



REPUBLIC OF UGANDA

MINISTRY OF EDUCATION AND SPORTS

**DEPARTMENT OF BUSINESS, TECHNICAL, VOCATIONAL EDUCATION
AND TRAINING (BTJET)**

**CURRICULUM FOR HIGHER DIPLOMA
IN ANAESTHESIA**

2017

CONTENTS

FOREWARD	ii
ACKNOWLEDGEMENTS.....	iii
ACRONYMS.....	iv
KEY DEFINITIONS.....	v
EXECUTIVE SUMMARY.....	1
INTRODUCTION.....	2
The Programme.....	2
Main Objectives of the Curriculum.....	2
General Programme Regulations.....	4
ATP PART I: Development of Profile for Anaesthetic Officers	7
Additional Information	9
ATP-PART II: Module Development for Higher Diploma in Anaesthesia.....	11
Overview of Modules for Diploma in Anaesthesia.....	13
Breakdown of Semester Load.....	14
MODULES FOR HIGHER DIPLOMA IN ANAESTHESIA.....	15
Module 1: Perform General Practices in Anaesthesia.....	15
Module 2: Operate Anaesthetic Equipment and Instruments.....	18
Module 3: Administer Anaesthesia.....	20
Module 4: Provide Emergency and Critical Care.....	25
Module 5: Perform Management Tasks.....	27
Module 6: Perform Operational Research.....	30
ATP-PART III: ASSESSMENT INSTRUMENTS FOR HIGHER DIPLOMA IN ANAESTHESIA	32
Performance Test Items (Samples).....	34
Written Test Items (Samples)	39
APPENDIX 1: INFORMATION ON DEVELOPMENT PROCESS.....	47
APPENDIX 2: DEVELOPMENT TEAMS	48
REFERENCES	51

Foreward

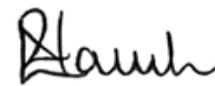
The Ministry of Education and Sports (MoES), in partnership with the private sector and other stakeholders, has embarked on reforming Business, Technical and Vocational Education and Training (BTVET) in Uganda. The reform makes training relevant to the skills requirements of employment.

As the MoES executes its obligation to ensure quality in training standards, the public-private sector partnership is being strengthened to improve occupational competence of the country's workforce.

Further to efforts of linking education and training to the real world of work, the MoES through BTVET has developed training materials in order to effectively enhance Competence-Based Education and Training (CBET) in Uganda. The emphasis on competences is understood as the ability to perform tasks of an occupation at a defined competence level. Competence-Based Education and Training enhances acquisition of skills and is supported by related knowledge which is required in the world of work for a given occupation. The foreseen advantages of CBET include improved access to equity and relevance of BTVET, reduced unit costs of training, and recognition of prior learning (or on-the-job- training), among others.

This Curriculum contains 3 parts: Occupational/Job Profile, Training Modules, and Sample Assessment Tools.

The Curriculum should be used by accredited and licensed training providers.



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ACKNOWLEDGEMENTS

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6. Uganda Allied Health Examinations Board
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8. Anesthesiologists
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ACRONYMS

A&C	Assessment and Certification
ATP	Assessment and Training Package
BTVET	Business, Technical, Vocational Education and Training
CBET	Competence-Based Education and Training
CGPA	Cumulative Grade Point Average
CPR	Cardiopulmonary Resuscitation
DACUM	Develop a Curriculum
DES	Directorate of Education Standards
HIV	Human Immunodeficiency Virus
LWAs	Learning Working Assignment
MC	Modular Curriculum
MoES	Ministry of Education and Sports
MoH	Ministry of Health
OP	Occupational Profile
PEXs	Practical Exercises
PTI	Performance (Practical) Test Item
RPL	Recognition of Prior Learning
TVET	Technical, Vocational Education and Training
UAHEB	Uganda Allied Health Examinations Board
UAHPC	Uganda Allied Health Professional Council
UNMEB	Uganda Nurses & Midwives Examinations Board
UTVQ	Uganda Technical Vocational Qualification
USAID	United States Agency for International Development
WHO	World Health Organisation
WTI	Written (Theory) Test Item

KEY DEFINITIONS

Assessment

Assessment is the means by which evidence is gathered and judged to decide if an individual has met the stipulated assessment standards or not.

Certification

Certification is a formal procedure to issue a certificate (qualification) to an individual that has demonstrated during formal assessment that they are competent to perform the tasks specified in the occupational profile.

Competence and Competence-Based Education and Training (CBET)

Occupational competence is understood as the ability to perform tasks common to an occupation at an acceptable level. Competence-Based Education and Training means that programmes:

1. Have content directly related to work
2. Focus on 'doing something well'
3. Have assessment based upon industry work standards
4. Have curricula which are developed in modular form

Duty

A Duty describes a large area of work in performance terms. A duty serves as a title for a cluster of related tasks (see also: TASK).

Learning-Working Assignments (LWAs)

LWAs are simulated or real job situations/assignments that are suitable for learning in a training environment. In a working environment, LWAs are real work situations/assignments.

Module

Modularisation involves the breaking down of teaching and learning into "units of learning" called Modules. Each module is independent and represents a coherent meaningful outcome of learning which enhances employability. Modules are parts of a whole curriculum. Modules can be considered as "self-contained" partial qualifications which are described by learning outcomes or competences and in which one can be assessed and certified individually.

Occupational Profile (OP)

An Occupational Profile is an overview of the duties and tasks a job incumbent is expected to perform competently. These define WHAT a person is supposed to do, which become the reference points for developing the modular curricula and assessment standards. Occupational profiles developed by practitioners from the world of work enhance the relevance of training and learning to the requirements of the world of work.

Qualification

A Qualification is a formal reward for demonstrating competence, based on formal assessment against set standards and provided to the individual in the form of a certificate specifying the nature of the competence.

Task

Job Tasks represent the smallest unit of job activities with a meaningful outcome. Tasks result in a product, service or decision. They represent an assignable unit of work and have a definite beginning and ending point, can be observed and measured (see also: Duty).

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APPENDIX 2: DEVELOPMENT TEAMS

The participating panels of job practitioners and instructors required at different stages were constituted by members from the following organisations:

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EXECUTIVE SUMMARY

The preliminary material describes the objectives, philosophy, and justification of the Higher Diploma in Anaesthesia training program. Uganda's population has increased to 34 million people which calls for increase in the number of health service providers including trained anaesthetic officers, who are urgently needed in Health Centre IVs (HCIVs), districts, and Regional Referral Hospitals (RRHs). The training programme will take two (2) years, consisting of four (4) semesters with assessments carried out for each semester. This Curriculum is competence-based and consists of three major parts which were developed sequentially by combined panels of practitioners and tutors between November and December 2015.

PART I: The Occupational Profile (OP) of an Anaesthetic Officer

This OP was developed by anaesthetic officers and mirrors the duties and tasks they are expected to perform at work.

PART II: Training Modules

Training modules are guidelines to train anaesthetic officers on the job, in training institutions, or a combination of both. The modules herein have been developed basing on the OP and are therefore directly relevant for employment. The modular format of the curriculum allows learners to acquire job specific skills and knowledge (competences) module by module. In principle, and following the philosophy of CBET, the modules can be used as a guide for learning in a training centre or at the workplace and/ or combinations of both.

PART III: Assessment Instruments

Assessment instruments are in the form of performance (practical) and written (theory) test items that can and should be used to assess whether a person complies with the requirements of employment as an anaesthetic officer. The assessment instruments were developed jointly by job practitioners and tutors.

This Curriculum (or parts of it) may be periodically revised to match the dynamic trends in the occupation and hence issued in different versions.

INTRODUCTION

The Programme

This is a competence-based modular programme aimed at training Anaesthetic Officers at Higher Diploma level. The Higher Diploma in Anaesthesia is a post-basic diploma.

Title of the Program

Higher Diploma in Anaesthesia.

Aim of the Training Curriculum

The aim is to produce competent Anaesthetic Officers at a Higher Diploma to provide effective anaesthetic services with minimum supervision to improve quality of health care.

Main Objectives of the Curriculum

1. To guide teachers on how best to influence skills acquisition
2. To enable learners acquire scientific knowledge and skills that will enable them to provide general anaesthetic techniques and services
3. To enable learners acquire scientific knowledge and skill that will enable them provide critical care and resuscitation services
4. To demarcate the scope of technical skills and responsibilities required to be performed and therefore trained for this specific cadre
5. To increase access to quality anaesthetic services in the health sector
6. To determine competence in work procedures as tasks are performed

Philosophy

The Government of Uganda is committed to attaining the highest standard of health care for its people, and has made deliberate policies to ensure promotion of health and productive life for its citizens. This philosophy underpins this curriculum which aims to provide a holistic and comprehensive training programme that can provide a highly effective and efficient anaesthetic officer who addresses the health needs specifically required for anaesthetic services. These needs include pre-, intra- and post-operative care of surgical patients, care of patients in intensive care unit (ICU), managing emergencies, pain management, training, and research.

Justification

Uganda's population has increased to 34 million people (UBOS 2014), increasing the need for health services, including increased need for surgical procedures. The MOH introduced an innovation advocating for access to essential health care for all at all levels of the health sector. This involved establishing operational medical theatres at district hospitals and HCIVs, significantly increasing the need for professionally trained anaesthetic officers.

This programme aims to increase quality care in anaesthetic services by producing an anaesthetic officer who is innovative, resourceful, has the capacity to make independent decisions and can execute her/his duty with competence and creativity. This cadre has a unique role in peri-operative anesthesia management for successful surgical operations. This curriculum guides the training of anesthetic officers to provide high-quality anaesthetic care and improve outcomes for surgical patients.

APPENDIX 1: INFORMATION ON DEVELOPMENT PROCESS

1. Occupational Profile Development (November 2015)

The Occupational Profile was developed by job practitioners and supervisors who were working as Anaesthetic Officers. The job expert panel, guided by DACUM/TVET facilitators, defined duties and tasks performed and provided additional generic information regarding the occupation.

2. Training Module Development (November 2015)

Based on the Occupational Profile for an Anaesthetic Officer, modules were developed by combined panels of tutors and job practitioners, guided by DACUM/TVET facilitators.

3. Test Item Development (December 2015)

Based on the Occupational Profile and Modules for an Anaesthetic Officer, sample test items were developed by combined panels of tutors and job practitioners, guided by DACUM/TVET facilitators.

