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—: એ કે ડે મિક કાઉન્સિલ :—

—: કાર્યસૂચિ - ૩ :—

તા. ૧૨-૦૧-૨૦૨૧

વાર : બુધવાર

સમય : બપોરે ૩:૦૦ કલાકે

૧૦. NORTHWEST ACCREDITATION COMMISSION (NWAC), USA નો તા. 15/Dec 2021, Ref. No. NWAC/Gujarat/Recognition/146 એમેરિકન હાઈસ્કૂલ ડિપ્લોમાની માન્યતા માધ્યમિક (NWAC), USA અંડરગ્રેજ્યુએટ અભ્યાસક્રમોમાં પ્રવેશ માટે ના પત્ર પર વિચારણા કરવા બાબત.

નોંધ :- આ યુનિવર્સિટીમાં પરિપત્ર ક્રમાંક : એકે/પ્રવેશ/૨૧૮૮૪ /૨૦૧૭, તા. ૦૮-૧૧-૨૦૧૭ મુજબ યુનિવર્સિટી NWAC, USA નોટીવેસ્ટ એક્રેડિએશન કમિશન, યુ.એસ.એ. (ઈન્ટર નેશનલ બોર્ડ) કે જે ગુજરાત રાજ્યનાં ઓફ કેમ્પસ સેન્ટરો માંથી ધોરણ-૧૨ની પરીક્ષા પાસ કરેલ વિદ્યાર્થીઓ આપણી યુનિવર્સિટી સંલગ્ન કોલેજોમાં પ્રવેશ લેવા માંગતા હોય, જે અંગે એકેડેમિક કાઉન્સિલની તા. ૧૩-૧૦-૨૦૧૭ ની સભાનાં ઠરાવ ક્રમાંક : ૩૦અન્વયે નીચે મુજબ ઠરાવેલ છે.

એકેડેમિક કાઉન્સિલની તા. ૧૩-૧૦-૨૦૧૭ ની સભાનો ઠરાવ ક્રમાંક : ૩૦

:: આથી ઠરાવવામાં આવે આવે છે કે, ઉપરોક્ત બાબત અંગે સરકારના નીતિનિયમો અનુસાર P.E.C આપવું નહીં.

(એકેડેમિક વિભાગ)

૧૧. શ્રી સ્વામિનારાયણ એજ્યુકેશન ટ્રસ્ટ, સુરત દ્વારા સંચાલિત વાયબ્રન્ટ નર્સિંગ કોલેજ, મું. માસમા, સુરત ખાતે નીચે મુજબના મલ્ટી ડીસીપ્લીનરી સર્ટીફિકેટ કોર્સ શરૂ કરવા માટે SOP મુજબ કરેલ અરજી પર વિચારણા કરવા બાબત.

1. Diploma in Sanitary Inspector
2. Diploma in Operation Theater Technician
3. Diploma in Medical lab Technician
4. Diploma in Hospital management
5. Diploma in Fire Safety

(બિડાણ: ૭)

(સેનેટ/સિન્ડિકેટ વિભાગ)

૧૨. ન્યુ ઈન્ડિયન એજ્યુકેશન એન્ડ રીસર્ચ સોસાયટી, વી.એન.પટેલ મેડીકલ કેમ્પસ, મું. વસરાવી, તા.માંગરોળ, જિ.સુરત દ્વારા શ્રી ઓધવરામ ફિઝિયોથેરાપી, મું. વસરાવી, માંગરોળ, જિ, સુરત ખાતે નીચે મુજબના મલ્ટી ડીસીપ્લીનરી સર્ટીફિકેટ/ડીપ્લોમાં કોર્સ શરૂ કરવા માટે SOP મુજબ કરેલ અરજી પર વિચારણા કરવા બાબત.

1. Diploma in Operation Theater
2. Diploma in Fire Safety
3. Diploma in Sanitary Inspector
4. Diploma in Medical Lab Technician
5. Diploma in Hospital management

(બિડાણ: ૮)

(સેનેટ/સિન્ડિકેટ વિભાગ)

૧૩. રૂરલ સ્ટડીઝ ફેકલ્ટીના રૂરલ સ્ટડીઝ વિષયમાં પીએચ.ડી. ના માર્ગદર્શક શિક્ષક તરીકેની માન્યતા મેળવવા નૂતન ગ્રામ વિદ્યાપીઠ, થવા ના આચાર્યશ્રી ડૉ.દિનેશકુમાર પ્રતાપભાઈ ચૌધરી ની અરજી સંદર્ભે જણાવવાનું કે, તા.૨૩-૦૨-૨૦૧૮ ના પત્રક્રમાંક : એસ(૧)/(માન્યતા-૭૯)/૩૪૨૭/૨૦૧૮ ના રોજથી અરજીકર્તા આચાર્ય તરીકે કાર્યરત હોય અને ઓર્ડિનન્સ ૧૦૮ (I) (A)(B) ની નીચેની જોગવાઈ મુજબનું પીએચ.ડી. પરિપાલન થતું હોય ઓર્ડિ. ૧૦૮ ની જોગવાઈ મુજબ પબ્લીકેશન રીફર્ડ જર્નલમાં પ્રકાશિત થયેલ હોય જે અંગે મહાત્મા ગાંધી ગ્રામ અભ્યાસ વિભાગના તા.૩૦-૧૨-૨૦૧૮ના પત્ર ક્રમાંક: એમઆરએસ/૬૭૩૦/૨૦૨૧-૨૨થી નીચે મુજબ હકારાત્મક ભલામણ કરેલ હોય , જે અવલોકને લઈ BUTની તા. ૯-૫-૨૦૧૨ ની સભાના ઠરાવ ક્રમાંક : ૧૧ અન્વયે સત્તા માન.કુલપતિશ્રીને આપેલ હોય જે માનનીય કુલપતિશ્રી એ BUT વતી AC ને ભલામણ કરેલ છે. જે ભલામણ પર વિચારણા કરવા બાબત.

મહાત્મા ગાંધી ગ્રામ અભ્યાસ વિભાગના વડાશ્રીનો અભિપ્રાય : ડૉ.દિનેશકુમારની અરજી સાથે જોડેલ પ્રકાશનો પૈકી નીચે જણાવેલ પાંચ પ્રકાશનો નોલેજ કન્સોર્ટિયમ ઓફ ગુજરાત દ્વારા પ્રકાશિત જર્નલ ઓફ સોશિયલ સાયન્સ અને જર્નલ ઓફ મલ્ટી ડિસિપ્લિનરીમાં પ્રકાશિત થયેલ છે જે રેફર્ડ જર્નલ્સ છે.

વધુમાં તેમણે સંયુક્ત રીતે પ્રકાશિત કરેલ સંશોધન પત્ર **Perspective Of Agriculture Marketing** જર્નલ્સ ઓફ ઈમર્જિંગ ટેકનોલોજીસ એન્ડ ઈનોવેટીવ રિસર્ચ પણ રેફર્ડ જર્નલ છે. જે વિદિત થાય.

Ord.108 :-

A. A Teacher to be recognized as a Research Supervisor for the Ph.D. degree in a subject shall have the following qualifications, and only a full time regular teacher of this University or affiliated College/ Recognized Institution can act as a Research Supervisor. The external research supervisors are not allowed. However, a Co-supervisor can be allowed in inter-disciplinary areas from other departments of the University or from other related institutions with the approval of the Research Advisory Committee.

Any regular Professor of the University/ College/ Recognized Institution with at least **five research publications** in refereed journals and any regular Associate/Assistant Professor of the University/ College/ Recognized Institution with a Ph.D. degree and at least **two research publications** in refereed journals may be recognized as a Research Supervisor.

Provided that in areas/disciplines where there is no or only a limited number of refereed journals available, the Board of University Teaching(B.U.T) may relax the above condition for recognition of a person as Research Supervisor with reasons recorded in writing.

B. A Professor / Principal and an Associate Professor, duly recognised by the university, with the five-year post graduate teaching experience in the case of the latter, shall require the number of research publications as mentioned above in (A), and shall be recognized as Ph.D. research supervisors without being subjected to its formal process of recognition.

Note: Proviso regarding five years experience of teaching Post-Graduate classes and required number of publication as mentioned (A) shall not apply to the Associate professors who were already in the staff of the University before this amendment came into force and were recognized as Research Supervisors for the Ph.D Degree in their respective subject.

(અનુસ્નાતક વિભાગ)

૧૪. **કોર્મસ** ફેકલ્ટીના **કોર્મસ** વિષયમાં પીએચ.ડી. ના માર્ગદર્શક શિક્ષક તરીકેની માન્યતા મેળવવા ઉઘના એકેડેમી એજ્યુકેશન ટ્રસ્ટ, સુરતના આસિ. પ્રોફેસર **ડૉ.અમિના ઈમરાન નખુડા** ને પીએચ.ડી. ના માર્ગદર્શક શિક્ષક તરીકેની માન્યતા આપવા વિચારણા કરવા બાબત.

(૧) ડૉ. સંદિપ ભટ્ટ, પ્રોફેસર એન્ડ હેડ, પી.જી. ડિપાર્ટમેન્ટ ઓફ બિઝનેસ સ્ટડીઝ, સરદાર પટેલ યુનિવર્સિટી, આણંદનો અહેવાલ હકારાત્મક છે.

(૨) ડૉ. એચ.સી.સરદાર, પ્રોફેસર, શેઠ દામોદરદાસ સ્કુલ ઓફ કોર્મસ, ગુજરાત યુનિવર્સિટી, અમદાવાદનો અહેવાલ હકારાત્મક છે.

(૩) માનનીય કુલપતિશ્રી એ BUT વતી અહેવાલોનો સ્વીકાર કરી AC ને ભલામણ કરેલ છે.

BUT ની તા.૯-૫-૨૦૧૨ ની સભાના ઠરાવ ક્રમાંક : ૧૧

- આથી ઠરાવવામાં આવે છે કે સાયન્સ ફેકલ્ટીનાં જૂલોજી વિષયમાં પીએચ.ડી.નાં માર્ગદર્શક શિક્ષક તરીકેની માન્યતા મેળવવા યુનિવર્સિટી કેમ્પસમાં ચાલતા એમ.એસ.સી.-બાયોટેકનોલોજી (સ્વનિર્ભર અભ્યાસક્રમ) ના વ્યાખ્યાતા ડૉ.પ્રીતી શર્માની અરજી સંદર્ભમાં સંશોધન પેપર્સનો અહેવાલ આપવા માટે મા.કુલપતિશ્રી દ્વારા નીમાયેલ બે નિર્ણાયકોના (ડૉ.અશોક કુમાર- યુનિવર્સિટી ઓફ રાજસ્થાન, જયપુર અને ડૉ. એમ.વી.રાવ- ગુજરાત યુનિવર્સિટી, અમદાવાદ) હકારાત્મક અહેવાલનો સ્વીકાર કરી માર્ગદર્શક શિક્ષકની માન્યતા આપવા એકેડેમિક કાઉન્સિલને ભલામણ કરવામાં આવે છે.

