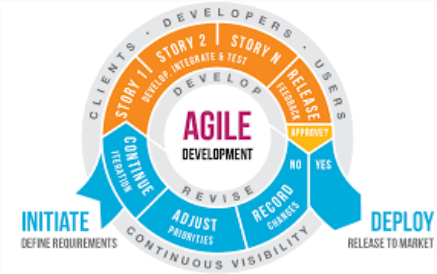
MUT
MANGOSUTHU
UNIVERSITY OF TECHNOLOGY

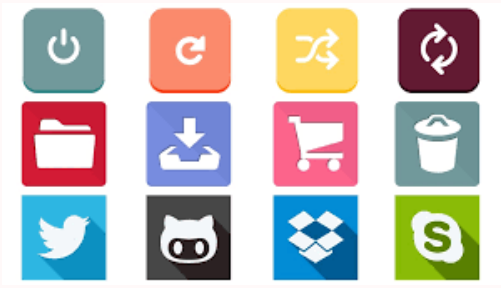
ICT
Information and
Communication Technology

DEVELOPMENT SOFTWARE 3

Course Outline

2024





Diploma in Information Technology

(Software Development)

Development software 3

Course Title	Development Software 3	**Abbreviated Title**	DS3
Course Codes	DSOF300; DVSF300		
NQF-Level	NQF-6	**Credits (Notional Hours)**	30 (300 Hours)
Course Context	Development Software 3 is located within the Software Development core group of modules in the Diploma in Information Technology.		

Course Description

This module consist of two components:

- System development Projects and ;
- Advanced Development Software.

The key aim is for students to apply the knowledge and skills of systems development in order to develop a fully functional Application (App). Students will experience the process of an agile systems development methodology using Scrum (iterative incremental development) in order to formulate a scenario, analyze, design and develop the application system which meets industry or societal requirements.

Advanced Development Software is aimed at exposing the learner to more advanced concepts in programming that will simulate a real world environment. Open Source Coding Solutions will be utilised in order to develop an Android App, which is fit for purpose.

Lecturer Details

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Department Details

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General Logistics Details

Disclaimer

Whilst every attempt has been made to ensure the correctness of information contained in this course outline, no liability or responsibility may be claimed for any errors or omissions herein. The Department reserves the right to make changes to the course without notice.

Updates

Updates to this course outline and supplementary material will be made available on the institution's Blackboard Learning Management System.

Learning Management System

DS3 makes use of the University's LMS – Blackboard and MS Teams .

Version control and copyright

Version 3.1

Revised: 18 February 2022

CONTENTS

WELCOME

Welcome to the exciting and challenging world of Projects.

This course is a capstone course and focuses on synthesis, integration and application of your knowledge gained from your previous courses in this Diploma in order to develop a fully integrated real-world IT project Mobile App and Web-based App.

I take this opportunity of wishing you well in your studies. May you enjoy a rewarding, fruitful, and successful year in 2024.

Kindest regards

FR Pillay

1. Purpose of Development Software 3

The purpose of Development Software 3 is to:

- Identify software requirements for a new IT software solution or Business Application
- Design and implement to meet the predetermined software requirements.
- Develop, test and implement the deliverables identified in the implementation plan
- Create comprehensive documentation for each deliverable
- Collaborate as a group to produce all deliverables of the IT solution

2. Pre-requisites / Entry level assumptions

The content and presentation of this subject assumes that the learner has passed all second-year subjects - if this is not the case, you will be required to de-register from this course. In addition, all work covered in all of the previous courses form the basis for what is covered in this course. The pace of the course is intensive and requires a lot of effort, hard work and commitment.

3. Brief Contents

- Problem /Project Identification & Needs Analysis
- Project Planning / Implementation Document
- Software Requirements Document
- Design Specifications Document
- Testing and Coding Documentation
- Developing of Prototype
- Presentation of System

4. Contribution to Exit Level Outcomes

This subject contributes wholly or partially to the following Exit Level Outcomes of the Diploma in Information Technology as registered with SAQA:

After completing this qualification, the qualifying learner will be able to:

- Analyse and design software solutions to industry related Information Technology problems.
- Utilise the required technical skills to effectively implement the designed solutions in a distributed Information Technology (IT) environment.
- Utilise the required technical skill to design and implement solutions in data communications, networks and the internet environment.
- Demonstrate the effective utilisation of business and management skills to bridge the gap between the IT discipline and the business functional areas in industry.