Test Item Database		
Written (Theory) Test Item – Matching Item No. 3		
Occupational Title	Anaesthetic Officer	
Qualification Level	L5	
Test Item Type	Short Answer	
	Multiple Choice	
	Matching item	X
	Work-sequence	
	Other types approved (Specify)	
Complexity Level	C2	
Date of OP	2015	
Related Module	M4	
Time Allocation	2 minutes	

Test Item	Match the given emergency events in Column A with their corresponding interventions in Column B			
Column A (Emergency Events)		Column B (Interventions)		
1	Excessive secretion	A	Give oxygen	
2	Airway obstruction	B	Advanced life support	
3	Aorto-caval compression	C	Left lateral tilt	
4	Cardiac arrest	D	Suction	
		E	Jaw thrust	
		F	Right lateral tilt	
Key (Answer)	1-D; 2-E; 3-C; 4-B			

Test Item Database		
Written (Theory) Test Item – Matching Item No. 4		
Occupational Title	Anaesthetic Officer	
Qualification Level	L5	
Test Item Type	Short Answer	
	Multiple Choice	
	Matching item	X
	Work-sequence	
	Other types approved (Specify)	
Complexity Level	C2	
Date of OP	2015	
Related Module	M2	
Time Allocation	2 minutes	

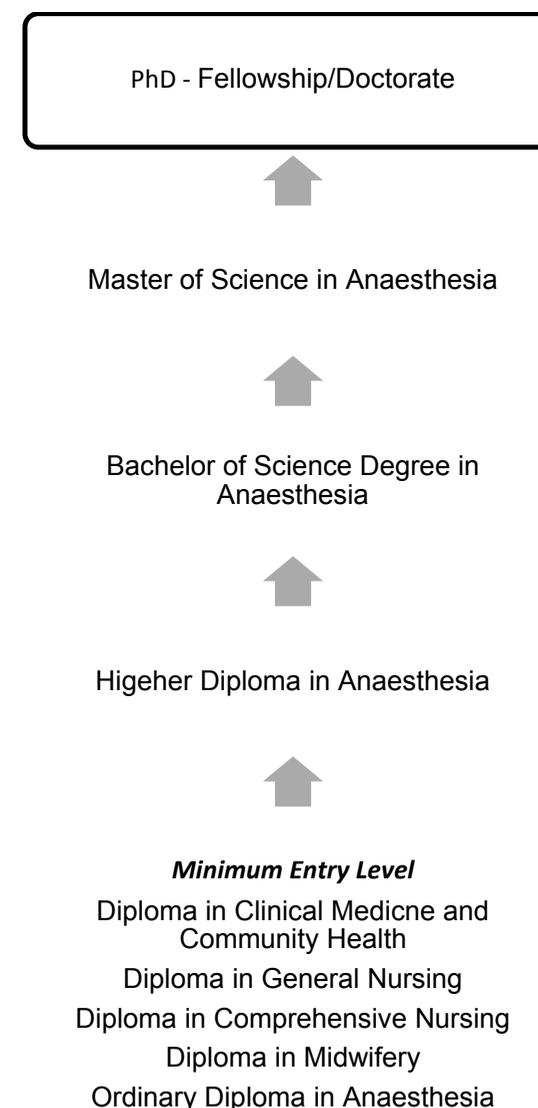
Test Item	Match the given events in Column A with their corresponding equipment used in Column B.			
Column A (Events)		Column B (Equipment)		
1	Difficult intubation	A	Tongue depressor	
2	Regurgitation	B	Magill's forceps	
3	High spinal	C	Bougie	
4	Nasal Intubation	D	Suction apparatus	
		E	Dissecting forceps	
		F	Oxygen concentrator	
Key (Answer)	1-C; 2-D; 3-F; 4-B			

Description of an Anaesthetic Officer: Qualification Level 5

An Anaesthetic Officer is a non-physician specialist who is responsible for providing anaesthesia to patients for operations and procedures. He/she has a range of practice which extends beyond anaesthesia for surgery to include pain management and intensive care.

Recommended Career Progression for Anaesthetic Officers

An Anaesthetic Officer may progress as indicated below:



General Programme Regulations

Minimum Entry Requirements

Entry requirements for this programme shall be:

- Diploma in General Nursing or Comprehensive Nursing
- Diploma in Midwifery
- Diploma in Clinical Medicine and Community Health
- Ordinary Diploma in Anaesthesia
- An Oral Interview
- A Medical Fitness Assessment

Age Limit: A maximum age of 45 years.

Authority Responsible for the Programme

The Department of Business, Technical, Vocational Education and Training (BTVET) under the Ministry of Education and Sports.

Award

The award shall be a Higher Diploma in Anaesthesia.

Examination and Awarding Body

The examination and awarding body shall be the Uganda Allied Health Examinations Board (UAHEB), Ministry of Education and Sports.

Registration Body

Registration body for the practicing license shall be the Allied Health Professionals' Council.

Organisation and Duration of the Programme

Duration of the programme shall be 2 years. Training modules shall be divided into semesters and/or any other recognised system of education. The programme shall run on a semester system consisting of 4 semesters in the 2 academic years. Each semester shall be seventeen (17) weeks with fifteen (15) weeks for teaching and learning and two weeks for examination. Duration of the recess term shall be ten (10) weeks.

Assessment

Continuous assessment shall be the responsibility of the school education committee which will appoint an internal board of examiners consisting of tutors and Senior Anaesthetic staff, Surgeons and Senior Nursing Officers. Final and promotional examination will be the responsibility of UAHEB under the Ministry of Education and Sports.

End of Semester Examinations (Summative Assessment) shall contribute 70% of the total marks. Marks for end of Semester 2 practical examinations shall be divided as follows:

- 1) Clinical assessment 30%
- 2) Practical in theatre 40%
- 3) Objectively structured clinical examination (OSCE) and objectively structured practical examination (OSPE) 30%

Progressive (continuous) assessment shall contribute 30% of the total marks and will constitute theory and

Test Item Database		
Written (Theory) Test Item – Matching Item No. 1		
Occupational Title	Anaesthetic Officer	
Qualification Level	L5	
Test Item Type	Short Answer	
	Multiple Choice	
	Matching item	X
	Work-sequence	
	Other types approved (Specify)	
Complexity Level	C1	
Date of OP	November 2015	
Related Module	M3	
Time Allocation	2 minutes	

Test Item	Match the following activities done during physical examination in Column A with their corresponding findings in Column B			
Column A (Activities)		Column B (Findings)		
1	Inspection	A	Blood pressure	
2	Palpation	B	Therapeutic marks	
3	Percussion	C	Pulse	
4	Auscultation	D	Breath sounds	
		E	Ascites	
		F	Odour	
Key (Answer)	1-B; 2-C; 3-E; 4-D			

Test Item Database		
Written (Theory) Test Item – Matching Item No. 2		
Occupational Title	Anaesthetic Officer	
Qualification Level	L5	
Test Item Type	Short Answer	
	Multiple Choice	
	Matching item	X
	Work-sequence	
	Other types approved (Specify)	
Complexity Level	C1	
Date of OP	November 2015	
Related Module	M3	
Time Allocation	2 minutes	

Test Item	Match the given drugs in column A with their corresponding IV doses in column B.			
Column A (Drugs)		Column B (IV doses)		
1	Ketamine	A	3 – 5 mg/kg	
2	Thiopentone	B	0.03 – 0.05 mg/kg	
3	Morphine	C	1-2mg/kg	
4	Atacurium	D	8 mg/kg	
		E	0.3 – 0.6 mg/kg	
		F	0.1 – 0.2 mg/kg	
Key (Answer)	1-C; 2-A; 3-F; 4-E			

Test Item Database		
Written (Theory) Test Item – Multiple Choice No. 3		
Occupational Title	Anaesthetic Officer	
Qualification Level	L5	
Test Item Type	Short Answer	
	Multiple Choice	X
	Matching item	
	Work-sequence	
	Other types approved (Specify)	
Complexity Level	C2	
Date of OP	November 2015	
Related Module	M4	
Time Allocation	1 Minute	

Test Item (Question)	A child of 20kg has starved for 6 hours, what is the fluid deficit?
Choices	A. 300 mls B. 36 mls/kg C. 360 mls D. 120 mls
Expected Key (Answer)	C

Test Item Database		
Written (Theory) Test Item – Multiple Choice No. 4		
Occupational Title	Anaesthetic Officer	
Qualification Level	L5	
Test Item Type	Short Answer	
	Multiple Choice	X
	Matching item	
	Work-sequence	
	Other types approved (Specify)	
Complexity Level	C2	
Date of OP	November 2015	
Related Module	M3	
Time Allocation	1 Minute	

Test Item (Question)	Which of the given interventions should be done to prevent aspiration in anaesthesia for emergency operations?
Choices	A. Apply cricoid pressure after giving suxamethonium B. Apply cricoid pressure when patient loses consciousness C. Pre-oxygenate the patient for five minutes D. Avoid any use of long-acting muscle relaxants
Expected Key (Answer)	B

practical assessment. Theory and practical examination papers are complimentary. The written (theory) examination test items may consist of:

- 1) Short answer test items
- 2) Multiple choice test items
- 3) Work sequence test items
- 4) Essay questions
- 5) Performance/practical test items

The minimum pass mark in any module shall be 50%. Thus, no credit shall be awarded for any module in which a student scores below 50%. If a student has to retake a module, he/she waits till the module is next offered. A candidate shall not sit an examination more than 3 times.

The mark in each grade shall be classified as follows:

Percentage	Mark	Point
80-100	A	5.0
75-79	B+	4.5
70-74	B	4.0
65-69	C+	3.5
60-64	C	3.0
55-59	D+	2.5
50-54	D	2.0
Below 50	F	0.0

Computation of Semester Grade Point Average (GPA) and Cumulative Grade Point Average (CGPA)

GPA and CGPAs will be calculated using the following formulas:

GPA = $\frac{\text{Sum over modules in Semester (Module Credit Hours X Grade point Earned)}}{\text{Total Semester credit hours}}$

CGPA = $\frac{\text{Sum over all taken modules in all Semesters (Module Credit Hours X Grade point Earned)}}{\text{Total Credit Hours Taken in all Semester}}$

Progression through the Programme

Progression of a student shall be classified as normal, probationary or discontinuation. Normal progression shall occur when a student has passed the assessment in all the courses they registered for in a particular semester. Probationary progress shall occur when a student obtains a CGPA of less than 2.0. Such a student shall be allowed to progress to the next semester/academic year but shall retake the module he/she has failed in order to obtain at least the pass mark (50%) in those modules.

For withdrawal, a student can apply to the Institution's Governing Council for permission to withdraw from studies at any time of the semester after registration. A student will be allowed only a maximum of one withdrawal and that withdrawal shall be a maximum of one academic year only.

Retaking of Modules

- a) A student shall retake a module when next offered if:
 - i. She/he had failed before during the first and/or second assessment(s) of the module so as to obtain at least the pass mark of 50%
 - ii. She/he wants to improve the grade if his/her first pass grade was low.

- b) A student shall not be allowed to have probationary progress if he/she has accumulated half or more of a semester load as retakes.
- c) A final year student whose final examination results have already been classified by UAHEB and has qualified for the award of the Higher Diploma shall not be permitted to retake any module for the purpose of improving his/her grade.
- d) When a student has retaken a module, the better of the two grades he/ she has obtained in that module shall be used in the computation of his/ her CGPA.
- e) Whenever a module or modules has/have been retaken, the academic transcript shall NOT indicate so.
- f) Retaking a module for a student means attending all the prescribed lectures /tutorials, doing the required practical/clinical/ course work in the modules and sitting end of semester examinations.

Absence from Examinations and Special Examinations

- a) If UAHEB finds out that a student has no justifiable reason for having been absent from a particular examination, such a student shall receive a fail (F) Grade for the modules he/she had not sat the examinations.
- b) If UAHEB is satisfied that a student was absent from a final examination due to justifiable reason such as sickness or loss of a parent/guardian, then a grade of absence (ABS) shall be assigned to that module(s).