વધુમાં ઠરાવવામાં આવે છે કે, હવે પછીથી તમામ કેસોમાં જો બંને રેફરીના અહેવાલો હકારાત્મક હોય તો મંજૂરીની સત્તા માનનીય કુલપતિશ્રીને આપવી અને બી.યુ.ટી. રજૂ કરવું નહીં.

(અનુસ્નાતક વિભાગ)

૧૫. **કોર્મસ** ફેકલ્ટીના **કોર્મસ** વિષયમાં પીએચ.ડી. ના માર્ગદર્શક શિક્ષક તરીકેની માન્યતા મેળવવા એસ.ડી.જે.ઈન્ટરનેશનલ કોલેજ, સુરતના આસિ. પ્રોફેસર **ડૉ.મિલિન્દ હરેશભાઈ પારેખ** ને પીએચ.ડી. ના માર્ગદર્શક શિક્ષક તરીકેની માન્યતા આપવા વિચારણા કરવા બાબત.

(૧) ડૉ. આર. ડી. મોદી, આચાર્ય, સી.પી.પટેલ એન્ડ એફ.એચ.શાહ કોર્મસ કોલેજ, આણંદ નો અહેવાલ હકારાત્મક છે.

(૨) ડૉ. એચ.સી.સરદાર, પ્રોફેસર, શેઠ દામોદરદાસ સ્કુલ ઓફ કોર્મસ, ગુજરાત યુનિવર્સિટી, અમદાવાદનો અહેવાલ હકારાત્મક છે.

(૩) માનનીય કુલપતિશ્રી એ BUT વતી અહેવાલોનો સ્વીકાર કરી AC ને ભલામણ કરેલ છે.

BUT ની તા.૯-૫-૨૦૧૨ ની સભાના ઠરાવ ક્રમાંક : ૧૧

- આથી ઠરાવવામાં આવે છે કે સાયન્સ ફેકલ્ટીનાં જૂલોજી વિષયમાં પીએચ.ડી.નાં માર્ગદર્શક શિક્ષક તરીકેની માન્યતા મેળવવા યુનિવર્સિટી કેમ્પસમાં ચાલતા એમ.એસ.સી.-બાયોટેકનોલોજી (સ્વનિર્ભર અભ્યાસક્રમ) ના વ્યાખ્યાતા ડૉ.પ્રીતી શર્માની અરજી સંદર્ભમાં સંશોધન પેપર્સનો અહેવાલ આપવા માટે મા.કુલપતિશ્રી દ્વારા નીમાયેલ બે નિર્ણાયકોના (ડૉ.અશોક કુમાર- યુનિવર્સિટી ઓફ રાજસ્થાન, જયપુર અને ડૉ. એમ.વી.રાવ- ગુજરાત યુનિવર્સિટી, અમદાવાદ) હકારાત્મક અહેવાલનો સ્વીકાર કરી માર્ગદર્શક શિક્ષકની માન્યતા આપવા એકેડેમિક કાઉન્સિલને ભલામણ કરવામાં આવે છે.

વધુમાં ઠરાવવામાં આવે છે કે, હવે પછીથી તમામ કેસોમાં જો બંને રેફરીના અહેવાલો હકારાત્મક હોય તો મંજૂરીની સત્તા માનનીય કુલપતિશ્રીને આપવી અને બી.યુ.ટી. રજૂ કરવું નહીં.

(અનુસ્નાતક વિભાગ)

૧૬. અધ્યક્ષશ્રીની મંજૂરીથી જે બાબત રજૂ થાય તે.

ક્રમાંક : સિન્ડિકેટ/એ.કા./કા.સૂ./૬૦૬/૨૦૨૨

તા.૧૧/૦૧/૨૦૨૨

Sd/-

ઈ.ચા.કુલસચિવ

પ્રતિ,

એકેડેમિક કાઉન્સિલના સર્વે સભ્યશ્રીઓ....



VIBRANT NURSING COLLEGE
MANAGED BY
SHREE SWAMINARAYAN EDUCATION TRUST

CURRICULUM

FACULTY OF PARAMEDICAL SCIENCE

Proposal

For

**DIPLOMA IN SANITARY INSPECTOR
(DSI)**

**VEER NARMAD SOUTH GUJARAT
UNIVERSITY, SURAT**

VIBRANT CAMPUS, AT PO. MASMA, SURAT- OLPAD ROAD, SURAT-394540
Email: vibrantnursingsurat@gmail.com Contact : 98257 26019, 95120 39003.

❖ **Course Title:** Diploma in Sanitary Inspector (DSI)

❖ **Learning Objectives**

The objective of the course is to impart technical training supplemented by practical training programme to candidates aspiring to join Health and Sanitation departments of Municipal Bodies, Local Govt. Bodies, District Councils, Railways, Five-Star Hotels, Food and Drugs Administration, Airports or similar services in other organizations.

- Should have knowledge of food safety and the ability to apply it to establishments such as restaurants.
- Apply the principles of natural and mechanical ventilation, as needed
- Should be able to dispose of waste (solid, liquid and sewage) appropriately with minimum harm to the environment.
- Applying the techniques of sterilization and disinfection of various articles
- Should be able to survey housing colonies to assess sanitary standards and prescribe corrective measures.
- Should assist in sanitation management at fairs and festivals.
- Should understand communicable diseases and their prevention.
- Should be able to assist in or independently conduct disinfection of areas in a hospital such as wards, operation theatres, labour rooms, etc.
- Conducting programmes on personal hygiene.
- Should be able to conduct visits to various establishments for assessment of cleanliness and hygienic practices and ensure the desirable standards are maintained.

❖ **Duration of course** - One Academic year

❖ **Tenure:** June to November & December to May

❖ **Admission Criteria:** The candidate must have completed 10+2 with any stream

❖ **Medium of Instruction:** English/Gujarati

❖ **Intake Capacity:** 60 (Minimum 10 students are to be admitted to commence the course)

❖ **Course Fee:** Rs.40,000/- (Fourty Thousand Only)

STRUCTURE OF THE COURSE

Paper No.	Course Name	Internal Marks	External Marks	Total Marks	Credits
01	Basic Study (Foundation Course)	30	70	100	05
02	Diet and Nutrition	30	70	100	05
03	Land Hygiene/Sanitation and Sewage/Excreta Removal	30	70	100	05
04	Government Program for Disposal/Removal of biomedical waste	30	70	100	05
05	Project work	30	70	100	05
Total Credit					25

Paper No. 1: Basic Study (Foundation Course)

1. Basic understanding of the implementation of health services

- a. Method/Methodology of implementation of primary, secondary, and tertiary level health services.
- b. Community Partnership in Primary Health Care.
- c. Health systems in developing countries.
- d. Private department.
- e. National Health Mission (National Health Program and Schemes).
- f. National Health Policies and Various Health Days.

2. Aims, Objectives, Action Plan, and Target Achievements of National Health Program.

3. Basic Information about *Āyush* method

- a. Basic Information about *Āyurveda*.
- b. Basic Information about *Yoga* and Naturopathy.
- c. Basic Information about *Yunāni*.
- d. Basic Information about *Siddhā*.
- e. Basic Information about Homeopathy.
- f. The need of assimilating various methods.

4. Overview of Contemporary Health Sector in India.

5. Important Information Regarding Population

- a. Population census.
- b. Important life-events and its impact on population.
- c. Collection and Importance of information related to population.
- d. Population census and its impacts on health policy.
- e. The science of school of disease.
- f. The principles of the science of school of disease.
- g. Natural History of Diseases.
- h. Details of the study of the school of disease.

- i. The science of contagious and non-contagious diseases – Spread of diseases – Immune System – Cold-chain vaccination agent – Disease prevention survey.
- 6. Various words and terminologies used in medical language –Study of basic, detailed information about origin (of diseases) – The study and interpretation of the order and report of medical science.
- 7. **Primary information and knowledge about computer and information science. In order to provide students basic knowledge about computer technology, the following topics have been included:**

1. Introduction to Computer

- a. Characteristics of computer.
- b. Block diagrams.
- c. Generations of computer.
- d. Computer Languages.

2. Input – Output Device

- a. Input devices: Key-board – Paint and Draw devices – Data scanning devices – Digitized Electronic Card Reader –Voice Resign/Recognition device –Vision input device.
- b. Output devices: Monitor – Pointer – Platters – Screen Image Projector – VoiceResponse System

3. Processor and Memory – Central Processing Unit (C.P.U.) – Main memory.

4. Collection Instruments –Subsequent and Direct Use devices – Magnetic tape – Magnetic disc – Optical disc – Collective collection instruments.

5. Understanding Windows

History – Features – Desktop – Taskbar – Desktop Icons – Working with Folders – Creating Shortcut – Operating Windows (Starting – Shut Down – Moving – Size modification – Increasing and Decreasing, etc.).

6. Introduction to M.S. Word.

7. Introduction to Excel.
8. Introduction to PowerPoint.
9. Understanding Operating System.
10. Computer Networks.
11. Internet and its uses/functions.
12. Use of Engineering in Clinical Settings.

Paper No. 2: Diet and Nutrition

1. Classification of eatables and their importance for public health.
2. Assessment of daily required nutrition.
3. Assessment of the need for nutrients in a special group.
4. Balanced diet.
5. Assessing the nutritional status of the family.
6. The survey of nutrition education and its importance.
7. Preventive therapeutic nutrition.

Knowledge regarding General Safety – Occupational Health, and Hygiene Science

a. Dietetics Nutrition

Introduction to and classification of Health and Diseases – Nutritional Elements in Diet and their Sources

b. Nutrient

Carbohydrates – Protein - Vitamins and Minerals – Function – Sources and Dietary Needs.

c. Family Examination

Medical examination of all members– weight –height and circumference of the head – skin folds(in the case of children) –Blood test for Hemoglobin –Diet Survey –Weight of food before and after cooking.

d. Balanced Diet

Definition – Co-planning - Factors to take into consideration during planning– Nutritional needs of special groups.

e. Nutrition Education

Malnutrition – Less Weight during birth– Causes – Prevention –Protein energy malnutrition prevention – Special care regarding malnutrition – Special treatment given to malnourished children.