5. Contribution to Critical Outcomes, Graduate Attributes, and Entrepreneurial Skills

This subject is designed, presented, and assessed in a way that facilitates the promotion and development of the following skills of the learner:
The ability to:

- take decisions and accept responsibility;
- work effectively in a team;
- collect, organise and critically evaluate information, in order to assess the situation correctly;
- demonstrate an understanding that the problem solving contexts do not exist in isolation and therefore look at the system as a whole.

In addition to the above, the following graduate attributes identified by the department will be covered in this course:

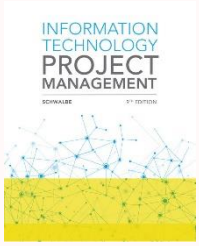
- GA1: Adaptable and Enquiring Mind- Will include critical thinking and problem solving
- GA2: Ethical practice
- GA3: Innovation and Creativity
- GA4: Communication and Social
- GA5: Driven, commitment and accountable
- GA6: Confidence

The following entrepreneurial skills will be covered in this course:

- Financial Implications
- Product and Brand Awareness
- Ideation and Implementation

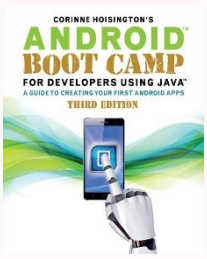
6. Teaching and Learning Resources

There is no **Prescribed Textbook** for this course. However, the following texts are **recommended:**



Kathy Schwalbe, Information Technology Project Management, Cengage Technology, 2019

Pham A, Pham PV, Scrum in Action: Agile Software Project Management and Development, Cengage Learning, 2012 (ebook resources)



Corrine Hoisingtons, Android Boot Camp of Developers, Cengage Technology, 2016

Recommended Readings:

The Importance of Requirements Definition in IT Systems Development by Ray Phariss; IS 6840, Systems Analysis; November 29, 2006 at http://www.umsl.edu/~sauterv/analysis/f06Papers/Phariss/

Layton, MC. 2017. Agile project management for dummies sheat sheet. [Online]. Available at: http://www.dummies.com/careers/project-management/agile-project-management-for-dummies-cheat-sheet/ [Accessed 23 November 2021].

Spundak, M. 2014. Mixed Agile/Traditional Project Management Methodology – Reality or Illusion? [Online]. Available at:

http://www.sciencedirect.com/science/article/pii/S187704281402196X Accessed 23 November 2021].

Wideman, M. [s.a.].Major Types of Projects Based on Product of Project. [Online]. Available at: http://www.maxwideman.com/guests/typology/projects.htm. [Accessed 23 November 2021].

Project selection:

https://www.tutorialspoint.com/management_concepts/project_selection_method.htm

Thomas, S. 2008. Agile Project Scope. [Online]. Available at: http://itsadeliverything.com/agile-project-scope [Accessed 23 November 2021].

Aguanno, A. [s.a.].Managing Scope Creep in Agile Projects. [Online] Available at: http://agilepm.com/managing-scope-creep-in-agile-projects [Accessed 23 November 2021].

Learning Management System: https://www.mut.ac.za

Tools & Resources:

- Personal Computer
- Microsoft Office 365
- Microsoft Teams (Trello, Slack, Confluence)
- Project Management Software (MS Projects ,smartsheet)
- Microsoft Visual Studio, Android Studio (or any other IDE)
- GitLab, Bitbucket or GITHub
- MS Visio (miro, draw.io)

Guest lectures:

As part of the formal curriculum, you will receive guest lectures from staff members in the department of ICT as well as from industry members. The following guest lectures will take place:

Term 1: Mr Collin Fourie – Industry member and Chairperson of Advisory Board
Term 3: Dr Collin Thakur – Director DUT

7. Teaching and Learning Strategies

Notional Hours

Notional hours is the term given to the amount of time it will take an average student to achieve the outcomes of the course. In general, the notional hours are further divided (and hence assigned) to various teaching and learning activities, some of which is undertaken in the presence of the lecturer, while others are deemed to be either lecturer-directed self-study or are reserved for independent self-study by the student.