Examination Malpractice

Any student who engages in examination malpractice commits an offence and may lead to cancellation of the paper or whole examination. The Board may suspend or withdraw an Examination Centre that fails to maintain the regulations and ethical standards of an accredited Examination Centre.

Special Examinations

Special examinations can be offered as requested by the student after he/she meets the full examination costs.

Discontinuation

- a) A student who has failed to obtain the pass mark (50%) in four (4) modules at one sitting shall be discontinued.
- b) When a student accumulates three (3) consecutive probations based on CGPA, they shall be discontinued.
- c) A student who has failed to obtain at least the pass mark (50%) during the third assessment in the same module he/she had retaken shall be discontinued.

Appeals

Any student or candidate aggrieved by a decision of the Examinations Board may appeal to UAHEB addressed to the Executive Secretary of the Board for reversal or moderation of the decision of the Board.

Award

UAHEB, upon its satisfaction that the candidate has successfully completed all the prescribed modules and obtained the registered standard for the programme, will confer an award of a Higher Diploma upon the student.

Publication of Results

The MOES shall release and publish examination results through UAHEB.

Test Item Database Written (Theory) Test Item – Multiple Choice No. 1		
Occupational Title	Anaesthetic Officer	
Qualification Level	L5	
Test Item Type	Short Answer	
	Multiple Choice	X
	Matching item	
	Work-sequence	
	Other types approved (Specify)	
Complexity Level	C1	
Date of OP	November 2015	
Related Module	M3	
Time Allocation	1 Minute	

Test Item (Question)	At what level of the cervical vertebrae is the cricoid cartilage located?
Choices	A. C4 B. C5 C. C6 D. C3
Expected Key (Answer)	C

Test Item Database Written (Theory) Test Item – Multiple Choice No. 2		
Occupational Title	Anaesthetic Officer	
Qualification Level	L5	
Test Item Type	Short Answer	
	Multiple Choice	X
	Matching item	
	Work-sequence	
	Other types approved (Specify)	
Complexity Level	C1	
Date of OP	November 2015	
Related Module	M3	
Time Allocation	1 Minute	

Test Item (Question)	After how many attempts do we declare a failed intubation?
Choices	A. Four B. Two C. One D. Three
Expected Key (Answer)	D

Test Item Database Written (Theory) Test Item – Short Answer No. 3		
Occupational Title	Anaesthetic Officer	
Qualification Level	L5	
Test Item Type	Short Answer	X
	Multiple Choice	
	Matching item	
	Work-sequence	
	Other types approved (Specify)	
Complexity Level	C2	
Date of OP	November 2015	
Related Module	M3	
Time Allocation	3 Minutes	

Test Item (Question)	The patient has been given spinal anaesthesia and the blood pressure has come down drastically. List down the 4 steps to be taken in managing this patient.
Answer Space	1. 2. 3. 4.
Expected Key (Answer)	1. Give oxygen 2. Increase IV fluid input 3. Give vasopressor 4. Raise foot of the operating table

Test Item Database Written (Theory) Test Item – Short Answer No. 4		
Occupational Title	Anaesthetic Officer	
Qualification Level	L5	
Test Item Type	Short Answer	X
	Multiple Choice	
	Matching item	
	Work-sequence	
	Other types approved (Specify)	
Complexity Level	C1	
Date of OP	November 2015	
Related Module	M3	
Time Allocation	1 Minute	

Test Item (Question)	Give the I.V. Adult doses of the following drugs: 1. Ketamine 2. Atropine 3. Thiopentone 4. Suxamethonium	
Answer Space		
Expected Key (Answer)	1. Ketamine 1-2mg/kg 2. Atropine 0.01 – 0.02mg/kg 3. Thiopentone 3-5mg/kg 4. Suxamethonium 1-2mg/kg	

ATP PART I: Development of Profile for Anaesthetic Officers

The basic philosophy of DACUM is that expert practitioners can describe and define their job more accurately than anyone else. An effective way to define a job is to precisely describe the Duties and Tasks that expert practitioners perform. All tasks, in order to be performed correctly, demand certain knowledge, skills, tools and attitudes/behaviours. The 8-12 DACUM panel therefore comprises only job practitioners (not Instructors or other stakeholders) currently working in the job. The panel, through brainstorming in plenary/group work defines the duties and tasks actually performed in the job, under the guidance of a trained DACUM Facilitator.

Some salient features of the DACUM guidelines are:

1. A duty is defined as a cluster of related tasks, usually 6-12 per job
2. A task is defined as a specific meaningful unit of work, usually 6-20 per duty
3. A task reflects business value payable by an employer or customer.
4. Each task is performed in 2 or more steps (activities)

Please note that the Occupational Profile does not show 'STEPS', since steps only lead to a task which then has a payable value. Nevertheless, steps are identified in later stages of Assessment Instruments and Modular Curricula development.

The DACUM process was therefore used to conduct the occupation/job analysis leading to identification of competences required of practitioners as: Job Titles and Career Progression. Job titles are tagged on certain qualifications, for which the profession bases its recruitment.

Verification of Occupational Profiles

Owing to varying sizes of enterprises and institutions, the practitioners had some considerable differences in their practices. Verification exercises should be carried out to consolidate national occupational standards for the health sub-sector.

Updating Occupational Profiles

This occupation is dynamic as technological advancement takes place. The need to respond to global concerns like Environment, Occupational Health and Safety, among others, envisages an inevitable demand to update this OP periodically not exceeding 3-5 years' interval. It is further recommended that experts in the sector should regularly review the occupational trends to provide feedback to Training Delivery Systems and the Qualifications Framework.

Duties and Tasks for an Anaesthetic Officer

Duties	Tasks for Each Duty
1. Prepare Work Environment	Clean anaesthetic equipment
	Obtain theatre lists
	Identify working teams
	Set up anaesthetic equipment
	Prepare medicines and supplies for use
	Prepare an emergency trolley
2. Maintain Safety Measures	Display standard operating procedures
	Use protective gears
	Segregate waste
	Maintain scavenging system
	Store medicines and supplies
	Provide First Aid kit

Duties	Tasks for Each Duty
3. Maintain Anaesthetic Equipment	Avail fire extinguishers
	Obtain pre- and post- exposure prevention measures
	Check functionality of equipment
	Replace non-functional equipment
	Service equipment
	Repair minor faults
	Report malfunctioning equipment
	Store anaesthetic equipment
4. Manage Patient	Update anaesthetic equipment log book
	Carry out pre-operative assessment
	Prepare an anaesthetic plan
	Provide counselling
	Obtain informed consent
	Administer anaesthesia
	Monitor parameters
	Manage anaesthetic events
	Transfer patients to recovery room
	Hand over patients
	Manage critically ill patients
	Manage pain
	Manage referrals
	Follow up patients up to 24 hours
5. Carry out Quality Control	Avail clinical guidelines
	Design anaesthesia protocols
	Avail checklists
	Maintain supply chain
	Conduct mortality and morbidity audits
	Organise external monitoring and evaluation
	Carry out operational research
	6. Manage Anaesthetic Information System
Fill anaesthetic log book	
Fill incident report forms	
Prepare and update stock cards	
Prepare and update inventory	
Carry out record keeping/establish a data base	
Disseminate information	
7. Perform Administrative Tasks	
	Allocate duties
	Carry out support supervision
	Appraise staff
	Conduct and attend meetings
	Generate reports
	Prepare activity work plan
	Prepare budgets
	Account for resources

Test Item Database		
Written (Theory) Test Item – Short Answer No. 1		
Occupational Title	Anaesthetic Officer	
Qualification Level	L5	
Test Item Type	Short Answer	X
	Multiple Choice	
	Matching item	
	Work-sequence	
	Other types approved (Specify)	
Complexity Level	C1	
Date of OP	November 2015	
Related Module	M3	
Time Allocation	1 Minute	

Test Item (Question)	At what stage of induction do we apply cricoid pressure?
Answer Space	
Expected Key (Answer)	Immediately as soon as the patient loses consciousness

Test Item Database		
Written (Theory) Test Item – Short Answer No. 2		
Occupational Title	Anaesthetic Officer	
Qualification Level	L5	
Test Item Type	Short Answer	X
	Multiple Choice	
	Matching item	
	Work-sequence	
	Other types approved (Specify)	
Complexity Level	C2	
Date of OP	November 2015	
Related Module	M3	
Time Allocation	5 Minutes	

Test Item (Question)	Using the Parkland formula, establish the fluid requirements for a 70kg man who has sustained 30% burns, and show how it should be given.
Answer Space	
Expected Key (Answer)	<p>Parkland formula $V=4\text{mls} \times \text{weight} \times \% \text{ of burnt surface area}$ $V=4 \times 30 \times 70 = 8400\text{mls}$</p> <p>$\frac{1}{2} = 4.2\text{L } 1^{\text{st}} \text{ 8hrs}$ $\frac{1}{4} = 2.1\text{L } 2^{\text{nd}} \text{ 8hrs}$ $\frac{1}{4} = 2.1\text{L } 3^{\text{rd}} \text{ 8hrs}$</p>

Test Item Database		
Written (Theory) Test Item – Work Sequence No. 2		
Occupational Title	Anaesthetic Officer	
Qualification Level	L5	
Test Item Type	Short Answer	
	Multiple Choice	
	Matching item	
	Work-sequence	X
	Other types approved (Specify)	
Complexity Level	C2	
Date of OP	November 2015	
Related Module	M3	
Time Allocation	3 minutes	

Test Item	Arrange in chronological order the following steps of rapid sequence induction.
------------------	--

Chronology	Write in work step letter	Work Steps (in incorrect chronological order)	
1		A	Apply cricoid pressure
2		B	Position head to access airway
3		C	Perform laryngoscopy
4		D	Pre-oxygenate
5		E	Check position of tube and cuff
6		F	Give induction drugs
7		G	Secure the tube
8		H	Administer short-acting muscle relaxant
9		I	Pass the tube
10		J	Prepare equipment
11		K	Connect endotracheal tube to machine
12		L	Give atropine

Key (Answer)	1-J; 2-D; 3-L; 4-F; 5-A; 6-H; 7-B; 8-C;9-I;10-K;11-E;12-G
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Duties	Tasks for Each Duty
8. Pursue Professional Development	Participate in training anaesthetic students
	Adapt to new technology
	Conduct on-job training and mentorship
	Participate in educational refresher workshops
	Seek for continuous career development training
	Participate in health events i.e. conferences, exhibitions
	Identify staff for further training
Network with other health agencies and associations	

Additional Information

Required Theory/Knowledge and Skills

- Medical ethics and code of conduct
- Legal regulations for the profession
- Knowledge of applied:
 - o Anatomy
 - o Physiology
 - o Pharmacology
 - o Obstetrics and Gynaecology
 - o Physics and clinical measurements
 - o Clinical chemistry
- Maintaining aseptic technique
- Surgical operations
- Key anaesthetic skills e.g.
 - o Endotracheal intubation
 - o Venous access
 - o Lumbar puncture
 - o Nerve blocks
 - o Cardio-pulmonary resuscitation (CPR)
- Anaesthetic drugs
- Use of anaesthetic machines and equipment
- Methods of administering anaesthesia
- Diseases of interest to anaesthetists
- Lifesaving skills and resuscitation
- Infection prevention and control measures
- Theatre hazards
- Management of emergency cases
- Basic and advanced life support
- Health and safety precautions
- Concepts of social psychology relevant to theatre practice
- Knowledge of record-keeping
- Counselling theory and skills
- Management skills
- Inventory management
- Interpreting medical investigations
- Effective communication skills