Water Sanitation

1. Classification of sources of water.
2. The difference between deep and shallow wells.
3. Method of Sanitary Well.
4. Demonstration of *Arogyaprada* well in town/village.
5. Water Supply Sanitary Inspector.
6. Collecting and dispatching samples for chemical and bacteriological survey.
7. Water purification in urban areas.
8. Water purification in rural areas.
9. Environmental Cleanliness (WHO definition) –Balanced and healthy water and its sources – Various uses of water and its need

Waterborne Diseases – Water Conservation – Water Quality - Hard Water and aspects of health – Physical, chemical, and biological criteria and various types of water pollution– The process of cleansing borewell water in small and large amounts– Plumbing system and its maintenance– Water distribution and storage method at community and home level.

Clean, Healthy Air

1. Demonstration of air condition plan for maintain temperature.
2. The importance of air circulation in sufficient quantity and its importance – types of air circulation (1); natural (2) mechanical – Air purification and disinfectant greenhouse effect – Types of ventilation – Air temperature – Humidity –Radiation and Evaporation and their measurements.

Paper No. 3: Land Hygiene/Sanitation and Sewage/Excreta Removal

1. Demonstration of sewage treatment plant.
2. Inspection of soil plant, manhole, and flushing tank.
3. Collection of sewage samples and interpretation of chemical and bacteriological analysis.
4. Inspection of sewage treatment plant, its maintenance, and method of disinfecting it.
5. Cleaning of sewage system – Oil operation and organization of mechanical aspects.
6. Detection/investigation of water pollution.

Removal of excreta and waste

1. Method of waste disposal.
2. Sanitary land filling and demonstration of compost pit.
3. Disposal of excreta.
4. Toilet construction and maintenance
 - Soak-pit.
 - Sanitary latrine.
 - RCA latrine.
 - Septic tank latrine.
 - Sewage treatment plant.
 - Accessible toilets.

5. Excreta Removal

Sewage stream is a waste that includes human feces – Water Pollution – Methods to prevent diseases due to improper removal/discharge:

1. Different types of toilets.
2. Methods of disinfectant use.

3. Bore hole type latrine.
4. R.C.A. toilet.
5. Septic tank toilet.
6. Biogas.
7. Method of disinfecting sewage.

6. Burial and cremation in case of accidents

1. Removal and burial of dead bodies / cremation and record-keeping.
2. Inspection of land for burial and cremation and disposal of ashes.

Land Cleanliness

1. To make samples for assessment of land pollution.
2. Disinfecting the land and changing pH.
3. Types of soil from public health perspective –Causes of soil moisture –Proportion of bacteria and parasites and land health.

Control of bacterial environment

1. Identification and use of insecticides.
2. The method of disinfecting various objects.
3. Understanding the different parts of sprinkler equipment.
4. Use and maintenance of sprinkler.
5. Use of antiseptics.
6. Use of mice-killing drugs.

Housing

1. Survey of home design for determining cleanliness criteria.
2. Fairs – Industrial Estates/Residence Inspection and Sanitation Management.
3. Food – Housing – Water – Lighting – Community Waste Disposal and alternative provisions for emergencies to prevent disease outbreak.

Professional Health

1. Inspecting the workplace.
2. Visit and inspection of factory for cleanliness.
3. Identification of hazardous areas and security arrangements.
4. Health and cleanliness survey of business/industrial areas – Causes, Effects, and Prevention of Environmental pollution.

Paper No. 4: Government Program for Disposal/Removal of biomedical waste

1. Survey of health services in different areas.
2. Planning of vaccination services.
3. Ensuring sanitization of Hospital Ward – Operation Theater–Labor room.
4. Participation in various programs.
5. Self-cleanliness awareness program.
6. Primary treatment in case of emergencies.

1. Infectious Diseases

Introduction – Airborne diseases – Diseases transmitted by diseases – Diseases transmitted by contact – Steps for prevention and control of diseases spread through other diseases and insects.

2. Immunity and Vaccination

Aims -- types and effects – Major contagious diseases such as T.B., Diphtheria, Measles, Typhoid – National vaccination program for prevention

3. Disinfecting

Chemical Agent – Halogen –Potassium permanganate – bleaching powder – lime.

4. Non-communicable diseases

Introduction – new cases – total cases – Diagnosis, Detention, and Prevention.

5. Individual/Personal Health

Factors influencing it – Habits – Hand washing - digestive tract -- addiction and digestion maintenance– skin and dental care – exercise – proper nutrition.

6. Primary treatment

Treatment of general illness.

7. Rules and laws for Public Health.

Collecting food samples for investigation – Paper work for legal action – Home inspection for detecting adulteration (in milk – ghee – oil – tea – sugar).

Public Health Laws

- Indian Epidemic Act.
- Air purification and water pollution act.
- Laws to prevent food adulteration.
- Birth and death registration act.
- M.P.T Act.
- Traffic Act.
- Laws of Municipal and Local Bodies relating to house design and cleanliness.
- Factory Act and Workers State Insurance Act.
- Checking of school and mid-day meals – Healthy habits for personal health and maintaining proper standards of cleanliness.

Exchange of information on health education

To prepare verbal and aural-visual messages.

Behavioral Science

Habits and rituals affect individual health. Bodily care – Clothes – Periods and Health–Care of extremely sensitive organs (eyes, ears).

Health education

Individual health – Environmental health – Use of collective resources – Personal visit to Primary Health Center – Health education through group discussion –For prevention of diseases and nutritious diet:

- Information about A.I.D.S
- Rejuvenation

- N.Q.A.S.
- Cleanliness mission.
- Maintain quality in public health and cleanliness.

Solid Waste Disposal

Sources of Production –storage–collection –arrangement for disposal – classification and effects – collection and transportation of solid waste from home and streets –method of creating compost/fertilizer.

Liquid Waste Disposal

Healthy methods of liquid waste disposal and dangers of liquid waste on health –gutter system – gutter system construction and maintenance – Water pollution through gutters and disinfecting polluted water.

Paper No. 5: Project Work

The student should prepare a detailed report on the subject of interest to the student and remain present for interview.

Visit the following areas for this project work and submit a 50-page report

- 50 houses in urban area.
- 50 houses in rural area.
- Sewage treatment plan.
- Visit a Solid waste disposal plant.
- Visit two hospitals: (1) urban; (2) rural.
- Visit chlorination and antiseptic work.
- Visit gram Panchayat.

Reference book

- Swachh Bharat Abhiyan guidebook, Government of India.
- Healthcare waste management and biomedical waste management rules 2016
- Paramedical book – Jay Ganesh Seva Trust.
- Biology (Human body and functions) Std. 9-10-11-12, Govt. of Gujarat.
- Training module for paramedical staff – Govt. of Gujarat.

FACULTY OF PARAMEDICAL SCIENCE

Sr. No.	Name of Course	Credit/ Hours	Duration	Course Structure		Admission	Intake	Fees Rs.	Eligibility		Passing Criteria
				Internal	External				For Institution	For Teacher	
1	Diploma in Sanitary Inspector	25/375	1 ¹ Years	30%	70%	10+2 or Equivalent, Area in specialization (if any: Not Required	60	Rs. 40,000	UG and/or PG Institution (affiliated with SGGU) with relevant subject shall be eligible.	Diploma in Sanitary Inspector from any recognised Govt. institution.	40%



VIBRANT NURSING COLLEGE
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CURRICULUM

FACULTY OF PARAMEDICAL SCIENCE

Proposal

For

**DIPLOMA IN OPERATION THEATER
TECHNICIAN (D.O.T.T.)**

**VEER NARMAD SOUTH GUJARAT
UNIVERSITY, SURAT**

VIBRANT CAMPUS, AT PO. MASMA, SURAT- OLPAD ROAD, SURAT-394540
Email: vibrantnursingsurat@gmail.com Contact : 98257 26019, 95120 39003.

Objective of the course:

To prepare a OT technician who

- ❖ Can prepare OT before surgery including process of sterilization.
- ❖ Can assist common surgeries to respective surgeons as first assistant.
- ❖ Can use C-Arm and other imagings effectively.
- ❖ Can take care of patient in post operative room.
- ❖ Can maintain all records.
- ❖ Can do CPR.
- ❖ Can perform basic nursing procedures like IV/IM/SC injections, Nebulization, catheterization, Oxygen therapy.
- ❖ Can provide psychological support to the patient & counsel him & his/her relatives.

Expected Outcome of the course:

A career in Operation Theatre Technology is meeting the demand of the growing needs of experts in the fields of operation theatre management, medical ethics, anaesthesia technology and post-operation care. Operation Theatre Technology scope lies primarily in hospitals who recruit surgical or operation theatre technologists. Here is a list of professions that one can pursue after studying Diploma in OT technology.

- Operating Theatre Technician -- OT Technician handles all the lab equipment and likewise the maintenance procedures done at operation theatres. These professionals work in the operating theatres, ICUs and emergency departments of the hospitals and nursing homes.
- Teacher- Like all the fields, OT technology also requires teachers who can train future professionals. Their role is to teach candidates and deliver lectures on OT management and technology subjects in a deeper manner to the students.
- A wider scope of Operation Theatre Technology is quite prominent in transplant teams, orthopaedic clinics, gynaecology sections, cancer units, surgery, special care baby units. They are also hired for research, education and training. Some of the professionals are privately hired by doctors, surgeons, physicians or dentists who perform surgery of the patients.



