RAK Medical And Health Sciences University

DEPARTMENT OF BIOCHEMISTRY

STUDENT NAME:
ID NUMBER:
COURSE NUMBER:

PRACTICAL MANUAL FOR UNDERGRADUATE STUDENTS

A SYSTEMIC APPROACH

COLLEGE OF NURSING

DEPARTMENT OF BIOCHEMISTRY

COURSE NUMBER: NHB 7203 **YEAR 2023-2024**

Name of the student:

I.D Number:

The student has successfully completed skill training in Biochemistry Laboratory for the course number NHB 203 during the period of September 2023 to January 2024.

S.NO	Marks Assigned for	Marks Obtained
1.	Completion of Manual	
2.	Work Signed by the Faculty	
3.	Work Completed on Time	
4.	Systematic Record Maintenance	
5.	Able to Answer Questions	
	TOTAL	**/5**

Signature of the chairperson:
Dated:

Ras Al Khaimah Medical and Health Sciences University

Department of Biochemistry

Message from the Chairperson

Dear Students,

Practical session in this course are designed to be able to identify the different macromolecules in our body such as carbohydrate, protein and to be able to differentiate between the different classes of these molecules.
The objective of quantitative estimations of certain biomolecules like proteins and cholesterol will enable you to discriminate normal and abnormal values of these molecules, and to apply these knowledge for diagnosis and prognosis of different disease.
In order to reach our objective you must follow are the lab rules during your work.

Chairperson
Dr Neveen

Ras Al Khaimah Medical and Health Sciences University

Department of Biochemistry

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INTRODUCTION

FACTS ABOUT SKILL TRAINNING:

- Skills are more than performing tasks.
- It will enable the students to apply the theoretical knowledge into gaining hands on experience.
- Learning by doing increases the memory.
- Students' involvement is better.
- It makes the learning easy and with some fun too.
- Carefully designed skill training will enable the students to get involved in higher order of learning as well.
- The three components of learning namely k*nowledge, skills and attitude* can be incorporated in the Skills training
- It enables to build good rapport between teacher and student
- Individual interaction with the student is possible.

Orientation to Skill training

Learning a skill-involves

- Gaining the knowledge about the skill
- Realize the relationship to the subject matter, and its usefulness or application in future practice
- Gain the basic steps of the procedure/ skill
- Observe the demonstration carefully
- Practice till you achieve the automatism / competency

Modes of learning skills

- Simulated patients
- Videos, mannequins
- Computers and
- Virtual reality technology is available to you
- Ensure that you learn skills in a safe environment, receive feedback, and reach a certain level of competence before you use the skills on patients.

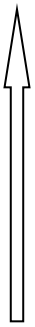
Be familiar with the four-step approach to learning any skill

- *Demonstration.* Trainer demonstrates at normal speed, without commentary.
- *Deconstruction.* Trainer demonstrates while describing steps.
- *Comprehension.* Trainer demonstrates while learner describes steps.
- *Performance.* Learner demonstrates while learner describes steps.

Gaining mastery in a skill

Skill learning involves three stages as shown below. In the Bloom's taxonomy of learning objectives, skills learning have been described to be involved with the psychomotor domain.
The first stage is **imitation,** where you carefully observe the demonstration of a procedure and try to imitate.
It is mandatory that your trainer is by your side.
The next stage is **Effective control,** where to some extent you can manage to perform the skill by yourself. But, keep somebody by your side (peer or facilitator) to give you feedback.
Third stage is the-**Automatism** and you can perform it by yourself to the expected competency level. Try to achieve the Automatism level.

Psychomotor



Automatism

Effective control

Imitation

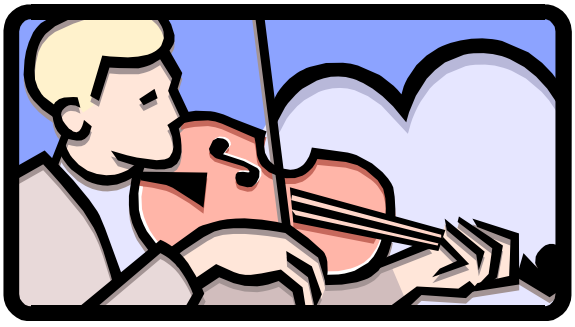
How to achieve automatism level in skill learning?

- With this four-step approach, ensure that you are provided with the *manageable steps*, of the process
- *Vocalize* the steps till you are thorough
- *Imitate* the process with the steps
- *Repetition o*f the process with steps, to reinforce the learning
- Get the feedback and *correct* the mistakes

Learning by practice is good old art

BUT

Still it is GOLDEN



LABORATORY HAZARDS:

- Read and follow instructions given during a practical session.
- Wear suitable clothing; moderately fitting (neither to loose nor too tight fitting) and must be fully covered.
- Students are always expected to wear laboratory coats whenever there is a practical session
- Students are advised to wear protective footwear (shoes) and sandals will not be allowed for practical sessions
- Do not eat, drink, or chew gum in the laboratory.
- Wash your hands carefully before leaving the laboratory.
- Some of the chemicals used in this laboratory are harmful if inhaled or ingested. Do not inhale powders or vapors.
- Do not allow laboratory chemicals to enter your mouth, small cuts or scratches on your hands.
- **No mouth pipetting** is allowed in this laboratory
- Use appropriate auto pipette, Pasteur pipette or teat pipette according to the instructions
- In case of **liquid spillage**

    a. Drop a handful of tissues at the site of spillage.

    b. Report the spill to a member of the staff

    c. Put on plastic gloves if not already worn

    d. Mop up the spill with tissues and wash with alkali detergent

- In case of **solid spill**, drop some damp tissues and repeat b, c and d.
- Solids should be disposed in the bins provided and not washed down the sink
- In case of any breakage of glassware, dispose it in the bins provided especially for that.
- Use the eyewash/shower in case of any spillage in your eyes or body.