Attitudes /Behaviour

- Committed to ethical standards
- Careful, analytical approach to work
- Professional approach to patients
- Hygienically alert
- Sympathetic and supportive
- Able to prioritise.
- Ability to focus for long hours
- Able to learn/work independently
- Able to work as part of a team
- Compassionate and empathetic
- Respectful and confidential
- Consultative and team player
- Accurate on keeping time
- Accountable
- Trustworthy/honest/loyal
- Observant
- Initiative
- Interpersonal relation skills
- Patient and considerate
- Disciplined
- Organised/ orderly
- Welcoming/ approachable
- Prepared to manage emergencies
- Safety conscious
- Able to keep records
- Knowledgeable
- Accurate
- Non-judgmental

Occupational Future Trends

- Need to esteem the uniqueness of the profession
- Standardised curriculum to match regional/International market
- Well stipulated future career path
- Tailor training to societal changes, policies and needs
- Training schools to be equipped with skills labs, laboratory equipment, materials
- Technological advancement to adapt with E-learning
- Regular symposiums
- Regional professional affiliations to be strengthened

Occupational Concerns

- Limited training opportunities for updated medicine and equipment
- Patient anaesthetist ratio approximately 1:100,000
- Lack of career path
- Under staffing
- Lack of public awareness about anaesthetic services
- Insufficient supply of drugs
- Shortage of anaesthetic equipment
- Lack of technical support supervision
- Negligence of some anaesthetists that sometimes end up in death of patients

Equipment/Machines

- | | | |
|-------------------------------|----------------------|-------------------------------|
| 1. Oxygen cylinder | 9. Infusion pumps | 18. Nebuliser |
| 2. Suction machine | 10. Drip Stands | 19. Ultra Sound Scan machine |
| 3. Laryngoscopes | 11. Ambu bags | 20. Fibroptic scope |
| 4. Operation table (tiltable) | 12. Weighing scales | 21. Fluid warmers |
| 5. Patient monitors | 13. Nerve stimulator | 22. Anaesthetic machines |
| 6. Computers | 14. Ventilators | 23. Training models/ manikins |
| 7. Fridges | 15. Glidoscope | |
| 8. Trollies | 16. Defibrillator | |
| | 17. Gas analyser | |

Tools

- | | |
|--------------------|---------------|
| 1. Magills forceps | 4. Bougies |
| 2. Stethoscopes | 5. Head rings |
| 3. Stylets | |

Supplies/Materials

- | | | |
|----------------------------------|--------------------------------|---------------------------------|
| 1. Syringes | 12. Checklists | 23. Connectors |
| 2. Needles | 13. Hot water bottles | 24. Drugs |
| 3. Endotracheal tubes | 14. Linen | 25. Disinfectants |
| 4. Suction tubes | 15. Pillows /sand bags | 26. Theatre garments |
| 5. I.V sets and transfusion sets | 16. Cotton swabs | 27. Airways and Laryngeal masks |
| 6. Cannulas | 17. Gauze swabs | 28. Tongue depressors |
| 7. Gloves | 18. I.V fluids | 29. Epidural sets |
| 8. Anaesthetic forms | 19. Urinary catheters and bags | 30. Sets for nerve blocks |
| 9. Stock cards | 20. Adhesive tapes | |
| 10. Log books | 21. Spinal needles | |
| 11. Inventory forms | 22. Breathing circuits | |

Written Test Items (Samples)

Test Item Database		
Written (Theory) Test Item – Work Sequence No. 1		
Occupational Title	Anaesthetic Officer	
Qualification Level	L5	
Test Item Type	Short Answer	
	Multiple Choice	
	Matching item	
	Work-sequence	X
	Other types approved (Specify)	
Complexity Level	C2	
Date of OP	November 2015	
Related Module	M3	
Time Allocation	5 minutes	

Test Item	Arrange in chronological order the given steps taken in carrying out endotracheal intubation.
------------------	--

Chronology	Write in work step letter	Work Steps (in incorrect chronological order)	
1		A	Administer the drugs
2		B	Pre-oxygenate
3		C	Prepare the equipment and drugs
4		D	Position the patient
5		E	Performing laryngoscopy
6		F	Check for equal bi-lateral air entry
7		G	Cuff the tube
8		H	Insert the endotracheal tube
9		I	Secure the tube
10		J	Connect tube breathing circuit and ventilate patient

Key (Answer)	1-C; 2-D; 3-B; 4-A; 5-E; 6-H; 7-J; 8-G, 9-F;10-I
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#	Assessment Criteria	Scoring Guide	Maximum Score			Result
			Process			
			Fully done	Partly done	Not done	
		Handed over the patient's file to the recovery nurse				
13	Clearing Work Environment	Disposed of the sharps into safety box (sharp container)				
		Disposed of used cotton into the yellow bucket				
		Disposed of covers of the cannular, giving sets and gloves into black bucket				
		Kept plaster and scissors into cupboard				
		Disinfected the trolley and stored it				

ATP-PART II: Module Development for Higher Diploma in Anaesthesia

A curriculum is a “guide/plan for teaching and learning” which provides guidance to teachers and learners. According to CBET, a curriculum is a guide for the organisation and implementation of teaching and learning. It describes what should be taught and learnt, how the teaching and learning should be conducted and resources required for training. In the envisaged system of CBET, curricula are no longer the benchmark against which assessment is conducted. It is rather the OP and the related test items that provide the benchmark for assessment as well as for curriculum development.

Modularisation involves the breaking down of teaching and learning into “units of learning” called modules. Each module is independent and represents a coherent meaningful outcome of learning which enhances employability. The size of a module can vary from 35 to 40 hours, to several weeks or months in some cases. The competence-based training modules are developed basing on the Occupational Profile.

The modular curriculum format allows learners of anaesthetic techniques to acquire job-specific skills and knowledge (i.e. competences) module by module. A single module can be accomplished within a relatively short duration allowing learners to move directly into an entry level job, do further modules and advance to higher levels of training. Modular courses allow more learners to access the training system because training centres as well as companies can accommodate more students in a given period of time.

In principle, and following the philosophy of CBET, the modules can be used as a guide for teaching and learning in a training centre or at the workplace, or a combination of both.

Module Titles

A module title concisely describes a coherent and meaningful outcome of learning directly reflecting an area of responsibility in employment. It is expressed in active voice and indicates the contents of the module. Each module title must be unique and from other module titles.

Learning Working Assignments (LWAs)

The LWAs are similar or equivalent to real assignments which someone who has completed a specific module will be required to perform in the real world of work based on customer requests and requirements. LWAs result in the production of a product or service, or the planning and marketing thereof as is done in the real world of work. They simulate real job projects representing customer value. The training modules implementation and delivery strategy is based on implementation of identified LWAs.

1. LWA's are expressed in performance terms like the module titles. LWAs include the development of human and social competence in the context of the work process
2. LWAs are performance dominated and allow more time for practical repetition and practice and hence result in strong learner activation and motivation.
3. The LWA's are expressed in performance terms like the module titles. LWAs include the development of human and social competence in the context of the work process.
4. LWAs are performance dominated and allow more time for practical repetition and practice, and hence result in strong learner activation and motivation, experiential and discovery learning.
5. LWAs integrate technical craft competence, cognitive (knowledge) competence, and business and general competences. These competences are not developed one after the other but simultaneously.
6. LWAs are based on real-life typical customer needs, expectations and complaints.
7. LWAs result is meaningful products and services.

8. LWAs are carried out by individual trainees or teams of trainees. A team approach is recommended. Trainees work in teams following written instructions.
9. LWAs facilitate work-process-oriented independent learning.
10. LWAs must be complex and challenging and reflect the real complexity which workers face within the world of work.

Notes on Learning-Working Assignments (LWAs):

1. The learning exercises may be repeated until the student acquires targeted competencies.
2. The instructor should deliver relevant theoretical instruction with demonstrations as required to perform each LWA.
3. The order of execution of the LWAs may vary.

Practical Exercises (PEXS)

Each LWA is divided into two or more PEXs which are practical tasks performed by the learner repetitively in order to become competent in what the LWA requires. PEXs result in strong learner activation and motivation, experiential learning and discovery learning. PEXs integrate technical craft competence, cognitive (knowledge) competence, and business and general competences. These competences are developed one after the other but simultaneously. PEXs are therefore performance dominated and allow more time for practical repetitions and practice.

Related Knowledge Required to Perform a Module

The related knowledge in the training modules is an identification of the theory required to perform the LWA and PEX's outlined in the specific module. There is a reduction of irrelevant theory by focusing only on the theory relevant for effective performance of LWA's and PEX's. This reduces costs tremendously.

Tools, Equipment and Materials for Completion of a Module

The tools, equipment and materials listed in each module are those required to carry out the LWA's and PEX's in that module. The list of these provides vital information to the teacher for the preparation of learning and working stations to enable the students to conduct the LWA's and PEX's effectively. Consequently, training institutions are able to mobilise relevant resources for teaching/learning.

Teaching and Learning Methods and Experiences Required

1. Clinical practice of Anaesthesia
2. Case write up – logging cases
3. Small group tutorials
4. Practical demonstrations
5. Simulations and case studies
6. Role plays
7. Lectures and discussions
8. Research projects
9. Pre-operative, post-operative and morbidity conferences

#	Assessment Criteria	Scoring Guide	Maximum Score			
			Process			Result
			Fully done	Partly done	Not done	
		inserted the spinal needle through the introducer with the bevel held along the sagittal plane at an obtuse angle to the lumbar spine, to a depth estimated to reach the intrathecal space				
		Removed the stylet to observe flow of CSF				
		Held the spinal needle with the non-dominant hand: stabilised the needle with three fingers placed on the patient's back-adjusted the depth of the needle to obtain the best flow of CSF				
		Aspirated gently to check if the needle tip was still intrathecal and barbotaged to confirm the position, then slowly injected the spinal anaesthetic				
		Withdrew spinal needle and the introducer and syringe as one, and applied an adhesive tape to the puncture site				
		Lay the patient in the supine position, made the patient comfortable by adjusting the table				
9	Testing the Block	Applied cold solution to the patient's body from lower limbs upwards to the desired level to confirm level of block.				
		Assessed level of the block by asking the patient whether he/she can feel pain, numbness.				
10	Monitoring Patient (9 and 10 can be done interchangeably)	Talked to the patient, for verbal monitoring				
		Immediately regulated monitors to measure the blood pressure, every 2 minutes, for the first 10 minutes, then after every 5 minutes throughout the operation				
		Continuously observed pulse and percentage of oxygen saturation (SpO2) (Responded to change in the trends of the parameters)				
		Recorded parameters on the anaesthetic chart during the process of monitoring				
		At closure of surgery, disconnected and turned off monitors				
11	Transferring Patient	Transferred patient to trolley in supine or lateral position and covered patient with a warm covering, and rolled trolley to recovery room				
		Checked regression of the block				
12	Handing over to Recovery Nurse	Reconnected monitors to the patient				
		Explained procedure to the recovery nurse and gave instructions				