- R. DOT. 1:** **Eligibility for the admission:**
Candidates who have passed 10+2 examination conducted by any recognized School Certification Board or Equivalent Examination;
- R. DOT. 2:** **Duration of the course:**
Duration shall be for a period of **TWO** years
- R. DOT. 3:** **Medium of instruction:**
The medium of instruction and examination shall be in English.
- R. DOT. 4:** **Attendance**
Candidate shall be required to attend at least 75% of the Lectures and Practical separately in each year.
- R. DOT. 5:** **Subjects, Credits and Scheme of examination**
Main and Subsidiary subjects are common in first year for all the courses of Medical Technology. The subject-wise details of examination for the first year have been given in Table 1.
There shall be three examinations one each at the end of 1st & 2nd year.
- R. DOT. 6:** Eligible candidate desirous for appearing in the University examination of any/all theory papers must forward his/her application in the prescribed form from the respective college to the University on or before the date prescribed for the purpose under the relevant ordinance.
- R. DMLT. 7:** **INTERNAL ASSESSMENT:**
The internal assessment will be done based on continuous evaluation method. Every year, there will be two internal examinations for both the theory and the practical. For the award of internal marks in theory and practical, the better of the two internal examinations will be considered along with other components like attendance, seminar presentations, workshops & conferences attended and journal submission.
Internal marks calculation - 20% of total marks of a subject (Separately for theory and practical):
The better of two internal examinations: 10% of total marks
Attendance: 5% of total marks
Seminar presentations, workshops &
Conferences attended and journal submission: 5% of total marks
A candidate must obtain minimum of 35% marks of internal evaluation in each paper for both theory and practical separately. Failing which he/she would not be eligible in that paper(s)/ head of passing.

The subsidiary subjects in whom only the internal exam will be conducted, a candidate must obtain minimum of 35% of the total marks before appearing for University examination.

UNIVERSITY (EXTERNAL) EXAMINATION:

PASSING CRITERIA:

Every student has to have an aggregate score of minimum 35% marks of both the internal and University (external) Examination of 100 % marks in theory and practical examination combined together to pass in the University Examination. It is not compulsory to pass in section – I and section – II separately.

But, the student has to score minimum 35 % of marks separately in theory and practical in the University Examination of 80 marks in theory and practical examination and internal examination.

R. DOT. 8:

Promotion and A.T.K.T.

a. Candidates, who have passed separately in theory and practical of all subject heads (course) in F.Y.D.O.T and S.Y D.O.T Shall be promoted to degree certificate.

b. Candidates, who fail in **any three** of the subject heads (courses) in F.Y. D.O.T Shall be granted A.T.K.T. And shall be allowed to attend S.Y.D.O.T as the case may be. Candidate can re-appear in the following subject-heads in the subsequent exam.

c. Candidate would however not be allowed for certificate from. unless and untill s/he passes all subjects of F.Y. D.O.T

DISTRIBUTION OF TEACHING HOURS FOR
FIRST YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

Sr. No.	Subject	Course No.	Teaching Hours
Main Subjects			
1	Human Anatomy	DOT-101	60
	Practical – Anatomy	DOT-101(P)	30
2	Human Physiology	DOT-102	60
	Practical – Physiology	DOT-102(P)	30
3	Pathology	DOT-103	60
	Practical-Pathology	DOT-103(P)	30
4	Microbiology	DOT-104	60
	Practical- Microbiology	DOT-104(P)	30
5	Biochemistry	DOT-105	60
	Practical- Biochemistry	DOT-105(P)	30
Main Subjects- Teaching hours			450
Subsidiary subjects			
6	English	DOT-E-106	60
7	Computer Organization & PC Software	DOT-E-107	30
	Computer Organization & PC Software practical	DOT-E-107(P)	30
Subsidiary subjects- Teaching hours			120
Teaching hours-Theory/Practicals			570
Hospital Posting			360
Total Teaching hours			930

**DISTRIBUTION OF SUBJECTS, CREDITS
AND SCHEME OF EXAMINATION FOR
FIRST YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN**

Table 1. Subjects, Credits and Scheme of Examination

Sr. No.	Subject	Course No.	No. Credits per week	Duration of Uni. Exam	External Marks	Internal Marks	Total	Grand Total
1	Human Anatomy	DOT-101	2	3	80	20	100	100
	Practical – Anatomy	DOT-101(P)	1	-	-	-	-	
2	Human Physiology	DOT-102	2	3	80	20	100	100
	Practical – Physiology	DOT-102(P)	1	-	-	-	-	
3	Pathology	DOT-103	2	3	80	20	100	100
	Practical-Pathology	DOT-103(P)	1	-	-	-	-	
4	Microbiology	DOT-104	2	3	80	20	100	100
	Practical- Microbiology	DOT-104(P)	1	-	-	-	-	
5	Biochemistry	DOT-105	2	3	80	20	100	100
	Practical- Biochemistry	DOT-105(P)	1	-	-	-	-	
	Subsidiary subjects							
6	English	DOT-E-106	2	2	40	10	50	50
7	Computer Organization & PC Software	DOT-E- 107	1	2	40	10	50	50
	Practical- Computer Organization & PC Software	DOT-S-107(P)	1	2	25	25	50	50
Total								650

SYLLABUS OF FIRST YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

SUBJECT NAME: HUMAN ANATOMY

Course code: DOT 101

Theory classes: 60

hours Practical classes :

30 hours

Unit 1. Introduction: human body as a whole

Theory:

- Definition of anatomy and its divisions
- Terms of location, positions and planes
- Cell and its organelles
- Epithelium-definition, classification, describe with examples, function
- Glands- classification, describe serous & mucous glands with examples
- Basic tissues – classification with examples

Practical:

- Histology of types of epithelium
- Histology of serous, mucous & mixed salivary gland

Unit 2. Locomotion and support

Theory:

- Cartilage – types with example & histology
- Bone – Classification, names of bone cells, parts of long bone, microscopy of compact bone, names of all bones, vertebral column, intervertebral disc, fontanelles of fetal skull
- Joints – Classification of joints with examples, synovial joint (in detail for radiology)
- Muscular system: Classification of muscular tissue & histology
- Names of muscles of the body

Practical:

- Histology of the 3 types of cartilage
- Demo of all bones showing parts, radiographs of normal bones & joints
- Histology of compact bone (TS & LS)
- Demonstration of muscles of the body (as functional groups)
- Histology of skeletal (TS & LS), smooth & cardiac muscle

Unit 3. Cardiovascular system

Theory:

- Heart-size, location, chambers, exterior & interior
- Blood supply of heart
- Systemic & pulmonary circulation
- Branches of aorta, common carotid artery, subclavian artery, axillary artery, brachial artery, superficial palmar arch, femoral artery, internal iliac artery
- Peripheral pulse
- Inferior vena cava, portal vein, portosystemic anastomosis

- Great saphenous vein
- Dural venous sinuses
- Lymphatic system- cisterna chyli & thoracic duct
- Histology of lymphatic tissues
- Names of regional lymphatics, axillary and inguinal lymph nodes in brief

Practical:

- Demonstration of heart and vessels in the body
- Histology of large artery, medium sized artery & vein, large vein
- Microscopic appearance of large artery, medium sized artery & vein, large vein
- pericardium
- Histology of lymph node, spleen, tonsil & thymus
- Normal chest radiograph showing heart shadows
- Normal

angiograms

Unit 4. Gastro-intestinal system Theory:

- Parts of GIT, Oral cavity (lip, tongue (with histology), tonsil, dentition, pharynx, salivary glands, Waldeyer's ring)
- Oesophagus, stomach, small and large intestine, liver, gall bladder, pancreas
- Radiographs of abdomen

Unit 5. Respiratory

system Theory:

- Parts of RS, nose, nasal cavity, larynx, trachea, lungs, bronchopulmonary segments
- Histology of trachea, lung and pleura
- Names of paranasal air sinuses

Practical:

- Demonstration of parts of respiratory system.
- Normal radiographs of chest
- Histology of lung and trachea

Unit 6. Urinary

system Theory:

- Kidney, ureter, urinary bladder, male and female urethra
- Histology of kidney, ureter and urinary bladder

Practical:

- Demonstration of parts of urinary system
- Histology of kidney, ureter, urinary bladder
- Radiographs of abdomen-IVP, retrograde cystogram

Unit 7. Reproductive

system Theory:

- Parts of male reproductive system, testis, vas deferens, epididymis, prostate (gross & histology)
- Parts of female reproductive system, uterus, fallopian tubes, ovary (gross & histology)
- Mammary gland – gross

Practical:

- Demonstration of section of male and female pelvis with organs *in situ*
- Histology of testis, vas deferens, epididymis, prostate, uterus, fallopian tubes, ovary
- Radiographs of pelvis – hysterosalpingogram

Unit 8. Endocrine

glands Theory:

- Names of all endocrine glands in detail on pituitary gland, thyroid

- gland, parathyroid gland, suprarenal gland – (gross & histology)

Practical:

- Demonstration of the glands
- Histology of pituitary, thyroid, parathyroid, suprarenal glands

**Unit 9. Nervous
system Theory:**

- Neuron
- Classification of NS
- Cerebrum, cerebellum, midbrain, pons, medulla oblongata, spinal cord with spinal nerve (Gross Anatomy)
- Histology of Cerebrum, cerebellum and spinal cord
- Meninges, Ventricles & cerebrospinal fluid
- Blood supply of brain (In Brief)
- Cranial nerves (Only Names)

Practical:

- ☐ Histology of peripheral nerve & optic nerve
- ☐ Demonstration of all plexuses and nerves in the body
- ☐ Demonstration of all part of brain
- ☐ Histology of cerebrum, cerebellum, spinal cord

Unit 10. Sensory organs:

Theory:

- Skin: Skin-histology
- Appendages of skin
- Eye: Parts of eye & lacrimal apparatus
- Extra-ocular muscles & nerve supply
- Ear: parts of ear- external, middle and inner ear and contents

Practical:

- Histology of thin and thick skin
- Demonstration and histology of eyeball
- Histology of cornea & retina

Unit 11. Embryology:

Theory:

- Spermatogenesis & oogenesis
- Ovulation, fertilization
- Fetal circulation
- Placenta

There shall be no University Practical Examination.