The credit assigned to Development Software 3 is 30 credits at NQF level-6. This means that the average student should comfortably achieve the outcomes of the course in 300 hours (1 credit = 10 notional hours).

The 300 notional hours for DS3 – Project is divided and assigned as follows:

Activity	Hrs (tot)	Per of total(300)	Explanation / Comments
Lectures	96	32%	16 wks x 6 hours per week = 8 double periods
Consultations	96	32%	6 hours per week per learner/group
Assessments / Documentation	24	8%	6 submission points
Total: lecturer directed	210	70%	Total time for lecturer-directed activities
Self-Study: student directed	90	30%	Student self-directed learning
Total Time	300	100%	Total Time: 30 credits = 300hr

Contact Time

6 lectures (3 double periods) per week
1 lecture – consultation

Course Presentation

The Lecturer is a facilitator of the learning process – this implies that lecturers are meant to guide and assist you to achieve the outcomes of this subject. In this context, you are expected to present yourself at lectures fully prepared. Attendance and punctuality are non-negotiable concepts.

A hybrid system and flipped classroom methodology of teaching and learning will take place. You will receive online lessons as well as face to face meetings. As the Project progresses, our meetings and consultations per group will be become more frequent.

Tutorials

You will make use of the e-learning system (Blackboard) & Ms Teams, which will be scheduled in the lab.

Absenteeism from assessments

Should you be absent from any assessment, you are required to furnish the subject lecturer with written reasons, with supporting documents within 3 days of the scheduled assessment or immediately upon your return to class

Monitoring of Academic performance

The subject lecturer and HOD will constantly be monitoring your academic performance. If you are not performing according to standards set by the Department, meetings to discuss intervention strategies will be called. A Part of the Project Evaluation, you will be assessed by your peers, this assessment forms an integral part of the process, and thus failure to have input or integrity in the creation and deployment of the project will impact negatively on your final mark/assessment.

Consultation Times

A period has been allocated each week for consultation and you will be notified about the time. Any student query can be dealt with during this time.

The subject lecturer will also be available (by appointment) for consultations with students (individuals, but preferably in small groups) if the situation requires it. The availability of the lecturer will be advertised once the time tables have been finalized.

Library Resources

The Institution's library has a good selection of IT books that may be used during your spare time. Please see the general student handbook for rules and regulations governing the use of the Library Resource Center.

Internet Facilities and LMS

Off site access to a suitable computing device and access to the Internet are required. The Institution makes Internet facilities available for student use. You are encouraged to make use of these facilities for your assignments and other academic work. Please see the general student handbook for rules and regulations governing the use of the Internet facility. You will be required to access the Blackboard portal on a regular basis, for purposes of accessing learning materials, submitting assignments, etc.

Study Groups

Learners are encouraged to form peer groups – work through past year papers and tutorials. It is always advisable to consult with your lecturer in small groups.

Self-Evaluation

Keep track of your own learning and make your own notes – these will assist you in your preparations for the tests, assignments and examination. As part of the formal assessment, you are required to submit a Self-Evaluation Report.

Copying / Plagiarism

Plagiarism is a situation in which you use someone else's work and pass it off as your own. If you are found guilty of such an offence, you could be expelled from the Institution. In addition, this is a serious offence which is punishable by law. One of the graduate attributes that the department is wanting to cultivate is Ethical practice, hence, strong action is taken to students who copy or plagiarize.

Assignments / Project Work

You are encouraged to engage your peers in discussion and debate with regards to assignments and other work which you are required to submit for grading purposes. However, all work submitted by you must be your own – read previous point above again!