#	Assessment Criteria	Scoring Guide	Maximum Score			
			Process			Result
			Fully done	Partly done	Not done	
	gloving	hands on the tap, and avoided water dropping from hands to the soap dispenser: <ul style="list-style-type: none"> Scrubbed palm to palm Palm to arm (3 inches at the elbow) palm to back finger tips to palm interlace Used soft brush to clean nails Rinsed under running water, from fingers to whole arm Repeated whole process once (whole process done at least for 5 minutes) 				
		Dried hands using sterile hand towel; Picked sterile hand towel with tips of the thumb and the index; Dried each hand using one side of the towel starting from finger tips to the elbow (drying done by patting)				
		Opened glove pack after reading instructions, gloved self on hand after the other first hand holding outside cuff				
		The gloved hand holds inside cuff to glove the other hand				
6	Preparation of Anaesthesia Drugs	Used 2mls syringe for the local infiltration drug Lignocaine 2% 2mls; 20-40mgs. Used the 5mls syringe for drawing the spinal anaesthetic drug; Spinal Bupivacaine 0.5% ranges from 5-20mg; Spinal Lignocaine 5% ranges from 50-100mg. (Determined dose according to type of drug, height of patient, and duration of surgery)				
7	Preparing Site	Cleaned the site from the centre outwards using cotton swabs and anti-septic solution				
		Discarded used swabs and repeated the procedure (ensured a large area is cleaned)				
		Left site to dry, or dried with sterile gauze				
		Draped the patient's back with a sterile towel to gain more freedom of movements of hands in handling the back of the patient				
		Re-identified landmarks to locate point for lumbar puncture				
8	Administration of Spinal Anesthesia	Infiltrated the point of lumbar puncture. Student was positioned behind the patient.				
		Injected lignocaine 2% 1-2mls under the skin with a disposable 25 gauge needle at the proposed puncture site				
		Inserted an introducer in the midline, then				

Overview of Modules for Diploma in Anaesthesia

#	Module Title	Theory Hours	Practical Hours	Total Contact Hours
1	Perform General Practices in Anaesthesia	210	210	420
2	Operate Anaesthetic Equipment and Instruments	180	180	360
3	Administer Anaesthesia	167	333	500
4	Provide Emergency Care	80	160	240
5	Perform Management Tasks	60	60	120
6	Carry out Operational Research	54	106	160
Total of Course Training Hours		751	1049	1800

Note: Average duration is contact time, NOT calendar Duration

It is assumed that 1 day is equivalent to 6 hours of nominal teaching and learning and 1 week is equivalent to 30 hours (5 days) of nominal teaching and learning. Information given on the average duration of training should be understood as a guideline. Quick learners may need less time than indicated or vice versa. At completion of a module, the learner should be able to satisfactorily perform the included learning working assignments, their practical exercises and attached theoretical instructions, as the minimum exposure. Prior to summative assessment by recognised agencies, the users of these Module Guides are encouraged to carefully consider continuous assessment using samples of (or similar) performance (practical) and written test items available in Part III of this ATP for Anaesthetic Officers

Breakdown of Semester Load

The total course duration is 2040 hours, or 68 weeks, across 4 semesters (each with 450 contact hours and 60 hours of assessment time). The tables below break down the contact hours by semester. Note each has an additional 60 hours, or 2 weeks, of assessment time.

Year 1, Semester 1

Code	Course Units	LH	TH	PH	CH	CU
DAN 1101	Communication Skills and Medical Ethics	15	45	45	60	4
DAN 1102	Occupational Health, Infection Prevention & Control, Basic Life Support and Airway Management	30	45	45	75	5
DAN 1103	Applied Anatomy and Physiology I	45	45	45	90	6
DAN 1104	Pharmacology I	30	45	45	75	5
DAN 1105	Computer Application	15	30	60	60	4
Attachment to Practicum Sites						90
Total Hours						450

Year 1, Semester 2

Code	Course Units	LH	TH	PH	CH	CU
DAN 1201	Advanced Airway Management	30	30	60	75	5
DAN 1202	Equipment and Instrumentation	15	45	45	60	4
DAN 1203	Basic Physics and Clinical Measurements	30	45	45	75	5
DAN 1204	Clinical Chemistry	30	45	45	75	5
DAN 1205	Applied Anatomy and Physiology II	45	45	45	90	6
DAN 1206	Pharmacology II	15	45	45	60	4
Attachment to Practicum Sites						15
Total Hours						450

Year 2, Semester 1

Code	Course Units	LH	TH	PH	CH	CU
DAN 2101	Medical Conditions and Anaesthesia Complications	30	45	45	75	5
DAN 2102	Obstetric Anaesthesia	30	45	45	75	5
DAN 2103	Paediatric Anaesthesia	30	45	45	75	5
DAN 2104	Management and Administrative Skills	30	45	45	75	5
DAN 2105	Research Methods	30	45	45	75	5
Attachment to Practicum Sites						75
Total Hours						450

Year 2, Semester 2

Code	Course Units	LH	TH	PH	CH	CU
DAN 2201	Anaesthesia for General Surgery and Gynecology	30	45	45	75	5
DAN 2202	Anaesthesia for Specialized Surgery	30	45	45	75	5
DAN 2203	Pain and Disaster Management	30	45	45	75	5
DAN 2204	Intensive Care Medicine	30	45	45	75	5
DAN 2205	Research Report	30	45	45	75	5
Attachment to Practicum Sites						75
Total Hours						450

Note: The time that students spend attached to practicum sites is usually not reflected in the chart yet it is still study time. The hours allocated and reflected on the chart above for practicum sites may not be exactly the hours spent.

#	Assessment Criteria	Scoring Guide	Maximum Score			Result
			Process			
			Fully done	Partly done	Not done	
		Identified the site for cannulation.				
		Examined hands/feet for the vein				
		Applied tourniquet to make the vein prominent				
		Removed gloves and discarded them on the receiver				
		Decontaminated hands and put on clean gloves				
		Cleaned site with anti-septic				
		Inserted the cannula, observed back flow of blood (In case there is no back flow of blood, the student should stop procedure and repeat the process). Advanced cannula and the stillet slowly, 1 to 2mm along the vein before removing the stillet from the cannula.				
		Secured hub of the cannula at the skin entry point. Applied the adhesive tape to make firm				
		Connected infusion set to the cannula				
		Tied the right size of the cuff to the upper arm, to allow at least two fingers to go through				
		Arrow of the cuff corresponding with the artery, and was positioned at the level of the heart.				
		Switched on pulse oximeter and attached probe to the tip of the finger				
		Attached ECG leads to patient, according to labels				
3	Preparing Sterile Trolley	Took and recorded baseline parameters				
		Disinfected the trolley from top to bottom				
		Covered the trolley with sterile towel				
		Set trolley with spinal needle, 2 syringe with needles, sponge holding forceps, 2 pairs of surgical gloves, receiver and gallipots containing swabs, gauze and antiseptic solution, sterile eye towel				
4	Positioning the Patient	Put patient in sitting up position or lateral with knees flexed				
		Asked the patient to arch the back, facing the umbilicus				
		Gently palpated for the iliac crest. Made a Tuffier's line to locate the site of puncture between L3 and L4 or L4 and 5 (marked site with skin marker)				
5	Preparing self, including	Put on goggles/shields, surgical boots and apron				
		Got antiseptic soap from the soap dispenser - pressed using elbow into the hands (avoided				

Performance Test Items (Samples)

	Test Item Database Performance Test Item No. 1
Occupational Title	Anaesthetic Officer
Qualification Level	L5
Test Item	Perform Spinal Anaesthesia for Inguinal Hernia Repair
Complexity Level	P2
Date of OP	December 2015
Related Module	M3
Required Tools, Materials, and Equipment	Trolley, 2 pairs of surgical gloves, 2 spinal needles gauge 25, 2 sterile gallipots, sterile gauze and cotton swabs, sponge holding forceps, sterile drape, hand towel, 5mls and 2mls syringes with needles, anti-septic solution, skin marker, kidney dish, lignocaine 2%, heavy bupivacaine, ephedrine, phenylephrine, tiltable operating table.
Time Allocation	1 hour
Preferred Venue	Operating Theatre
Remarks for Candidates	<ul style="list-style-type: none"> • Observation of rules and regulations is very crucial. If not done, may lead to penalty • Allowed to ask questions for clarity and understanding of tasks required to perform • Any problems arising during the operation e.g. power, equipment and tools, should immediately be brought to the attention of the Assessor Team • Observe health and safety precautions.
Remarks for Assessors	<ul style="list-style-type: none"> • All required working/protective wears, specified tools and materials have to be available for the test. • Operating room in this assessment is already disinfected. • Scoring guide has to be availed to the invigilator/assessor to award marks. • Assessor has to be around all through to observe the process. • Provide materials and tools (listed above). • Prepare a stand-by generator ready for use. • Organise workplace for performance.

Key Point: A prepared trolley for general anaesthesia

#	Assessment Criteria	Scoring Guide	Maximum Score			Result
			Process			
			Fully done	Partly done	Not done	
1	Preparing for General Anaesthesia	Prepared anaesthetic equipment and drugs				
2	Preparing the Patient	Explained procedure to patient				
		Washed hands and gloved				
		Connected the infusion set to the capped tip of the bottle for Intra Venous (I.V) fluid and hung it on the stand				
		Opened the control regulator to expel air				

MODULES FOR HIGHER DIPLOMA IN ANAESTHESIA

Module 1: Perform General Practices in Anaesthesia

Related qualification	Part of : Uganda Technical Vocational Qualification – Anaesthetic Officer
Qualification level	5
Module learning outcome	By the end of this module, the student should be able to maintain occupational safety practices in theatre, carry out infection control measures as well as apply ethical conduct and effective communication skills suitable for the anaesthetic profession.
Occupational health and safety	Precautions, rules and regulations on occupational health, safety and environmental protection, included in the listed related knowledge should be observed and demonstrated during LWAs and PEXs.
Pre-requisite modules	None
Related Knowledge and Theory	For occupational theory suggested for instruction/ demonstration, the teacher is not limited to the outline below. In any case, related knowledge/ theory may be obtained from various recognised reference materials as appropriate.
Average duration of teaching and learning	420 hours of nominal teaching and learning suggested to include: <ul style="list-style-type: none"> • 210 hours of occupational theory • 210 hours of occupational practice
Minimum required teaching/learning resources	Buckets, funnel bowls, gallipots, kidneys/receivers, cheatles forceps, autoclave, glucometer, oven, waste bins of different colours, fire extinguisher, computer, printer, filters
Minimum required materials and consumables or equivalent	Paper bins, gloves, syringes, Jik, iodine, centrinide, hibitane, Savlon, alcohol, disinfectants, formaldehyde, scavengers, linen, gauze swabs, cotton wool, liquid soap, bar soap, scrub brushes, running water system, AC system/ ventilators, lubricating jelly, surgical spirit, hand sanitizers, referral forms, anaesthetic forms

