technical Applications, or Software Development, or Web Application Development, **or** a Diploma in Computer Science, **or** a relevant bachelor's degree, **or** an equivalent qualification in Computer Science or Software Engineering at NQF Level 6 with a minimum of 360 credits. Prospective students are required to have knowledge of advanced JAVA programming.

Holders of any other equivalent South African or international qualification may also be considered, see Chapter 1 of Students' Rules and Regulations.

*b. Selection criteria:*

Admission is subject to selection. Prospective students will be evaluated based on the marks obtained in the previous qualification and/or work experience.

Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP). Applicants will be informed of their status per official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, [www.tut.ac.za](http://www.tut.ac.za).

*c. Recognition of Prior Learning (RPL), equivalence and status:*

See Chapter 30 of Students' Rules and Regulations.

*d. Intake for the qualification:*

January only.

*e. Presentation:*

Day classes offered on Saturdays over a period of two years. Online classes are also offered in some instances, but assessments are on campus.

*f. Minimum duration:*

A minimum of one or two years (depending on the programme offering).

*g. Exclusion and readmission:*

See Chapter 2 of Students' Rules and Regulations.

*h. Re-registration:*

A student may re-register for the module Integrated Software Project only with the permission of the Head of the Department. The purpose of the re-registration is to provide students with an opportunity to complete the project only, and not to redo it, should they fail the module.

*i. Personal equipment:*

Access to a laptop or desktop computer is essential to participate in multimodal learning experiences as well as to complete assignments and projects. NSFAS students receive an allowance to acquire a laptop, and using this allowance for this purpose is critical for academic success. Students are encouraged to consult the faculty website where the minimum requirements for specific programmes are published.



## CURRICULUM

### ATTENDANCE (FIRST OR SECOND YEAR)

Modules are offered as determined by the Head of the Department.

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
ISJ107V	Integrated Software Project	(7)	(15)	Data Structures and Algorithms Distributed Programming
ISJ117R	Integrated Software Project (re-registration) (first- or second- semester module, see paragraph h)	(7)	(0)	

#### FIRST SEMESTER

DTD117V	Data Structures and Algorithms	(7)	(15)	
HMD117V	Human Computer Interaction	(7)	(15)	
SEC117V	Service-Oriented Computing	(7)	(15)	Distributed Programming
SFG117V	Software Engineering	(7)	(15)	

#### SECOND SEMESTER

DSD117V	Distributed Programming	(7)	(15)
IDA117V	Introduction to Data Science	(7)	(15)
TCR117V	Theoretical Computer Science	(7)	(15)

TOTAL CREDITS FOR THE QUALIFICATION: **120**

## 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 module. At time of publication, the syllabus content was defined as follows:

### D

**DATA STRUCTURES AND ALGORITHMS (DTD117V)** **1 X 4-HOUR COMPUTER-BASED**  
(Module custodian: Department of Computer Science)

The focus of this module is to introduce students to new types of data structures such as trees, heaps, stacks and queues. (Total notional time: 150 hours)

**DISTRIBUTED PROGRAMMING (DSD117V)** **1 X 4-HOUR COMPUTER-BASED**  
(Module custodian: Department of Computer Science)

The focus of this module is to equip the student with the requisite skills to create automated applications that are distributed over distinct application servers using the JEE framework in the software industry. (Total notional time: 150 hours)

### H

**HUMAN COMPUTER INTERACTION (HMD117V)** **1 X 4-HOUR COMPUTER-BASED**  
(Module custodian: Department of Computer Science)

This module prepares and equips the student with a practical know-how that helps to address the basic tactical and strategic principles of designing systems that interact with human beings. (Total notional time: 150 hours)



**I****INTEGRATED SOFTWARE PROJECT (ISJ107V, ISJ117R)****PROJECT ASSESSMENT****(Module custodian: Department of Computer Science)**

This module presents students with the opportunity to apply and extend their practical knowledge acquired in other modules completed prior to this one by completing an industry-related Information Technology software project similar to projects found in a workplace environment, incorporating relevant current technologies. (Total notional time: 150 hours)

**INTRODUCTION TO DATA SCIENCE (IDA117V)****1 X 4-HOUR COMPUTER-BASED****(Module custodian: Department of Computer Science)**

This module prepares the student to manage vast amounts of data using a variety of modern computing technologies and infrastructure from different kinds of sources. (Total notional time: 150 hours)

**S****SERVICE-ORIENTED COMPUTING (SEC117V)****1 X 4-HOUR COMPUTER-BASED****(Module custodian: Department of Computer Science)**

The focus of this module is to equip the student with the requisite skills to create secure web services using the JEE framework to integrate heterogeneous systems in the software industry. (Total notional time: 150 hours)

**SOFTWARE ENGINEERING (SFG117V)****1 X 4-HOUR COMPUTER-BASED****(Module custodian: Department of Computer Science)**

This module is aimed at taking the students through the areas of Software Engineering to equip them with the necessary knowledge, skills, technical abilities and exposure to technologies and methods applicable to the software development environment and activities. (Total notional time: 150 hours)

**T****THEORETICAL COMPUTER SCIENCE (TCR117V)****1 X 4-HOUR PAPER****(Module custodian: Department of Computer Science)**

The main focus of this module is to lay the foundation upon which many of the essential topics of computer science are built, i.e. design of programming languages and compilers, data structures, algorithms, and natural language processing. Understanding of this module will enable reasoning about computability of certain functions. (Total notional time: 150 hours)

