

## Quality Assurance Course Syllabus (Cr. Hrs: 2)

University of Jordan  
Dept. Biol. & Biomed. Sciences  
Quality Assurance 0304423

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### Course Description

This course is intended to teach the student the ways and means by which health care providers such as clinician and laboratory staff collect proper human samples, perform tests effectively and obtain reliable and relevant data with maximal benefit to the patient and community and minimal risk to themselves. The student will receive a complete overview of methods used to ensure quality patient management, quality assurance and quality control techniques. The course will also include health care organizational behaviour and the skills required for management roles, budget planning, safety precautions, sterilization and disinfection.

### LECTURE TOPICS

1. General principles of Quality Assurance (QA) and total quality management(TQM).
2. Concepts and key elements of QA.
3. QA of pre-analytical variables.
4. QA of analytical variables including analytical terms in use such as standard, control, precision, accuracy, reliability, analytical specificity, analytical sensitivity, systemic error, random error, total error, qualitative variation, quantitative variation.
5. Statistical concepts used in QA such as population, sample, frequency distribution, mean, range, coefficient of variation (CV), median, variance, mode, standard deviation, frequency distribution displayed as table, frequency distribution displayed as bar graph, frequency distribution displayed as histogram, frequency distribution displayed as relative frequency and cumulative percents histogram, frequency distribution displayed as frequency distribution curve, Gaussian or normal distribution curve, skewed distribution curve (to the right or to the left), Bimodal distribution curve.
6. Establishing the reference range (interval) and its use in QA and The use of percentile ranking for the 95 % confidence intervals.
7. Selection and types of control material, preparation of in-house control material and establishing its target values (control range).
8. Construction and the use of the following QC charts: Levey-Jennings chart (Shewhart mean and range control chart), application of Westgard rules (multirule system), Cusum (Cumulative) chart, Mean of normals (application of Bull's algorithm).



9. Selection and validation of a new method of analysis in the laboratory.
10. Evaluation of a new method of analysis in the laboratory in regard to linearity, precision (using F-test of significance), accuracy (using student t-test of significance), correlation with existing or reference method (using correlation coefficient (r) test).
11. Evaluation of a new method of analysis in the laboratory in regard to diagnostic sensitivity, diagnostic specificity, predictivity values and diagnostic efficiency.
12. QA of post-analytical variables.
13. External QA and the state of quality of Jordanian laboratories.
14. Tracablity and accreditation in clinical laboratories.
15. Safety Precautions in the laboratory including components of safety, sterilization and disinfection procedures.
16. General principles of laboratory management and managerial functions of laboratory manager including Planning, organizing, directing, coordinating and controlling.
17. The interpersonal role of a manager including leadership styles, the skills and personality traits required by successful managers, how to motivate staff, effective job interviews and effective employee performance appraisals.
18. Management practices (the organizational function of a manager) including strategic and operational planning, the use of budgets, workload measurement (units) and methods of time management.

#### **Text Books**

- Manual of Quality Assurance in Medical Laboratory, Prof. Dr.Y. Bilto,
- Manual of Lab. Management and Accreditation, Prof.Dr. Y. Bilto,
- Basics of quality assurance for intermediate and peripheral laboratories, 2<sup>nd</sup> edition, Eds. M. El-nageh , C.C, Heuck, W.Apple, J. Vandepitte, K.Engbaek and A kallner. WHO Regional Publications, Eastern Mediterranean Series 2, Cairo, Egypt, 2002.
- Principles of Management of Health Laboratories, eds. L.Houang and M..El-Nageh, Who Regional Publications, Eastern Mediterranean Series 3. Alexandria, Egypt, 1993.

<b>Exams &amp; Grading</b>	<b>Date</b>	<b>points</b>
1 <sup>st</sup> Exam	week 6	20
2 <sup>nd</sup> Exam	week 12	20
Term Paper	deadline week 15	10
Final Exam	week 16	50
<b>Total</b>		<b>100</b>