LWAs	PEXs
LWA 1: Carry out Preventive Measures to Occupational Hazards	PEX 1.1: Use protective gear (apron, gloves, goggles, boots, masks, caps) PEX 1.2: Arrange workplace PEX 1.3: Display safety signs PEX 1.4: Use fire extinguisher PEX 1.5: Use scavenging system PEX 1.6: Demonstrate emergency evacuation drills PEX 1.7: Store equipment and supplies
LWA 2: Carry out Infection Control Measures	PEX 2.1: Carry out hand washing PEX 2.2: Prepare/mix disinfectants PEX 2.3: Decontaminate anaesthetic equipment and other materials PEX 2.4: Clean equipment and other material PEX 2.5: Disinfect anaesthetic equipment and other materials PEX 2.6: Carry out autoclaving PEX 2.7: Carry out chemical sterilization PEX 2.8: Store sterile items PEX 2.9: Carry out gloving and gowning PEX 2.10: Drape patient

	PEX 2.11: Segregate waste
LWA 3: Apply Communication Skills	PEX 3.1: Demonstrate effective communication skills PEX 3.2: Provide counselling to patients and attendants PEX 3.3: Obtain informed consent PEX 3.4: Carry out referral of patients
LWA 4: Use Computer	PEX 4.1: Open and close a computer PEX 4.2: Generate documents using Microsoft Word PEX 4.3: Generate documents using Microsoft Excel PEX 4.4: Generate documents using PowerPoint PEX 4.5: Use website for internet access

#	Title	Components	Semester
1	Introduction	1. Introduction to anaesthesia profession 2. History/ background of anaesthesia	Semester 1
2	Ethics and Etiquette of Anaesthesia	1. Ethics and professional code of conduct 2. Qualities of an anaesthetist 3. Professional attitude for anaesthetists 4. Rights of patients and anaesthetists.	Semester 1
3	Occupational Health	1. Definitions and background 2. Laws and policies 3. Maintaining a safe workplace 4. Hazards and their prevention 5. Hospital health hazards	Semester 1
4	Infection Prevention and Control	1. Protective wear 2. Hand washing 3. Disinfectants 4. Sterilization and sterilizers 5. Waste management	Semester 1
5	Communication Skills	1. Types of communication 2. Communication skills knowledge and attitude 3. Counselling	Semester 1
6	Applied Anatomy I	1. Introduction to anatomy 2. Anatomy of the cell 3. Respiratory system 4. Cardiovascular system	Semester 1
7	Applied Anatomy II	1. Nervous system 2. Musculoskeletal system 3. Endocrine system 4. Renal system	Semester 2
8	Applied Physiology I	1. Introduction of physiology 2. Overview of cellular physiology 3. Cardiovascular system 4. Respiratory system	Semester 1
9	Applied Physiology II	1. Nervous system 2. Renal system 3. Endocrine system 4. Muscular skeletal system <i>(Incorporate physiological changes due to anaesthesia in each system)</i>	Semester 2

construction enterprises. They comprise a test assignment for candidates and assessment criteria and/or scoring guides for assessors' use.

Written Test Items (WTI) for written testing of occupational theory, (knowledge) are presented in different forms, as well as practical test items:

- Short answer test items**
 This type of question is an open ended question within specific requirements or objectives. A candidate is tasked to presented information in his/her style. All possible answers to the question must be identified for examiner's use in checking results. Short answer questions are useful to test problem-solving and innovations
- Multiple choice test items**
 This type of question presents options for a candidate to select a correct answer. The options must contain only one correct answer while the others are plausible distracters within the same sphere of the test item. This type of question checks the confidence of the candidate in making decisions in occupational practice.
- Work sequence test items**
 This type of question presents a list of work steps for a candidate to arrange in acceptable work sequence. The list must not contain interchangeable steps for assessment purposes. These questions test the candidate's competence in work processes.
- Essays**
- Performance test items**
 These are practical test items intended to test actual skills mainly focused on problem-solving and work processes. Performance test items were developed in the contexts of work steps, cause-effect relationships as well as arrays of common defects/failures in the occupation. Symptoms and remedies in real life situations are included in performance test items. The scoring guide for practical tests is clustered around process steps and/or an outcome (product) of each step as appropriate
- Descriptive item**
 This type of question presents a work scenario where a candidate is required explain procedures and processes in essay form. Descriptive items are mainly intended to test one's ability to explain concepts as they unveil in the processes of tasks done at work. These types of questions also minimise guess work in occupational practice.

These WTIs herein focus on functional understanding as well as troubleshooting typically synonymous with the world of work. The following are samples of test items for assessing both performance (practical) and occupational knowledge (theory) for Higher Diploma in Anaesthesia.

No.	Type of Test Item	Number Included
1	Performance (Practical) - Test Items	1
2	Written (Theory) - Work Sequence	2
3	Written (Theory) - Short Answer	4
4	Written (Theory) - Multiple Choice	4
5	Written (Theory) - Matching Tests	4

ATP-PART III: ASSESSMENT INSTRUMENTS FOR HIGHER DIPLOMA IN ANAESTHESIA

Assessment of occupational competence is the procedure by which evidence is gathered and judged to decide if an individual (candidate) has met the stipulated assessment standards. Assessment of occupational competence should comprise both practical (performance) testing and written (theory/knowledge) testing.

Composition of assessment /test papers will always require good choices of different types of written test items in order to ensure the assessment of relevant occupational knowledge required of candidates to exhibit competence.

The test items contained in the Test Item Bank may be used for continuous /formative assessment during the process of teaching and learning as well as for summative assessment of candidates who have acquired their competences non-formally or informally. According to CBET the main purpose of occupational assessment is to:

1. Measure occupational competence of individuals.
2. Support occupational learning.

The competence-based assessment covers the cognitive domain including remembering (memory), functional understanding, and problem-solving in increasing order of complexity as below:

1. **Remembering:** This requires the person to recognise or recall previously learned information and knowledge such as fact, date, rule, symbol, standard, event, method, label, approach, name, terminology, formula, definition and procedures.
2. **Functional understanding:** This requires that an individual applies knowledge to practical situations.
The person shall summarise, interpret, translate knowledge and apply it to new situations.
3. **Problem-solving:** This requires analysis, synthesis and evaluation of a process or parts of a product. The individual is required to find solutions and develop methods based on a certain situation, purpose, need or problem

Features of Good Quality Assessment Instruments

1. **Validity** - Actually measures what it is supposed to measure.
2. **Objectivity** - Avoids subjective judgments, must be fair to the examinees and there is clear agreement on the right /best answer to a question.
3. **Reliability** - Carrying out the test/measurement accurately and consistently leads to the same assessment results being achieved at different times.
4. **Efficiency** - Test is feasible and desired results are achieved in a cost efficient manner without wasting resources such as human effort, time and money.
5. **Transparency** – Information rules and practices accessible and understandable by all interested people. Clear procedures for decision-making are established.
6. **Differentiation** - Differentiates between successful and unsuccessful candidates i.e. either competent or not competent.
7. **Comprehensiveness** - Covers all objectives and criteria for completeness over a broad scope of the occupation.

Types of Assessment Instruments Developed

Performance (Practical) Test Items (PTI) are closely related to typical work situations in Ugandan business/

10	Clinical Chemistry	<ol style="list-style-type: none"> 1. Body fluid compartments 2. Composition of body fluids 3. Acid-base balance 4. Selected lab tests; CBC, liver function test (LFT), renal function test (RFT), electrolytes and urea, urinalysis, coagulation test, blood sugar, thyroid function tests. 5. Significance of changes in blood chemistry due to disease 	Semester 2
11	Computer Application	<ol style="list-style-type: none"> 1. Introduction to Computers 	Semester 1

Module 2: Operate Anaesthetic Equipment and Instruments

Related qualification	Part of : Uganda Technical Vocational Qualification – Anaesthetic Officer
Qualification level	5
Module learning outcome	By the end of this module, the student should be able to assemble and operate anaesthetic equipment, carry out maintenance services including minor repairs for special equipment used in anaesthesia.
Occupational health and safety	Precautions, rules and regulations on occupational health, safety and environmental protection, included in the listed related knowledge should be observed and demonstrated during LWAs and PEXs.
Pre-requisite modules	M1: Perform General Practices in Anaesthesia
Related Knowledge and Theory	For occupational theory suggested for instruction/ demonstration, the teacher is not limited to the outline below. In any case, related knowledge/ theory may be obtained from various recognised reference materials as appropriate.
Average duration of teaching and learning	360 hours of nominal teaching and learning suggested to include: <ul style="list-style-type: none"> • 180 hours of occupational theory • 180 hours of occupational practice
Minimum Required Tools/Equipment/ Implements or Equivalent	Anaesthetic machines: Laryngoscope, Stethoscope, Epstein Mackintosh Oxford (EMO), Oxford Miniature Vapouriser (OMV), Boyles' machine, oxygen concentrator, oxygen cylinder, monitors (pulse oximeter, blood pressure (BP) machine, electro cardiogram (ECG) machine, thermometer, capnography glucometer, infusion pump and accessories, blood gas analyser, glide scope, ambubag and masks, tool kit, defibrillators, trolleys, operating tables, syringes, suction machine, infusion sets, Nebuliser, nerve stimulator, fibre optic machine, introducers
Minimum required teaching/learning resources	Heavy duty gloves, gauze, cotton, disposable gloves, naso-gastric-tubes, suction catheters, oxygen catheters, lubricants and oils, safety boxes, theatre boots and shoes, face masks and caps, vinegar, batteries, mops/ wipes, cannulas, central line set, ECG electrodes, spinal/epidural sets, sets for nerve blocks, endotracheal tube, laryngeal mask airway, tracheostomy tubes, oral/ nasal pharyngeal airway

LWAs	PEXs
LWA 1: Operate Equipment and Instruments used in Anaesthesia	PEX 1.1: Assemble and operate a draw-over system PEX 1.2: Assemble and operate a continuous-flow system PEX 1.3: Assemble and operate suction machine PEX 1.4: Assemble and operate oxygen concentrator and cylinder PEX 1.5: Assemble and operate monitoring machines PEX 1.6: Assemble and operate infusion pump PEX 1.7: Operate blood gas analyser PEX 1.8: Assemble and operate nebulizer PEX 1.9: Assemble and operate laryngoscope PEX 1.10: Assemble and operate glide scope PEX 1.11: Assemble and operate ventilators

PEX 1.5: Design research methodology to be used
PEX 1.6: Design work plan
PEX 1.7: Identify resources
PEX 1.8: Draw research budget

LWA 2: Carry Out Data Collection	PEX 2.1: Identify catchment area and type of respondents PEX 2.2: Identify data collection techniques PEX 2.3: Design data collection tools/instruments PEX 2.4: Carry out pre-testing of tools PEX 2.5: Collect data
LWA 3: Carry Out Data Analysis	PEX 3.1: Sort raw data PEX 3.2: Carry out data entry PEX 3.3: Clean data PEX 3.4: Use data analysis packages
LWA 4: Generate Research Report	PEX 4.1: Document research findings PEX 4.2: Draft research report
LWA 5: Disseminate Research Information	PEX 5.1: Prepare presentations for research results PEX 5.2: Present research report for defense

