"Dissemination of Education for Knowledge, Science and culture"

- Shikshanmaharshi Dr. Bapuji Salunkhe

Shri Swami Vivekanand Shikshan Sanstha, Kolhapur's

Raje Ramrao Mahavidyalaya, Jath. Sangli

CERTIFICATE COURSE

IN

MEDICAL LABO RATORY TECHNIQUES

Syllabus

2022-23

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CERTIFICATE COURSE IN MEDICAL LABORATORY TECHNIQUES

Academic year 2022-23

Structure, Scheme and Syllabus

1. **TITLE OF THE COURSE: Certificate Course in Medical Laboratory Techniques**
2. **ELIGIBILITY FOR ADMISSION:**
   As per guidelines obtained from UGC, NSQF and Shivaji University, Kolhapur by following rules and regarding reservations by Govt. of Maharashtra.
3. **MEDIUM OF INSTRUCTION:** The medium of instruction shall be in English.
4. **Eligibility for Admission** : 10 + 2 from science faculty.
5. **COURSE STRUCTURE :** The course will consist of a combination of practical's, theory and hands on skills in the Capital Goods Sector**.**
6. **DURATION** : Certificate Course is 30 hrs.

7. LEARNING OUTCOME:

Learning outcomes are an expression of total competencies of a learner and assessment will be carried out as per the assessment criteria.

LEARNING OUTCOMES/ COURSE OUTCOME (TRADE SPECIFIC):

The learning or course will be helpful for the students as below.

1. Clinical laboratory testing plays a crucial role in the detection, diagnosis, and treatment of disease.

2. Medical laboratory technicians are trained to work under the supervision of a technologist to conduct routine diagnostic tests, as well as set up, clean and maintain medical laboratory equipment.

3. You can explore a wide field of opportunity right after you complete your course in Medical Laboratory Technology.

4. Job opportunities in public hospitals and research laboratories, different departments of Hospitals like Pathology (Haematology, Blood Bank, Histology, Cytology), Microbiology (Bacteriology, Parasitology, Mycology and Virology), Serology and Biochemistry as a Medical Lab Technician.

5. Can do jobs in polyclinics, Medical centre and establish their own laboratory for diagnosis purposes.

6. Career at the private hospital, nursing homes and diagnostic centre.

7. Self-employment through private practice.

AIMS / KEY FEATURES OBJECTIVES OF COURSE :

The learner at the end of the course will –

1. be train competent clinical laboratory personnel to meet present and future needs in primary, secondary and tertiary health care and research centres.

2. be collaborate with the other institutions and medical laboratory education for the purpose to improving the quality of training to provide possible standards.

3. be implement effective programs of continuing education for medical laboratory technologists.

4. be encourage and prepare medical laboratory technology graduates for the external certifying examinations.

5. be able to work as a technician in laboratories attached to hospitals under the supervisions of senior officers like Biochemist, Microbiologist or Pathologist. They may be employed in a small laboratory functioning independently or attached to a doctor's clinic. Nature of the job dictates that the candidate should give more emphasis on learning practical skills along with a basic knowledge of the subject.

6. be able to carry out the routine tests in all these fields personally. He/She will maintain effective quality control and provide the patient with reliable reports.

7. Will acquire the necessary oriental knowledge and practical skill expected of him for the fulfilment of the above objectives.

8. acquire theoretical knowledge and practical skill leading to further specialization in the elective field.

9. appreciate and follow the ethical standards of the profession and will demonstrate qualities of honesty and accuracy towards his work and sympathy towards the suffering patients.

10. appreciate the limits of his ability and consult better qualified individuals when confronted with intricate problems.

11.The certification levels will lead to Diploma/Advanced Diploma/B. Voc. Degree in Industrial Tool Manufacturing and will be offered by respective affiliating University. Students may be awarded a Level Certificate/Diploma/Advanced Diploma /Degree as outlined in the table below:

8. SCHEME OF EXAMINATION

- Question Paper will be set in the view of the /in accordance with the entire syllabus and preferably covering each unit of syllabi.
- There will be external practical examination attendant to course.

Course Title	Marks							
	Attendance	Home Assignment	Unit test	Practical	Field visit/ Internship	Project	Final Exam	Total
Medical Laboratory Techniques	05 Mark	10 Marks	15 Mark	20 Mark	05 Marks	05 Marks	40 Marks	100 Marks

A) Final Theory Paper):

Q.1. Multiple Choice question	10 Marks
Q.2.Long answer type (any two) out of three	20 Marks
Q.3. Write short notes (any four) out of six	10 Marks

B) PRACTICAL:

Evaluation of the performance of the students in practical shall be based on examination

A) Each core course having separate practical	20 Marks
C) Project / fieldwork/Hands on training	05 Marks
D) Internship/ Field visit	05 Mark

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Academic year 2022—2023

Certificate Course in Medical Laboratory Techniques

Syllabus

Theory : 21 hrs.

Sr.No.	Paper	Topic	lectures
1	Introduction	**GENERAL LABORATORY EQUIPMENTS AND INSTRUMENTS** • Microscope • Autoclave • Incubator • Hot Air Oven • Centrifuge • Photometer • Spectrophotometer	4
2	Clinical Biochemistry	• Basic Laboratory Principles and Procedures. • Solutions and Reagents. • Instruments and Laboratory Technique. • Training the technician. • Biochemical tests.	5
3	Basic Haematology	• Composition of blood and its function. • Morphology of blood cells. • Routine Haematological test. • Haematological Diseases. • Routine Coagulation tests.	4
4	Blood Banking And Immune Haematology	• Collection of blood from donor. • Methods of determination of PCV. • Qualitative test for ABO grouping with antisera. • Determination of Rh (D) typing by slide method. • The compatibility test (Cross matching). • Blood Transfusion.	4
5	Clinical pathology, Histopathology and Parasitology	• Routine examination of urine. • Microscopic examination of urine. • Examination of body fluids. • Basic Histopathology techniques. • Laboratory requirements. • Routine Staining procedures	4

Skill development

Practical : 09 hrs.

Sr.No.	Name of experiment
1	Identification of ABO and Rh blood groups.
2	Estimation of hemoglobin.
3	Identification of RBC, WBC and platelets
4	Total count of RBC
5	Total count of WBC and WBC differential count
6	Clotting time and Bleeding time
7	Preparation of hemin crystals
9	Routine examination of urine.
10	ESR blood test
11	Detection of glucose in blood by glucometer method

Reference Books :-

1. Anatomy and physiology for Nurses, Pearce, 16th edition.
2. Clinical pathology and haematology, Nanda R. Baheti, 3rd edition.
3. Handbook of Media, Stains and Reagents in Microbiology, A. M. Deshmukh, 1 st edition 1997.
4. Human Anatomy and Physiology, Elaine N. Marieb, 6 th edition, 2004.
5. Human Physiology, Volome-I, 11 th edition, Mat 1992.
6. First year Diploma in Human Anatomy and Physiology, S. B. Shinde, 4th edition, 1995.
7. Medical Laboratory Science Theory and Practice, J Ochei, A. Kolhatkar, 2000.
8. Medical Laboratory Technology, Vol. II. & 7th reprint edition 1993.
9. Practical Microbiology, R.C. Dubey, D.K. Maheshwari, 1st edition 2002.
10. Textbook of Medical Laboratory Technology, Praful B. Godkar, 1994.
11. Microbiology laboratory manual-I, A.R. Jadhav, Aug.1999.
12. Textbook of Microbiology, Ananthanarayan and Paniker's, 10 th edition, 2017.