REFERENCE BOOKS

- 1 William Davis (P) understanding Human Anatomy and Physiology
MC Graw Hill
2. Human Anatomy for Nursing & Allied Sciences - 1st edition
Dr. M.K. Anand, Dr. Meena Verma, The Arora Medical Publishers Pvt. Ltd
3. Fattana, Human anatomy (Description and applied)

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SYLLABUS OF FIRST YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

SUBJECT NAME: HUMAN PHYSIOLOGY

Course code: DOT 102

Theory classes: 60

hours Practical classes :

30 hours

Theory:

Unit 1. Blood and Muscle Physiology:

- Composition & Function of Blood
- Erythropoiesis and Leucopoiesis
- Hemostasis
- Action potential and mechanism of Muscle contraction
- Neuromuscular junction

Unit 2. Digestive System and Excretory System

- Movement and Alimentary tract
- Deglutition and Mechanism of Vomiting
- Digestive juices
- Micturition
- Mechanism of Urine formation
- Regulation of acid-base balance

Unit 3. Cardiovascular and Respiratory System

- Heart rate and sound
- Blood pressure
- Cardiac cycle and output
- Mechanism of breathing
- Oxygen and Carbon dioxide Transport
- Pulmonary volume and capacity

Unit 4. Endocrinology and Reproductive System

- Spermatogenesis and Menstrual cycle
- Puberty
- Pregnancy and Lactation
- Hormones of Pituitary, Thyroid & Parathyroid Glands
- Hormones of Adrenal Gland and Pancreas

Unit 5. Nervous System and Special Senses

- Neuron and Neuroglia
- Properties of nerve fibre
- Reflex mechanism and Receptors
- Mechanism of vision and hearing
- Taste and smell

Practical:

- | | |
|----------------------------------|---------------------------|
| • Estimation of Haemoglobin | • Packed Cell Volume |
| • Bleeding time | • Arterial Blood Pressure |
| • Clotting time | • Pulse |
| • Blood Grouping | • Heart rate |
| • Erythrocyte Sedimentation rate | • Breathing rate |

There shall be no University Practical Examination.

REFERENCE BOOKS

1. Guyton (Arthur) Text Book of Physiology.
Latest Ed. Prism publishers
2. Ganong (William F) Review of Medical Physiology. Latest Ed . Appleton
3. Jain AK, Concise

SYLLABUS OF FIRST YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

SUBJECT NAME: PATHOLOGY

Course code: DOT 103

Theory classes: 60

hours Practical classes

: 30 hours Theory

Unit 1. Histo Pathology

- Introduction to Histo Pathology
- Receiving of Specimen in the laboratory
- Grossing Techniques
- Mounting Techniques – various Mountants
- Maintenance of records and filing of the slides.
- Use & care of Microscope
- Various Fixatives, Mode of action, Preparation and Indication. Section Cutting
- Tissue processing for routine paraffin sections
- Decalcification of Tissues.
- Staining of tissues - H& E Staining
- Bio-Medical waste management

Unit 2. Clinical Pathology

- Introduction to Clinical Pathology
- Collection, Transport, Preservation, and Processing of various clinical Specimens
- Urine Examination -- Collection and Preservation of urine. Physical, chemical, Microscopic Examination
- Examination of CSF and other body fluids.
- Sputum Examination.
- Examination of feces

Unit 3. Haematology

- Introduction to Haematology
- Normal constituents of Blood, their structure and function.
- Collection of Blood samples
- Various Anticoagulants used in Haematology
- Various instruments and glassware used in Haematology, Preparation and use of glassware
- Laboratory safety guidelines
- SI units and conventional units in Hospital Laboratory
- Hb, PCV
- ESR
- Normal Haemostasis
- Bleeding Time, Clotting Time, Prothrombin Time, Activated Partial Thromboplastin Time.

Unit 4. Blood Bank

- Introduction
- Blood grouping and Rh Types

- Cross matching

Practical:

- Urine Examination.
- Physical
- Chemical
- Microscopic
- Blood Grouping Rh typing.
- Hb Estimation, Packed Cell Volume[PCV], Erythrocyte Sedimentation rate{ESR}
- Bleeding Time, Clotting Time.
- Histopathology – Section cutting and H & E Staining.[For BSc MLT only]

There shall be no University Practical

Examination.REFERENCE BOOKS

1. Silvertone : Introduction to Medical Lab. Technology
2. Bancroft : Theory and Practical of Histology techniques
3. Textbook of Clinical Blood Banking Science by Zmijewski.
4. Manual for Clinical Pathology by Sabitry Sanyal
5. Practical Pathology by Dr.P.Chakraborty & Gargi Chakraborty
6. Haematology for students and practitioners by Ramnik Sood
7. Histological techniques by K.Laxminarayan

SYLLABUS OF FIRST YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

SUBJECT NAME: MICROBIOLOGY

Course code: DOT 104

Theory classes: 60

hours Practical classes

: 30 hours

Theory

Unit 1. Morphology

- Classification of microorganisms,
- Size, shape and structure of bacteria.
- Use of microscope in the study of bacteria.

Unit 2. Sterilisation and Disinfection

- Principles and use of equipments of sterilization namely Hot Air oven, Autoclave and serum inspissator. Pasteurization,
- Anti septic and disinfectants

Unit 3. Growth and nutrition

- Nutrition, growth and multiplications of bacteria,
- Use of culture media in diagnostic bacteriology.
- Antimicrobial sensitivity test

Unit 4. Immunology

- Infection & Immunity
- Antigen, Immunoglobulin (in brief)
- Principles and interpretation of commonly done serological tests namely Widal, VDRL, ASO, CRP, RF & ELISA. Rapid tests for HIV and HBsAg (Technical details to be avoided)
- Types of Vaccine and immunization schedule

Unit 5. Systematic Bacteriology

- Morphology, cultivation, diseases caused, laboratory diagnosis including specimen collection of the following bacteria (the classification, antigenic structure and pathogenicity to be avoided)
 - *Staphylococci, Streptococci, Pneumococci,*
 - *Gonococci, Meningococci,*
 - *C. diphtheriae, Clostridia, Bacillus,*
 - *Shigella, Salmonella, Esch coli,*
 - *Klebsiella, Proteus, Pseudomonas*
 - *Mycobacteria*
 - *Vibrio cholerae, &*
 - *Spirochetes-Treponema pallidum & Leptospira*

Unit 6. Parasitology

- Morphology, life cycle, laboratory diagnosis of following parasites

- Protozoa - *E. histolytica*, *Plasmodium*,
- Tape worms – *Taenia*
- Intestinal nematodes – Round worm, Hookworm,

Unit 7. Mycology

- Morphology, diseases caused and lab diagnosis of following fungi.
 - *Candida*, *Cryptococcus*,
 - Dermatophytes ,
 - opportunistic fungi.

Unit 8. Virology

- General properties of viruses, diseases caused, lab diagnosis and prevention of following viruses,
 - Herpes,
 - Hepatitis,
 - HIV
 - Rabies and
 - Poliomyelitis.

Unit 9. Hospital infection

- ☐ Causative agents, transmission methods,
- ☐ Prevention and control Hospital infection.

Unit 10. Principles and practice Biomedical waste management

Practical

- Compound Microscope.
- Grams stain
- Acid Fast staining
- Demonstration and sterilization of equipments – Hot Air oven, Autoclave, Bacterial filters.
- Demonstration of commonly used culture media, culture methods
Nutrient broth, Nutrient agar, Blood agar, Chocolate agar, Mac conkey medium, LJ media, Robertson Cooked meat media, Potassium tellurite media with growth, Mac with LF & NLF, NA with staph
- Demonstration of commonly used Biochemical Reactions for identification of bacteria
 - Coagulase test
 - Catalase test
 - IMViC
 - TSI
 - Urease, Oxidase
- Antibiotic susceptibility test
- Anaerobic culture methods.
- Demonstration of common serological tests – Widal, VRDL, ELISA.
- Stool exam for Helminthic ova
- Visit to hospital for demonstration of Biomedical waste management.

There shall be no University Practical

Examination. REFERENCE BOOKS

1. Anathanarayana & Panikar Medical Microbiology
2. Roberty Cruickshank – Medical Microbiology – The

3. Practice of Medical Microbiology
4. Chatterjee – Parasitology – Interpretation to Clinical medicine.
5. Rippon – Medical Mycology
6. Monica Cheesebrough,

SYLLABUS OF FIRST YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

SUBJECT NAME: BIOCHEMISTRY

Course code: DOT 105

Theory classes: 60

hours Practical classes

: 30 hours

Theory

Unit.1 Introduction, specimen collection and Handling

- ☐ Introduction to Bio-chemistry including code of ethics for Medical Lab technicians and Medical Lab Organization.
- ☐ Reception, Registration and Bio-chemical parameters investigated.
- ☐ Types of vials used in blood /specimen collection
- ☐ Anticoagulants
- ☐ Preservatives
- ☐ Blood collection
- ☐ Precautions
- ☐ Safety, first aid, Biological and chemical hazards
- ☐ Processing of samples
- ☐ Preservation
- ☐ Disposal of samples
- ☐ Introduction to laboratory apparatus :
 - Pipettes - different types (Graduated, volumetric, Pasteur, Automatic etc.), Calibration of glass pipettes
 - Burettes, Beakers, Flasks, Funnels, Cuvettes,

Unit 2. Units of measurements and Basics of Instrumentation

- ☐ Conventional and SI units
 - Molecular weight, equivalent weight of elements and compounds, normality, molarity,
 - Preparation of molar solutions, normal solutions, Percent solutions
- I. Colorimetry : Photoelectric methods, instrumentation, principles and laws involved, Operation, maintenance, applications.
- II. Spectrophotometry : Principle, types and applications.
- III. Weighing : Different types of balances used, care and maintenance.
- IV. pH meter-Principle, Use, care and maintenance of pH meter and electrodes
- ☐ Basic lab operations like -Separation of Solids from liquids,
 - a) Centrifugation : Principle, Different types of Centrifuges, care and maintenance, applications
 - b) Filtration using funnel

Unit.3 Carbohydrates :

Definition, biological importance, classification, qualitative tests, Metabolism(brief), Blood glucose.

Unit.4 Lipids :

Definition, biological importance, classification, Acid value, Iodine value, saponification value, Metabolism(brief).

Unit.5 Aminoacids and Proteins :

Definition, biological importance, classification, qualitative tests.

Unit.6 Vitamins and Minerals :

Vitamins : Classification of Vitamins, Sources, Daily requirements, Deficiency diseases.
(In Brief)Minerals (Iron, calcium, Iodine): Sources, Daily requirements, Deficiency diseases .

Unit.7 Enzymes

Nature, Classification and Clinical enzymes.