Module 6: Perform Operational Research

Related qualification	Part of : Uganda Technical Vocational Qualification – Anaesthetic Officer
Qualification level	5
Occupational health and safety	Precautions, rules and regulations on occupational health, safety and environmental protection, included in the listed related knowledge should be observed and demonstrated during LWAs and PEXs.
Pre-requisite modules	M1: Perform General Practices in Anaesthesia
Related Knowledge and Theory	For occupational theory suggested for instruction/ demonstration, the teacher is not limited to the outline below. In any case, related knowledge/ theory may be obtained from various recognised reference materials as appropriate: <ul style="list-style-type: none"> A. Introduction to Applied Research <ul style="list-style-type: none"> 1. Principles of research 2. Importance of research methods 3. Ethical issues 4. Types of research 5. Identifying a research problem 6. Concept paper B. Research Proposal <ul style="list-style-type: none"> 1. Research topic 2. Research question 3. Objectives 4. Literature Review 5. Methodology C. Conducting Research <ul style="list-style-type: none"> 1. Data collection 2. Data analysis 3. Presentation of results 4. Discussion of results 5. Conclusions and recommendations 6. Dissemination of findings
Average duration of teaching and learning	160 hours of nominal teaching and learning suggested to include: <ul style="list-style-type: none"> ☒ 54 hours of occupational theory ☒ 106 hours of occupational practice
Minimum required teaching/learning resources	Literature e.g. books, journals etc, facilitators/teachers, computers, printers, projectors, flip chart boards/ blackboards, chairs, tables, classroom/ training space, calculator
Minimum required materials & consumables or equivalent	Flip charts, markers, chalk/pens, printing paper, books
LWAs	PEXs
LWA 1: Write Research Proposal	PEX 1.1: Identify research problem PEX 1.2: Carry out problem analysis PEX 1.3: Formulate research objectives PEX 1.4: Carry out literature review

	PEX 1.12: Assemble and operate defibrillator PEX 1.13: Operate nerve stimulator PEX 1.14: Operate fibre optic machine PEX 1.15: Assemble and use spinal/epidural sets PEX 1.16: Assemble and use sets for nerve blocks <i>(Assembling in this context is limited to fixing accessories in order to use the given equipment)</i>
LWA 2: Maintain Anaesthetic Equipment and Instruments	PEX 2.1: Clean equipment and instruments PEX 2.2: Test equipment and instruments PEX 2.3: Lubricate instruments and equipment PEX 2.4: Carry out minor repairs on equipment PEX 2.5: Store equipment and instruments PEX 2.6: Replace worn out parts

Criteria for managing equipment including steps for servicing, and liaising with repair management:

A) Equipment and Instrumentation

1. Anaesthesia machines (Draw-over - Epstein Mackintosh Oxford (EMO), Oxford Miniature Vapouriser (OMV) and Continous - flow - Boyles machine)
2. Anaesthesia breathing circuits and valves
3. Gases used in anaesthesia, (gas supply in oxygen cylinder and concentrators)
4. Monitoring machines (Pulse - oximeter, blood pressure machine, nerve stimulator, capnograph, electrocardiogram, glucometer, stethoscope)
5. Other equipment [ambubag, face masks (classical, prosceal, intubating, reinforced, disposable), oro-pharyngeal airway, introducer, magill's forceps, suction machine and tubes, endotracheal tubes, laryngoscope and blades, laryngeal mask airway (LMA), naso-pharyngeal airway, infusion pump, bougies, fibre-optic laryngoscope, tracheostomy tubes, epidural kits, patient warming blanket, defibrillator, emergency drug kit/cart, operating table, oxygen masks, manikins [for adults and paediatric]

B) Basic Physics and Clinical Measurements

1. The gas laws and their application in Anaesthesia
2. Volume and flow measurement
3. Diffusion
4. Osmosis
5. Thermometry and physical principle
6. Solubility
7. Vapourisers
8. The Mapleson classification of anaesthesia circuits
9. SI Units and other units
10. Heat
11. Humidity
12. Thermometry
13. Capnography
14. Electrical hazards to the anaesthetized patient
15. Biological electrical potentials
16. Measurement of pressure
17. Mass spectrometry

Module 3: Administer Anaesthesia

Related qualification	Part of : Uganda Technical Vocational Qualification – Anaesthetic Officer
Qualification level	5
Module learning outcome	By the end of this module, the student should be able to plan for anaesthesia, prepare patient, induce, maintain and reverse anaesthesia, as well as offer post anaesthetic care to patients.
Occupational health and safety	Precautions, rules and regulations on occupational health, safety and environmental protection, included in the listed related knowledge should be observed and demonstrated during LWAs and PExs.
Pre-requisite modules	M1: Perform General Practices in Anaesthesia
Related Knowledge and Theory	For occupational theory suggested for instruction/ demonstration, the teacher is not limited to the outline below. In any case, related knowledge/ theory may be obtained from various recognised reference materials as appropriate.
Average duration of teaching and learning	500 hours of nominal teaching and learning suggested to include: <ul style="list-style-type: none"> • 167 hours of occupational theory • 333 hours of occupational practice
Minimum required teaching/learning resources	Anaesthetic machines (Boyle’s), suction machine, oxygen concentrator, oxygen cylinders patient monitors, defibrillator, nebulizer, Laryngoscope, Guedel airway, face mask, laryngeal mask airway, bougies, introducers/stilets, glidescope, suction tubings, magils forceps, finger probes, tourniquets, gallipots, kidney dishes
Minimum required materials & consumables or equivalent	Endotracheal tubes, suction catheters, syringes needles, Savlon, iodine, alcohol pads, strappings, drapes, oxygen mask, block needles, epidural kit, spinal kit, peripheral nerve block stimulator.

LWAs	PEXs
LWA 1: Prepare Patient for Anaesthesia	PEX 1.1: Take patient’s history PEX 1.2: Examine patient PEX 1.3: Interpret laboratory results, e.g. CBC PEX 1.4: Interpret Electrocardiogram (ECG) PEX 1.5: Interpret x-ray films PEX 1.6: Insert I.V line PEX 1.7: Test for glucose PEX 1.8: Demonstrate use of surgical checklist
LWA 2: Prepare Equipment, Instruments and Drugs for Anaesthesia	PEX 2.1: Set anaesthetic machine(s) PEX 2.2: Set anaesthetic trolley PEX 2.3: Prepare drugs PEX 2.4: Connect and set monitors PEX 2.5: Check operation table PEX 2.6: Set and test suction machine
LWA 3: Position Patients for Anaesthesia	PEX 3.1: Put patient in supine position PEX 3.2: Put patient in lateral position PEX 3.3: Put patient in sitting position

	PEX 1.6: Draft operation work schedule PEX 1.7: Draft a basic budget, work plan and accountability tools
LWA 2: Manage Work Teams	PEX 2.1: Practise interpersonal relationships PEX 2.2: Supervise subordinates PEX 2.3: Assign duties PEX 2.4: Maintain staff welfare (ensure job profiles, payments, leave are in place) PEX 2.5: Evaluate staff/team performance PEX 2.6: Carry out disciplinary procedures
LWA 3: Perform Administrative Tasks	PEX 3.1: Generate reporting system and tools PEX 3.2: Fill monitoring charts PEX 3.3: Carry out anaesthetic audit PEX 3.4: Requisition for equipment, tools and supplies PEX 3.6: Conduct meetings PEX 3.7: Keep medical and administrative records
LWA 4: Perform Financial Management Tasks	PEX 4.1: Manage inventory PEX 4.2: Prepare and manage budgets PEX 4.3: Prepare vouchers PEX 4.4: Maintain cash books PEX 4.5: Perform procurement tasks PEX 5.6: Extract quality control measures

	<p>G. Health information management system</p> <ol style="list-style-type: none"> 1. Concept of HIMS 2. Types of HIMS records 3. Procedures of maintaining HIMS <p>H. Knowledge of Disaster Management</p> <ol style="list-style-type: none"> 4. The nature of disaster 5. Disaster preparedness 6. Disaster prevention and mitigation 7. Disaster relief operation 8. Disaster planning for local communities <p>I. Basic Entrepreneurship Skills</p> <ol style="list-style-type: none"> 1. Foundations of entrepreneurship 2. Setting up a business (market survey, costing, taxation, customer care, branding, marketing, quality service delivery) 3. Business plan 4. Entrepreneurship resources 5. Entrepreneurship and social responsibility 6. Success and failure 7. Record keeping 8. Business sustainability and growth 9. Monitoring and evaluation of a business <p>J. Health Service Organisation in Uganda</p> <ol style="list-style-type: none"> 1. Levels of health service delivery 2. Decentralisation of health services 3. District service commission 4. Health financing 5. District pay rolls 6. Supply chain and procurement 7. Public procurement and disposal of public assets
Average duration of teaching and learning	120 hours of nominal teaching and learning suggested to include: 60 hours of occupational theory 60 hours of occupational practice
Minimum required teaching/learning resources	Literature e.g. books, journals, etc., facilitators/teachers, computers, printers, projectors, flip chart, boards/ blackboards, chairs, tables, classroom/ training space, calculator, bin cards, samples of financial reports, appointment letters, appraisal forms, duty roasters, files, budgets, cabins
Minimum required materials & consumables or equivalent	Flip charts, markers, chalk/pens, printing paper, books, e-learning books
LWAs	PEXs
LWA 1: Draft Management Tools	<p>PEX 1.1: Draft data collection forms/ tools</p> <p>PEX 1.2: Draft a duty roaster</p> <p>PEX 1.3: Draft anaesthetic chart</p> <p>PEX 1.4: Draft requisition forms</p> <p>PEX1.5: Draft safety signs, guidelines and regulations for theatre</p>

		PEX 3.4: Put patient in lithotomy position	
LWA 4: Induce General Anaesthesia		<p>PEX 4.1: Attach monitors to the patient</p> <p>PEX 4.2: Pre-oxygenate patient</p> <p>PEX 4.3: Give induction drug/medicine</p> <p>PEX 4.4: Apply cricoid pressure in emergency/full stomach</p> <p>PEX 4.5: Administer muscle relaxant</p> <p>PEX 4.6: Ventilate patient</p> <p>PEX 4.7: Perform Laryngoscopy</p> <p>PEX 4.8: Insert endotracheal tube, confirm tube position, cuff and secure tube</p> <p>PEX 4.9: Connect patient to anaesthetic machine</p> <p>PEX 4.10: Administer G.A using Laryngeal mask/face mask</p>	
LWA 5: Maintain and Reverse Anaesthesia		<p>PEX 5.1: Position patient in lateral position</p> <p>PEX 5.2: Position patient in Trendelenburg position</p> <p>PEX 5.3: Position patient in reverse Trendelenburg position</p> <p>PEX 5.4: Position patient in lithotomy position</p> <p>PEX 5.5: Position patient in supine position</p> <p>PEX 5.6: Position patient in prone position</p> <p>PEX 5.7: Position patient in semi - prone position</p> <p>PEX 5.8: Maintain anaesthesia by inhalation agent</p> <p>PEX5.9: Maintain anaesthesia by total intravenous agent</p> <p>PEX 5.10: Reverse anaesthesia</p> <p>PEX 5.11: Extubate patient</p>	
LWA 6: Perform Loco-Regional Anaesthesia		<p>PEX 6.1: Identify landmarks</p> <p>PEX 6.2: Scrub self</p> <p>PEX 6.3: Prepare site for administration of anaesthesia</p> <p>PEX 6.4: Administer spinal anaesthesia</p> <p>PEX 6.5: Administer and maintain epidural anaesthesia</p> <p>PEX 6.6: Perform peripheral nerve blocks</p> <p>PEX 6.7: Test for level of the block</p>	
LWA 7: Provide Post Anaesthetic Care		<p>PEX 7.1: Transfer patient to recovery room</p> <p>PEX 7.2: Monitor patient (vitals)</p> <p>PEX 7.3: Administer and maintain analgesia</p> <p>PEX 7.4: Manage airway</p> <p>PEX 7.4: Handover patient</p>	
#	Title	Components	Semester
1	Medical and Surgical Conditions and their Effect on Anaesthesia	<ol style="list-style-type: none"> 1. Infectious diseases <ul style="list-style-type: none"> Malaria Sepsis and septic shock HIV and AIDS Hepatitis B 2. Cardiovascular system <ul style="list-style-type: none"> Hypertension Hypotension Cardiac arrhythmias Congenital heart diseases Valvular heart diseases Pulmonary hypertension 	Year 1 Semester 2