All submissions must be via the LMS and deadlines MUST be adhered to. Failure to submit on the allocated date/time WILL jeopardize your FINAL mark. **STRICTLY NO EXCUSES!!**

8. ASSESSMENTS

NO Final Exam | NO Supplementary | NO Aegrotat | NO Special Examination

Continuous Assessment Mark (CAM) – aka Course Mark (CM)

This is a mark allocated for various assessments during the course of the year, including formal tests, assignments and submission points.

Note that the assignments/ submissions must reach your lecturer on the due date before 20h00 - NO LATE assignments will be accepted.

CM Determination

The contribution of the assessments during the year to the CM is determined as follows:

The course marks are made up as follows:

Project Management: (individual)

Assignment - 10%	20%
Test 1 - 30%	

Projects (group)

Submission Point 1 - 10% :	5 April 2024
Submission Point 2 - 15% :	26 April 2024
Submission Point 3 - 15% :	31 May – 07 June 2024
Final submission – 40% :	22 – 31 July 2024

Final Examinations

There is NO final examination in this course.

Final Mark Determination

CONTINUOUS ASSESSMENT methodology is used, the final mark is obtained as follows:
100% of course mark.

Supplementary Examinations

No supplementary exams are offered when the course is offered as continuous assessment.

Aegrotat Examinations

No Aegrotat exams are offered when the course is offered as continuous assessment.

Exclusion Rule

Students are affected by the G20 rule as follows:

General rule: No student may register for the same subject more than twice.

Annual programmes: A student who fails to obtain all the credits

a) For the first year curriculum at the end of the second year of registration

b) For the second year curriculum at the end of the fourth year of registration

c) For the third year curriculum at the end of the sixth year of registration will be regarded as a student whose academic performance is unsatisfactory and will therefore be refused admission to further studies in the particular programme.

Test/Exam Results

During the academic year, students are required to verify test results on the student portal (ienabler) and advise the lecturer within ONE week from the date of publication should there be any errors.
Students can access progress / academic reports from the student portal.
Final results are published on the exam notice boards and / or online platforms.
It is the responsibility of the student to access this information.

9. Work Plan, Learning Outcomes and Syllabus Content

Wk		Learning Outcomes	Learning Activities/Resources
TERM 1			
0		**Group Definition** **Group selection, Terms of Reference and Contracts – Mentor/Mentee**	*Proposal FORM : <LINK ON LMS>*
1		**Identification of Problem/ Business Need / NGO assigned problem domain** **Identification of the problem domain, business processes, system requirements, stakeholders, inputs, processes and outputs**	*Needs Analysis* *Spundak, M. 2014. Mixed Agile/Traditional Project Management Methodology – Reality or Illusion? [Online]. Available at: http://www.sciencedirect.com/science/article/pii/S187704281402196X Accessed 23 November 2021].*
2		**Project Registration**	*Form: <LINK>* *Submission Point 1 - group*
3		**System Proposal Documentation** **Determine the Critical Success Factors relating to Proposals**	*SRS Document Templates:* *https://visuresolutions.com/software-requirement-specification-srs-tips-template/* *https://relevant.software/blog/software-requirements-specification-srs-document/*
		Project Plan **Project Planning, Scheduling and Closing** **Identify key deliverables, Milestones, Risk analysis and Scope**	*Work Breakdown Structure (WBS) in Traditional and Agile Life Cycles with MS Project. [Online] Available at: https://www.mpug.com/work-breakdown-structure-wbs-in-traditional-and-agile-life-cycles-with-ms-project/ [Accessed 27 January 2022].*
4-5			*Submission Point 2 – group* *Assignment 1 – individual*
TERM 2			
1		**System Design Specifications** **Documentation – logical systems model** **Database design**	***SDS Document***
2-3		Solution Criteria are assessed and reworked System architecture is designed Design of the GUI is adequately documented	*Submission Point 3 – group*

4		Prototyping Code for system testing Rework and submit necessary documentation	*Design documentation is reworked*
5-6		Prototyping - Rework and submit documentation - Deploy test data	*Sprint Backlog is reviewed*
7-8		User Support Documentation	*Uploading of User Support Documenation*
9-10		Presentation of App Artefacts are submitted	*Final Submission Point – group*
TERM 3			
		Consultations and review	
TERM 4			
		Finalize marks	