Unit.8 Nucleic acids- Chemistry and functional aspects

Purine bases, Pyrimidine bases, nucleosides, Nucleotides, DNA & RNA,
Their functionsBrief outline of Replication, Transcription, translation

Unit.9

- PH, buffers, acid-base balance, disorders.
- Digestion and absorption of Biomolecules
- Water, Chemicals and related substances
- ★ Purity of chemicals
- ★ Corrosives

Practical:

- Reception and registration
- Collection of Capillary blood
- Collection of Venous blood
- Separation of Serum from clotted blood
- Separation of plasma from blood
- Lab glass ware
 - a) Identification
 - b) Handling
 - c) Care and Maintenance
 - d) Uses
- Lab instruments
 - a) Centrifuges
 - b) Balances
 - c) Photo Electric colorimeter
 - d) Spectrophotometer
- Preparation of
 - a) Percentage solutions
 - b) Normal solutions
 - c) Molar solutions
- Qualitative identification of tests of sugars
- Qualitative identification of tests of proteins
- Qualitative identification of tests for amino acids
- Estimation of Blood glucose
- Estimation of Blood urea
- Normal and pathological urine.

There shall be no University Practical Examination.

REFERENCE BOOKS

1. TEITZ – Clinical chemistry
Vasudevan (DM) Sreekumari(S) Text
book of Biochemistry for Medical
students ,Latest Ed
2. Varley – Clinical chemistry
3. 3. Kaplan – Clinical chemistry

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SYLLABUS OF FIRST YEAR DIPLOMA IN OPERATION THEATER

TECHNICIAN SUBJECT NAME: ENGLISH

Course code: DOT-E-106

Theory classes: 60 hours

Overall Objectives

The objectives are to develop abilities

- ☐ To process information using a variety of media
- ☐ To use appropriate phrases for performing language functions
- ☐ To edit, select and present information in a format / perspective
- ☐ To listen and reduce information to a point form
- ☐ To read and to expand from points to paragraph
- ☐ To predict, comprehend, infer and synthesize information
- ☐ To question, probe and arrive at information through discussions, dialogues and interviews
- ☐ To answer questions, choose and provide data etc.

A. Reading

The objectives are to enable the students to

- ☐ Read for information news features, articles, newspaper and text
- ☐ Read intensively a collection of short stories given in a compiled text (See for the text and the lessons selected from it below)

Book prescribed

- ☐ L.A.Hill (1970), **Contemporary Short Stories**. Chennai: Oxford University Press. The following stories have been selected for use on the course.
- ☐ The happy Prince
- ☐ A Horseman in the sky
- ☐ The Wolves of Cernogratz
- ☐ The half Mile
- ☐ The Mark of Vishnu
- ☐ The Halfyard Ham
- ☐ Locomotion 38
- ☐ The Ghost Ship
- ☐ Uneasy Homecoming
- ☐ The Trust Property

B. Writing

The objectives are to enable the students to

- ☐ Form words properly using prefixes / suffixes (See list 4 in the Appendix)
- ☐ Use phrasal verbs (See list 3 in the Appendix)
- ☐ Use appropriate and related registers (See list 5 in the Appendix)
- ☐ Writing paragraphs, developing points / ideas
- ☐ Writing resume, job applications, letters of invitations (inviting / accepting/ declining), letters of complaint to civil authorities
- ☐ Answering questions based on the prescribed text:

☐ **Contemporary**

☐ **Short Stories Books Recommended**

- Champa Tickoo and Jaya Sasikumar (2000). **Writing with a Purpose**, Chennai, OUP
- David Jolly (1988). **Writing Tasks: An authentic task approach to individual writing needs.**

C. Listening

The objectives are to enable the students to listen and understand

- Short lecture, descriptions, and narrations, rapid talks, passages read aloud and/or dictated and identify Language functions (See list 2 in the Appendix)
- Conversations based on familiar situations, and
- Note Making

Books Recommended

- Spoken English-D Sasikumar and PV Dhamija (with Audio Cassette) Tata McGraw Hill

D. Speaking

The objectives are to enable the students to

- Use greeting and formula in everyday conversations.
- Use various notions and function of everyday usage (See list 2 in the Appendix)
- Use grammatically correct and appropriately structures to organize thought (See list 1 Containing Syntactic items in the Appendix)
- Give short formal and informal talks, speeches

Books Recommended

- Grant Taylor. English Conversation Practice. New Delhi: Tata McGraw Hill
- R.P. Bhatnagar and R.T. Bell (1999) **Communication in English**, Hyderabad: Orient Longman

SYLLABUS OF FIRST YEAR DIPLOMA IN OPERATION THEATER
TECHNICIAN **SUBJECT NAME: COMPUTER ORGANIZATION & PC**
SOFTWARE
Course code: DOT-E-107

At the end of this course, a student would be able to :

- ☐ identify various components of computer hardware and
- ☐ Use some software in order to manage data related to the profession.

Teaching hours:	Theory:	30 hours
	Practicals:	30 hours

Curriculum:

SECTION A

Unit 1. Computer Organization -I

Generations of a computer, types of a computer, some important terms: hardware, software, program, operating system, interpreter, compiler, assembler, high level languages, bits and bytes. Introduction to number systems

Unit 2. Computer Organization -II

Processors, CPU organization, primary memory, memory addresses, secondary memory, memory hierarchies, magnetic disks, CDROMs, DVDs, input/output devices: keyboards, monitors, mice, printers, modems
The concept of character codes

SECTION B

Unit 1: PC Software- I

Introduction to spreadsheets, the concept of cells and cell addresses, formulas, some important functions, introduction to charts
Introduction, features and applications of a DBMS Database objects Tables – creation, modification, deletion

Working with data – insertion, modification, finding, sorting, grouping, viewing and sharing data

Unit 2. PC Software- II

Forms – creation of forms; modification, viewing and validating data using forms, subforms
Reports – creation, modification, opening, viewing
Creating mailing labels

REFERENCE BOOKS:

- Tanenbaum A. S., Structured Computer Organization, 4th Edition, Prentice-Hall of India Pvt. Ltd., 2002.
- Elmasri, Navathe, Somyajulu, Gupta, Fundamentals of Database Systems, Pearson Education, 2006.
- Progue, Irwin, Roardon, Microsoft Office Access 2007 Bible, Wiley Publishing Inc., 2007.
- Taxali R. K., P C Software for Windows 98 Made Simple, Tata McGraw-Hill, 2001.
- Hall D. V., Microprocessors and Interfacing, McGraw-Hill Book Company, 1986.
- Desai Bipin C., An introduction to Database Systems, 7th Edition, Pearson Education Asia, 2001.

..... **COMPLITION OF FIRST YEAR DIPLOMA IN OPERATION THEATER TECNICIAN**

DISTRIBUTION OF TEACHING HOURS FOR
SECOND YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

Sr. No.	Subject	Course No.	Teaching Hours
Main Subjects			
1	Basic Anesthesia Technology	DOT-201	60
2	Advanced Anesthesia Technology	DOT-202	60
3	Medicines relevant to OT	DOT-203	60
4	Introduction to Operation Theater Technology	DOT-204	60
	Introduction to Operation Theater Technology- Practical	DOT-204-P	60
5	Health Care	DOT-205	45
Main Subjects- Teaching hours			345
Subsidiary subjects			
6	English	DOT-E-206	25
	English Practical	DOT-E-206-(P)	25
7	Computer skills	DOT-7-207	20
Subsidiary subjects- Teaching hours			70
Teaching hours-Theory/Practicals			415
Laboratory Posting			330
Total Teaching hours			745

DISTRIBUTION OF SUBJECTS, CREDITS
AND SCHEME OF EXAMINATION FOR
SECOND YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

1	Basic Anesthesia Technology	DOT- 201	2	3	80	20	100	100
2	Advanced Anesthesia Technology	DOT-202	2	3	80	20	100	100
3	Medicines relevant to OT	DOT-203	2	3	80	20	100	100
4	Introduction to Operation Theater Technology	DOT- 204	1	2	80	20	100	100
5	Introduction to Operation Theater Technology- Practical	DOT-204-(p)	1	2	40	10	50	50
6	Health Care	DOT-205	2	2	40	10	50	50
	Subsidiary subjects							
7	English	DOT-E- 206	1	2	40	10	50	50
		DOT-E- 206(P)	1	1	25	25	50	50
8	Computer skills	DOT-E-202	2	3	40	10	50	50
Total								650

SYLLABUS OF SECOND YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

SUBJECT NAME: BASIC ANAESTHESIA TECHNOLOGY

Course code: DOT-201

Theory classes: 60 hours

S.NO.	TOPIC	Domain	Hours as per MCI
1	Medical Gas	Must Know 1. compressed gas cylinders 2. Colour coding different gas cylinder and pipe linesystem 3. Cylinder storage space and things to remember while empty and full cylinder storing. 4. Diameter index safety system 5. Medical gas pipe line system and station outlets. 6. Alarms and safety devices in pipe line gas supply. Desirable to Know 7. Oxygen concentrator working principle, their uses and care. Nice to know 8. Air compressor	8 Hrs
2	Gas administration devices	Must Know 1. Anaesthesia masks : Types / sizes 2. Flow meters 3. Gas Regulators Desirable to Know 1. Flow restrictors	8 Hrs
3	Oxygen Therapy	Must Know 1. Definition, causes and responses to hypoxemia. 2. Clinical signs of hypoxemia. 3. Goals of oxygen therapy. 4. Evaluation of patients receiving oxygen therapy 5. Hazards of oxygen therapy.	8 Hrs
4	Anaesthesia Machine	Must Know 1. Boyles Machine and its function. 2. Modern anesthesia machine. 3. Hanger and Yoke system 4. Cylinder pressure gauge	11 Hrs

		6. Pressure regulator 7. Vaporizers- TYPES, Hazards, Maintenance, Filling and drainage. 8. Flow meter assembly	
5	Breathing System	Must Know Open and Closed Circuits, Classification of breathing system	9Hrs

6	Injection Techniques	Must Know 1. Intra muscular and insertion of Intra Venous cannulas. 2. Handling of sterilized syringes and needles.	7Hrs
7	Fluids and Electrolytes	Must Know 1.Type of fluid (Crystalloids & Colloids) 2.Steps to prepare I.V. drip 3.Indication of specific fluid and their complication	7 Hrs
8	Gas Analyzers and monitoring	Must know 1.Pulse oxymeter 2.Oxygen Analyser / sensor 3.EtCO2 Monitor / Capnography Nice to Know 4.Transcutaneous oxygen monitor	8 Hrs
9	Resuscitation Techniques	Must know 1.Basic life support (Airway, Breathing, and Circulation) 2.Equipment utilized for it, 3.Drugs used in CPR, 4.Defibrillation	8 Hrs
10	Artificial Airways	Must Know 1.Types of airways (Nasal/Oral) and features, 2. Sizes, colour coding, and methods of insertion 3.Indications for use	8 Hrs
11	Pre op and post op care	Must Know 1.Checking and preparation of Anaesthesia trolley and Eqpt 2. Pre operative preparation of patient. 3. Management of pre operative and post operativerooms. 4. Transportation Techniques of patient in conscious,semi conscious and unconscious patient to and fro – operation theatre.	10 Hrs
	Anesthesia Equipment Maintenance / sterilization	Must Know 1. Cleaning, Disinfection & sterilisation 2. Physical / chemical methods • Testing of sterilization • Critical /semicritical /Non critical devices • Levels of Disinfection	8 Hrs