		<ul style="list-style-type: none"> • Heart failure <p>3. Respiratory system</p> <ul style="list-style-type: none"> • Pneumonia • Tuberculosis • Empyema • Asthma • COPD • Respiratory failure • Pulmonary edema • Pulmonary embolism • Emphysema • Pleural effusion • Lung abscess • Chest trauma • Acute upper respiratory tract infection <p>4. Genito- urinary system</p> <ul style="list-style-type: none"> • Urolithiasis • Kidney failure • Nephritis <p>5. Central nervous system</p> <ul style="list-style-type: none"> • Traumatic brain injury • Spina bifida • Hydrocephalous • Traumatic spine injury <p>6. Haematology</p> <ul style="list-style-type: none"> • Anaemia • Sickle cell disease • Coagulation disorder • Deep vein thrombosis <p>7. Gastro-intestinal system</p> <ul style="list-style-type: none"> • Alcoholism • Malnutrition • Liver disease • Biliary disease • Pyloric stenosis • Intestinal obstruction <p>8. Metabolism</p> <ul style="list-style-type: none"> • Diabetes mellitus • Hyperthyroidism • Cushing's syndrome • Pheochromocytoma <p>9. Others</p> <ul style="list-style-type: none"> • Morbid obesity • Multiple injured patient • Cancers • Burns 	
2	Applied Pharmacology I	<p>1. Basic principles of pharmacology</p> <p>2. Pharmacokinetics and pharmacodynamics</p>	Year 1 Semester 1

Module 5: Perform Management Tasks

Related qualification	Part of : Uganda Technical Vocational Qualification – Anaesthetic Officer
Qualification level	5
Module learning outcome	By the end of this module, the student should be able to execute administrative tasks, manage a working team as well as generate management tools..
Occupational health and safety	Precautions, rules and regulations on occupational health, safety and environmental protection, included in the listed related knowledge should be observed and demonstrated during LWAs and PEXs.
Pre-requisite modules	M1: Perform General Practices in Anaesthesia
Related Knowledge and Theory	<p>For occupational theory suggested for instruction/ demonstration, the teacher is not limited to the outline below. In any case, related knowledge/ theory may be obtained from various recognised reference materials as appropriate:</p> <p>A. Leadership</p> <ol style="list-style-type: none"> 1. Leadership skills 2. Qualities of a good leader 3. Difference between leadership and management <p>B. Principles of Management</p> <ol style="list-style-type: none"> 1. Characteristics of a good manager 2. Understanding job descriptions, job analysis & responsibilities 3. Planning 4. Delegation 5. Monitoring and evaluation 6. Total quality control measures/ management <p>C. Human Resource Management</p> <ol style="list-style-type: none"> 1. Staffing and staff development 2. Staff motivation 3. Appraisal 4. Team building and team development 5. Disciplinary standard and decisions 6. Conflict resolution (harassment and discrimination) <p>D. Financial Management</p> <ol style="list-style-type: none"> 1. Basics of health economics 2. Sources of funding 3. Budgeting 4. Accountability 5. Financial records 6. Management of petty cash <p>E. Transport Management - Availability of transport</p> <p>F. Management of Assets, equipment, and supplies</p> <ol style="list-style-type: none"> 1. Inventory and stock control 2. Requisition procedures 3. Procurement 4. Rational use of supplies 5. Knowledge of health centre asset maintenance 6. Ground maintenance

Average duration of teaching and learning	500 hours of nominal teaching and learning suggested to include: <ul style="list-style-type: none"> • 167 hours of occupational theory • 333 hours of occupational practice
Minimum required materials & consumables or equivalent	Gloves, adhesive tapes, intravenous cannula, oxygen tubings, anti-septic solution, gauze and cotton swabs, bandages, linens/drapes, syringes and needles, suction catheters, naso-gastric tubes, giving sets (intravenous giving set) , protective gear(e.g. face masks, gowns, aprons), stationery (e.g. forms/charts/pens) medicines (drugs); emergency drugs, fluids, oxygen, central venous catheters.

LWAs	PEXs
LWA 1: Perform Basic Life Support	PEX 1.1: Call for help PEX 1.2: Clear airway PEX 1.3: Check for breathing PEX 1.4: Feel the pulse PEX 1.5: Check for deformities/disabilities PEX 1.6: Expose the patient PEX 1.7: Perform cardiopulmonary resuscitation (CPR)
LWA: 2 Perform Advanced Life Support	PEX 2.1: Prepare emergency kit/cart PEX 2.2: Ventilate using ambubag PEX 2.3: Intubate patient PEX 2.4: Position patient for transportation PEX 2.5: Ventilate patient in intensive care unit PEX 2.6: Perform central venous cannulation PEX 2.7: Perform cricothyrotomy PEX 2.8: Defibrillate the heart

		3. Premedicants 4. Intravenous anaesthetics 5. Neuromuscular blocking agents 6. Inhalation anaesthetics 7. Drugs used to supplement anaesthesia. (Opioids, non- opioids)	
3	Applied Pharmacology II	1. Pharmacology of cholinergic agents: <ul style="list-style-type: none"> • Neostigmine • Physostigmine 2. Drugs acting on the autonomic nervous system <ul style="list-style-type: none"> • Agonists • Antagonists • Pharmacokinetics, • Pharmacodynamics • Cardiovascular effects • Effects on non-vascular smooth muscle • Metabolic effects • Contraindications 3. Pharmacology of local anaesthesia <ul style="list-style-type: none"> • Classifications • Pharmacokinetics, pharmacodynamics and mode of action • Indications, dosage and side effects • Toxicity of local anaesthesia 4. Pharmacology of diuretics <ul style="list-style-type: none"> • Classification of diuretics • Mode and site of action 5. Drugs affecting bronchial tree calibre <ul style="list-style-type: none"> • Classification (bronchodilators, broncho constrictors) • Pharmacokinetics, pharmacodynamics • Indications, dosage and side effects. • Contraindications 6. Cardiovascular drugs and their classifications <ul style="list-style-type: none"> • Adrenergic blocking agents • Vasodilators 7. Miscellaneous drugs and their classifications <ul style="list-style-type: none"> • Hormones 8. Anticoagulants and their antagonists	Year 1 Semester 2
4	Principles of Anaesthesia	1. Pre-operative evaluation of patients for anaesthesia and surgery 2. Pre-operative preparation of patient 3. Immediate pre-anaesthesia preparation 4. Conduct of anaesthesia 5. Complications associated with anaesthesia 6. Airway management 7. Blood and fluids used in anaesthesia	Year 2 Semester 1

		8. Recovery Post-anesthetic care a. Transfer of patient to recovery room b. Monitoring of patient in recovery room (vitals, check level of consciousness, airway, level of block, scoring of pain, check for bleeding, urine output, check cyanosis, check cannulation site, check drainage) c. Investigations required d. Communication during handover e. Reporting and handing over patient	
5	Obstetric Anaesthesia	1. Introduction to obstetric anaesthesia 2. Physiological changes in pregnancy 3. Techniques of obstetric anaesthesia 4. Anaesthetic complications in obstetrics 5. Anaesthesia for complicated obstetric conditions 6. Anaesthesia for obstetric emergencies 7. Anaesthesia for non-obstetric surgery 8. Neonatal resuscitation	Year 2 Semester 1
6	Paediatric Anaesthesia	1. Special physiological, anatomical, psychological anaesthetic considerations 2. Anaesthesia for elective paediatric surgery 3. Induction techniques 4. Intubation 5. Drug and dosages 6. Fluid management 7. General principles in anaesthesia for paediatric emergencies 8. Common paediatric emergencies 9. Pain management 10. Congenital abnormalities in paediatrics	
7	Anaesthesia for General Surgery and Gynaecology	1. General surgical emergencies 2. Elective general surgical conditions 3. Gynaecological emergencies 4. Elective gynaecological conditions 5. Laparoscopic surgery	Year 2 Semester 2
8	Anaesthesia for Specialized Surgery	1. Ophthalmic anaesthesia 2. E.N.T 3. Neurosurgery 4. Urology 5. Oral surgery 6. Orthopaedic 7. Trauma 8. Cardio - thoracic 9. Electroconvulsive therapy & radiological investigations 10. Day care and dental surgery 11. Plastic surgery	Year 2 Semester 2

Module 4: Provide Emergency and Critical Care

Related qualification	Part of : Uganda Technical Vocational Qualification – Anaesthetic Officer
Qualification level	5
Module learning outcome	By the end of this module, the student should be able to perform basic life support as well as advanced life support. He/she will be able to offer emergency care outside theatre and care for patients in ICU.
Occupational health and safety	Precautions, rules and regulations on occupational health, safety and environmental protection, included in the listed related knowledge should be observed and demonstrated during LWAs and PEXs.
Pre-requisite modules	M1: Perform General Practices in Anaesthesia
Related Knowledge and Theory	<p>For occupational theory suggested for instruction/ demonstration, the teacher is not limited to the outline below. In any case, related knowledge/ theory may be obtained from various recognised reference materials as appropriate:</p> <p>A. Critical Care Medicine</p> <ol style="list-style-type: none"> 1. Definition of Critical Care Medicine 2. Background of critical care 3. Organisation and location of ICU 4. Levels of intensive care 5. Classification of patients that need critical care 6. Criteria for admission 7. Methods of drug administration 8. Criteria for discharge 9. Management of critically ill patients: <ul style="list-style-type: none"> Nutrition Ventilation Nursing care Common conditions Ethical issues Psycho-social care Spiritual care <p>B. Pain Management</p> <ol style="list-style-type: none"> 1. Definition 2. Types of pain 3. Physiology of pain 4. Causes of pain 5. Pain score 6. Effects of pain 7. Techniques of pain relief 8. Organisation of acute pain services <p>C. Disaster Management</p> <ol style="list-style-type: none"> 1. Definition 2. Types of disaster 3. Trauma survey and concept of triage 4. The role of team work 5. Emergencies and prioritisation of treatment