LABORATORY CONDUCT:

- It is highly dangerous to play with any of the chemicals.
- Equipment is the responsibility of the student using it.
- If you lose, destroy or abuse any equipment you will be charged for replacement or repair.
- Cleanliness should be maintained in your working area, after each session
- Report any problems with equipment to the instructor
- Keep your glassware clean.

ABSENCES:

- Lack of attendance for practical sessions is strictly to be avoided since repetition of a missed session is not possible.
- Advance written documentation is always required for any absence from practical sessions.
- No exceptions will be made to this rule.

BREAKAGE CARD:

- Report the breakage to the Laboratory Assistant and obtain the breakage card.
- The duly filled and singed breakage card has to be submitted to the instructor at the end of the practical session when the breakage has occurred.
- If any student is found responsible for damaging and/or destroying equipment in the biochemistry laboratory, a designated fee will be deducted from the caution deposit.

FORMAT FOR LABORATORY MANUAL ENTRIES:

- All experimental data should be recorded in permanent ink.
- Loose-leaf or spiral-bound notebooks and loose pieces of paper are **not** acceptable.
- Record data and observations as you obtain or make them.
- The records should be duly singed by the instructor of each practical session.
- **On the last practical session the laboratory manual will be assessed.**

SAMPLE ENTRY:

1. **Title:** The top of the page should contain the title of the experiment and the date.

2. **Observation:** Record your observation in a systematic form.

Example: Recording reading for a titration

Volume of liquid in the burette before the experiment (V_1)= 25 ml

Volume of liquid at the end of experiment(V_2)= 15 ml

Volume required for titration= V_1- V_2

Mistakes should be neatly crossed out. Do not erase mistakes or remove pages from your book. Handwriting should be neat and **legible.** Remember that the purpose of writing a laboratory book is anyone should be able to read it and repeat your methods and results.

3. **Conclusions/Summary**: This is one of the most important sections. You should summarize all of your results and state any conclusions that you can make.

Acids and Organic Solvent in the Biochemistry Laboratory

S.No	Name of acids	Chemical Safety Data
	A	
1.	Acetic acid (100%) Acetone	
	E	
2.	Ethanol	
	F	
3.	Formaldehyde (37%)	
	G	
4.	Glycerol	
	H	
5.	Conc. HCl (37%)	**Toxic, Corrosive, Hazardous to Environment**
	P	
6.	O-Phosphoric acid	
	N	
7.	Nitric acid	**Harmful, Corrosive, Oxidizing**
	S	
8.	Conc. Sulphuric acid Sulphuric acid(0.25mol/l)	**Corrosive, Toxic**

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Objective Structured Practical Examination (OSPE)

(Sample Examination Cover Sheet)

GUIDELINES FOR THE STUDENTS

1. **Students have to be at the venue 30 minutes before the examination.**
2. **Attendance will be taken in 10 min before the commencement of exam.**
3. **Students are expected to sign in the attendance register.**
4. **Students are expected to bring ID cards for examination.**
5. **Students will not be allowed to take up the exam after grace time of 10 minutes after commencement of the exam.**
6. **Students will not be allowed to bring inside mobiles, laptops, or any other electronic gadgets.**
7. **Students should bring 2HB pencils, erasers, sharpeners and pens only. No borrowing will be allowed. Books, reference materials of any kind will not be permitted inside the examination hall.**
8. **Lab coats should be strictly worn by the students.**
9. **Reagent bottles, test tubes pipettes must be placed in their proper places.**
10. **Spills should be reported to the laboratory staff.**
11. **Students are expected to maintain perfect silence**
12. **In case of malpractice, students will be debarred from the examination hall and exams canceled.**
13. **No eatables are allowed inside during examination.**
14. **Drinking water will be available in the examination hall.**
15. **Students should stay in their respective stations until the bell rings.**

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Objective Structured Practical Examination (OSPE)

(Sample Examination Cover Sheet)

Specific Guidelines For The Students

STATIONS	SPECIFIC GUIDELINES
Action /Procedural station	Perform the specific procedure with the resources available. The details of the procedure would be provided.
Response stations	Interpret the patient history, calculate the given data, and give the appropriate responses.
Spotter station	Identify and write the appropriate response
Rest stations	You can complete any incomplete work from the previous stations. No discussions and talking with peers allowed

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Objective Structured Practical Examination (OSPE)

(Sample Examination Cover Sheet)

PLAN FOR THE OBJECTIVE STRUCTURED PRACTICAL EXAMINATION

- **There are 12 OSPE stations.**
- **Each student is given 5 minutes per station.**
- **Questions in each station carry 5 marks each.**
- **The stations are designated as 6 Procedure, 2 Response, 2 spotter and 2 Rest.**
- **Always move in the direction of the arrow when the bell rings.**
- **No talking or discussions allowed in the laboratory**