		2. Electrically operated suction apparatus and its General Principal, uses and care 3. Central pipeline suction, colour coding	
5	Medical Ethics	Must know 1. Relevant medico legal aspects. 2. Responsibilities and duties. 3. Ethical behavior and conduct Nice to Know 1. Medico legal aspects and relation to consumer protection act.	7 Hrs
6	Drugs used in OT / ICU	Must know 1. Drugs used during General anaesthesia and Regional anaesthesia, 2. Intravenous anaesthetic agents uses and complications. 3. Inhalational Anaesthetics 4. Pre-medication indication, Type of drugs used for premedication, Doses and side effects. 5. Narcotic agents and other Analgesics 6. Anti hypertensive drugs Desirable to Know 1. Anticholinesterase drugs 2. Antiarrhythmic, Nice to Know 1. Vasopressors 2. Anticoagulant drugs.	16 Hrs
7	Blood Transfusion	Must know 1. Various types of blood and blood products 2. Pre transfusion Checks 4. Blood administration set 3. Transfusion reactions Desirable to Know 1. Grouping and cross matching	7 Hrs
8	Mental Sickness and Cardiology	Must know 1. Various ECG leads, their placement and normal ECG. 2. Shock : Types, signs & symptoms and management 3. Electroconvulsive (ECT) shock therapy, drug effects on seizure duration Desirable to Know 1. Hemodynamic responses and appropriate treatment	9 Hrs
9	Artificial Ventilation and Related Equipment	Must know 1. Operation room Ventilators and ICU ventilators 2. Complication in patients on Ventilators 3. General care of patient on Ventilator 4. Disinfection and sterilization of ventilators	8 Hrs
10	Anesthesia techniques	Must know 1. General Anaesthesia Technique 2. Regional / Local Anaesthesia Techniques	17 Hrs

		3. Topical Anaesthesia Technique 4. TIVA 5. Balanced Anaesthesia 6. MAC	
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SYLLABUS OF SECOND YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

SUBJECT NAME: MEDICINE RELEVANT TO OPERATION THEATRE

Course code: DOT-203

Theory classes: 60 hours

S.N O.	Topic	Domain	Teaching Hours
	Diabetes Mellitus	Must Know 1. Signs and symptoms Diabetes Mellitus 2. Causes- Type- 1, Type -2 3. Prevention 4. Management 5. Diabetic emergencies -Complications Desirable to know 1. Gestational diabetes, 2. Other types Nice to Know 1. Lifestyle, Medications, Surgery, Support	4 Hrs
2	Hypertension	Must Know 1. Signs and symptoms 2. Causes 3. Prevention Desirable to know 1. Diagnosis 2. Management Nice to Know 1. Pathophysiology	4 Hrs
3	Ischemic heart disease	Must Know 1. Signs and symptoms IHD 2. Risk factors Desirable to know	4 Hrs

		3.Diagnosis 4.Prevention 5.Management	
4	Obesity	Must Know 1.Classification of obesity 2.Effects on health 3.Causes Nice to Know 1. Management	4 Hrs
5	Elderly patient	Must Know 1.Differences between adult and geriatric medicine 2.Aging-associated diseases Desirable to Know 1.Pharmacology 2.Practical concerns	4 Hrs
6	Pregnancy shock 1	Must Know 1. Shock 2.Types and Causes of pregnancy shock 3.Managements of various types of shocks Desirable to Know 1.Clinical Picture of various Shocks	4 Hrs
	COPD	Must Know 1. Signs and symptoms of COPD 2.Cause of COPD Desirable to Know 1Pathophysiology 2. Diagnosis 3.Management 3.Prevention	4 Hrs
8	Anemia	Must Know 1. Signs and symptoms 2.Causes Desirable to Know 1.Diagnosis 2.Treatments Nice to Know 1.Epidemiology	4 Hrs
9	Chronic renal failure	Must Know 1.Signs and symptoms 2.Causes Nice to Know 1.Diagnosis 2.Treatment	4 Hrs
10	Chronic liver disease/failure	Must Know	3 Hrs

		1. Causes of chronic liver disease 2. Physical signs Nice to Know Desirable to Know 1. Recognition 2. Risk factors for various liver diseases 3. Treatment	
11	Paediatric patient infant/neonate	Desirable to Know - What is Pediatrics? - Physical characteristics of newborn - Internal physiological changes at birth Nice to Know 2. Neonatal Nursing : Care and feeding of newborn 3. Potential diseases of neonatal period	4 Hrs
12	Epilepsy	Must Know 1. Signs and symptoms 2. Causes Nice to Know 3. Prevention 4. Management Must Know Desirable to Know 1. Pathophysiology 2. Diagnosis	4 Hrs
13	CVA	Must Know 1. Types of stroke 2. Causes Nice to Know 1. Pathophysiology 2. Evaluation 3. Treatment	3 Hrs

SYLLABUS OF SECOND YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

SUBJECT NAME: INTRODUCTION TO OPERATION THEATRE TECHNOLOGY, SURGICAL EQUIPMENTS & MACHINERY

Course code: DOT-

204 Theory classes: 60

hours Practical classes:

60 hours

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S.NO.	Topic	Domain	Teaching Hours
I	<u>OT Techniques</u>	Must Know 1. Cleaning, Carbolicization and Maintenance of OT. 2. Scrubbing Techniques. 3. Handling sterilized articles in operation theatre. 4. Types of Operation Lights and other sources of lights their care and handling.	14 Hrs

		5. Setting and use of Image intensifier 6. O.T. environment and storing in OT	
2	Sterilization and CSSD	Must Know 1. Methods of instruments cleaning, cleaning agents, detergents, mechanical washing ultrasonic cleaner. 2. Lubrication and inspection of instruments. 3. Care of micro surgical and titanium instruments. 4. Principal of sterilization and disinfection 5. Different methods of sterilization 6. Precaution to be taken during sterilization 7. Methods of checking for efficiency of sterilization. 8. CSSD Desirable to Know 1. Recent advances in the methods of sterilization 2. Recent amendment in EPA (Environmental Protection Agency) with reference to waste disposable.	15 hrs
3	Introduction of surgery	Must Know 1. Basic principal of surgery. 2. Asepsis	14 Hrs
4	Wound Management	Must know 1. Different types of bandages. 2. Surgical Needle & Needle holders. 3. Types of suture material. 4. Techniques of stitching and removal of stitches.	13 Hrs
5	Surgical Instruments	Must know 1. Instruments used for cleaning and draping for a surgical procedure. 2. Classification of General surgical instruments 3. Orthopedic surgery instruments 4. Obstetrics and Gynecological surgery instruments 5. Laparoscopic instruments used for Cholecystectomy and Laparoscopic Gynecology procedures Desirable to Know 1. Urological surgery Instruments 2. Reconstructive surgery instruments	15 Hrs
6	Applied Surgery Eye injury.	Must Know 1. Intra-operative & postoperative problems and complications of general surgery. 2. Management of emergency caesarean section. 3. Laparoscopic gynecology procedures. 4. Surgical management of Fracture, Joint replacement and arthroscopy. 5. Surgical management of endoscopies. 6. Care and maintenance of Para surgical equipment (Cautery, OT lights, OT Table) 7. Esmarch bandage, simple tourniquet, pneumatic	29 Hrs

8. Major abdominal incision.

Desirable to know

9. Positioning of patient for different operation.

10. Surgical Consideration in TURP and PCNL

11. Surgical management in major burns.

Nice to Know

12. Surgical management of laryngectomy and cochlear implant.

13. Management of perforating

REFERENCES:

RECOMMENDED BOOKS FOR STUDY

1. Anatomy and Physiology for nurses Author Ross & Wilson
2. Principles and practice of nursing Author Sister Nancy
3. Introduction to Medical Laboratory Technology Author Dr E.J. Baker
4. Operation Theatre Technique Author Brigden
5. Safety in Operating Theatre Author Mainland and Dudley
6. Operation Room Technique Author Berry
7. Central sterile Supply Author Oxford University Press
8. Introduction to anaesthesia Author Dripps /Vandam/Eckenhoff
9. Anaesthesia Equipments Author Ward
10. Clinical application of ventilator support Author Robert R Kirby
11. Monitoring in Anaesthesia and critical care Medicine Author Caesey D.Blitt
12. Electronic Techniques in Anaesthesia and Surgery Author D.W.Hill

SYLLABUS OF SECOND YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

SUBJECT NAME: HEALTH CARE

Course Code: DOT-205

Theory classes: 45 hours

Unit 1. Introduction to Health

- Definition of Health
- Determinants of Health
- Health Indicators of India
- Health Team

Unit 2. Health Policy and Programmes

- Concept.
- National Health Policy
- National Health Programmes (Briefly Objectives and scope)
- Population of India and Family welfare programme in India

Unit 3. Introduction to Nursing

- What is Nursing ? Nursing principles.
- Inter-Personnel relationships.

Bandaging : Basic turns; Bandaging extremities; Triangular Bandages and their application.

- Nursing Position, Bed making, prone, lateral, dorsal, dorsal recumbent, Fowler's positions, comfort measures, Aids and rest and sleep.

Lifting And Transporting Patients: Lifting patients up in the bed.

Transferring from bed to wheel chair. Transferring from bed to stretcher.

Unit 4. Bed Side Management:

- Giving and taking Bed pan, Urinal :
- Observation of stools, urine. Observation of sputum,
- Understand use and care of catheters, enema giving.
- **Methods Of Giving Nourishment:** Feeding, Tube feeding, drips, transfusion
- Recording of body temperature, respiration and pulse,
- **Simple aseptic technique:** Sterilization and disinfection.
- **Surgical Dressing:** Observation of dressing procedures

Unit 5. First Aid :

- Syllabus as for Certificate Course of Red Cross Society

SUGGESTED BOOKS/LITERATURE:

- MEDICAL HEALTH CARE, by C.M. Francis, Jaypee Brothers
- Current Problems in HEALTH CARE, by George V. Lobo, St. Paul's Society, Allahabad.
- Hospital management Nurses & Patients by H.P. Dunn, St. Pauls Bandar, Mumbai.

SYLLABUS OF SECOND YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

SUBJECT NAME: ENGLISH

Course Code: DOT-E-206

Teaching hours:	Theory:	25 hours
	Practicals:	25 hours

Curriculum:

The objectives are to develop writing and short hand skills

- ☐ To process information using a variety of media
- ☐ To use appropriate phrases for performing language functions
- ☐ To edit, select and present information in a format / perspective
- ☐ To listen and reduce information to a point form
- ☐ To read and to expand from points to paragraph
- ☐ To predict, comprehend, infer and synthesize information
- ☐ To question, probe and arrive at information through discussions, dialogues and interviews
- ☐ To answer questions, choose and provide data etc.

Communication with patients and management.

(Theory) : 2 Credits : 2 hours week

E. Reading

The objectives are to enable the students to

- ☐ Read for information news features, articles, newspaper and text
- ☐ Read intensively a collection of short stories given in a compiled text (See for the text and the lessons selected from it below)

Practical exam:

Writing

The objectives are to enable the students to

- ☐ Form words properly using prefixes / suffixes (See list 4 in the Appendix)
- ☐ Use phrasal verbs (See list 3 in the Appendix)
- ☐ Use appropriate and related registers (See list 5 in the Appendix)
- ☐ Writing paragraphs, developing points / ideas
- ☐ Short hand note in detail.
- ☐ Communication with patients and management.

Book prescribed

L.A.Hill (1970), **Contemporary Short Stories**. Chennai: Oxford University Press. The following stories have been selected for use on the course.

- ☐ The happy Prince
- ☐ A Horseman in the sky
- ☐ The Wolves of Cernogratz
- ☐ The half Mile
- ☐ The Mark of Vishnu
- ☐ The Halfyard Ham
- ☐ Locomotion 38
- ☐ The Ghost Ship
- ☐ Uneasy Homecoming
- ☐ The Trust Property

SYLLABUS OF SECOND YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

SUBJECT NAME: COMPUTER SKILLS

Course Code: DOT-E-207

Theory classes: 20 hours

Objective:

At the end of this course, a student would be able to :

- ☐ identify various components of computer hardware and
- ☐ use some software in order to manage data related to the profession.

Unit 1. Computer Organization -I

Generations of a computer, types of a computer, some important terms: hardware, software, program, operating system, interpreter, compiler, assembler, high level languages, bits and bytes.

Introduction to number systems

Processors, CPU organization, primary memory, memory addresses, secondary memory, memory hierarchies, magnetic disks, CDROMs, DVDs, input/output devices: keyboards, monitors, mice, printers, modems

The concept of character codes

Unit 2. Computer Organization –II

MICROSOFT OFFICE

Introduction to spreadsheets, the concept of cells and cell addresses, formulas, some important functions, introduction to charts

Tables – creation, modification, deletion

Working with data – insertion, modification, finding, sorting, grouping, viewing and sharing data

Forms – creation of forms; modification, viewing and validating data using forms, subforms Reports – creation, modification, opening, viewing

Creating mailing labels

REFERENCE BOOKS:

1. Tanenbaum A. S., Structured Computer Organization, 4th Edition, Prentice-Hall of India Pvt. Ltd., 2002.
2. Elmasri, Navathe, Somyajulu, Gupta, Fundamentals of Database Systems, Pearson Education, 2003.
3. Progue, Irwin, Roardon, Microsoft Office Access 2007 Bible, Wiley Publishing Inc., 2007.
4. Taxali R. K., P C Software for Windows 98 Made Simple, Tata McGraw-Hill, 2001.
5. Hall D. V., Microprocessors and Interfacing, McGraw-Hill Book Company, 1986.
6. Desai Bipin C., An introduction to Database Systems, 7th Edition, Pearson Education Asia, 2001.

COMPLITION OF SECOND YEAR DIPLOMA IN MEDICAL LAB TECNICIAN

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☐ eloping points / ideas



VIBRANT NURSING COLLEGE
MANAGED BY
SHREE SWAMINARAYAN EDUCATION TRUST

CURRICULUM

FACULTY OF PARAMEDICAL SCIENCE

Proposal

For

**DIPLOMA IN MEDICAL
LAB TECHNICIAN (DMLT)**

**VEER NARMAD SOUTH GUJARAT
UNIVERSITY, SURAT**

VIBRANT CAMPUS, AT PO. MASMA, SURAT- OLPAD ROAD, SURAT-394540
Email: vibrantnursingsurat@gmail.com Contact : 98257 26019, 95120 39003.

Objective of the course:

To prepare a Lab technician who –

- ❖ Can perform all types of pathological tests.
- ❖ Can perform all types of Biochemistry tests.
- ❖ Can perform nil types of Microbiology tests.
- ❖ Can help in processing of Histo-cytopathology.
- ❖ Can perform blood bank techniques.

Expected Outcome of the course:

A career in Laboratory Technology is meeting the demand of the growing needs of experts in the fields of Laboratory Department, medical ethics. Laboratory Technology scope lies primarily in hospitals who are Out patient Department, In patient and Surgical . The government and the private sector have already begun working towards strengthening the healthcare system. While the number of available jobs and salaries in many different fields have seen a fall due to the COVID-19 pandemic, employment in the paramedical field is recession-proof and expected to rise.

Thus, it is the need of the hour to increase the workforce of trained paramedics. The courses offered at our institute emphasize the development of core technical skills, language abilities, and life skills in the students through blended learning delivered by facilitators, enabling the learners to transition into capable paramedical professionals.

- R. DMLT. 1:** **Eligibility for the admission:**
Candidates who have passed 10+2 examination in any stream conducted by any recognized School Certification Board or Equivalent Examination;
- R. DMLT. 2:** **Duration of the course:**
Duration shall be for a period of **TWO** years
- R. DMLT. 3:** **Medium of instruction:**
The medium of instruction and examination shall be in English.
- R. DMLT. 4:** **Attendance**
Candidate shall be required to attend at least 75% of the Lectures and Practical separately in each year.
- R. DMLT. 5:** **Subjects, Credits and Scheme of examination**
Main and Subsidiary subjects are common in first year for all the courses of Medical Technology. The subject-wise details of examination for the first year have been given in Table 1.
There shall be three examinations one each at the end of 1st & 2nd year.
- R. DMLT. 6:** Eligible candidate desirous for appearing in the University examination of any/all theory papers must forward his/her application in the prescribed form from the respective college to the University on or before the date prescribed for the purpose under the relevant ordinance.
- R. DMLT. 7:** **INTERNAL ASSESSMENT:**
The internal assessment will be done based on continuous evaluation method. Every year, there will be two internal examinations for both the theory and the practical. For the award of internal marks in theory and practical, the better of the two internal examinations will be considered along with other components like attendance, seminar presentations, workshops & conferences attended and journal submission.
Internal marks calculation - 20% of total marks of a subject (Separately for theory and practical):
The better of two internal examinations: 10% of total marks
Attendance: 5% of total marks
Seminar presentations, workshops &
Conferences attended and journal submission: 5% of total marks
A candidate must obtain minimum of 35% marks of internal evaluation in each paper for both theory and practical separately. Failing which he/she would not be eligible in that paper(s)/ head of passing.
- The subsidiary subjects in whom only the internal exam will be conducted, a candidate must obtain minimum of 35% of the total marks before appearing for University examination.

UNIVERSITY (EXTERNAL) EXAMINATION:

PASSING CRITERIA:

Every student has to have an aggregate score of minimum 35% marks of both the internal and University (external) Examination of 100 % marks in theory and practical examination combined together to pass in the University Examination. It is not compulsory to pass in section – I and section – II separately.

But, the student has to score minimum 35 % of marks separately in theory and practical in the University Examination of 80 marks in theory and practical examination and internal examination.

R. DMLT. 8: Promotion and A.T.K.T.

a. Candidates, who have passed separately in theory and practical of all subject heads (course) in F.Y.D.M.L.T. and S.Y D.M.L.T. Shall be promoted to degree certificate.

b. Candidates, who fail in any three of the subject heads (courses) in F.Y. D.M.L.T. Shall be granted A.T.K.T. And shall be allowed to attend S.Y.D.M.L.T.as the case may be. Candidate can re-appear in the following subject-heads in the subsequent exam.

c. Candidate would however not be allowed for certificate from. Unless and until s/he passes all subjects of F.Y. D.M.L.T.

DISTRIBUTION OF TEACHING HOURS FOR
FIRST YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

Sr. No.	Subject	Course No.	Teaching Hours
Main Subjects			
1	Human Anatomy	DMLT-101	60
	Practical – Anatomy	DMLT-101(P)	30
2	Human Physiology	DMLT-102	60
	Practical – Physiology	DMLT-102(P)	30
3	Pathology	DMLT-103	60
	Practical-Pathology	DMLT-103(P)	30
4	Microbiology	DMLT-104	60
	Practical- Microbiology	DMLT-104(P)	30
5	Biochemistry	DMLT-105	60
	Practical- Biochemistry	DMLT-105(P)	30
Main Subjects- Teaching hours			450
Subsidiary subjects			
6	English	DMLT-E-106	60
7	Computer Organization & PC Software	DMLT-E107	30
	Computer Organization & PC Software-practical	DMLT-E-107(P)	30
Subsidiary subjects- Teaching hours			120
Teaching hours-Theory/Practical's			570
Hospital Posting			360
Total Teaching hours			930

**DISTRIBUTION OF SUBJECTS, CREDITS
AND SCHEME OF EXAMINATION FOR
FIRST YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN**

Table 1. Subjects, Credits and Scheme of Examination

Sr. No.	Subject	Course No.	No. Credits per week	Duration of Uni. Exam	External Marks	Internal Marks	Total	Grand Total
1	Human Anatomy	DMLT-101	2	3	80	20	100	100
	Practical – Anatomy	DMLT-101(P)	1	-	-	-	-	
2	Human Physiology	DMLT-102	2	3	80	20	100	100
	Practical – Physiology	DMLT-102(P)	1	-	-	-	-	
3	Pathology	DMLT-103	2	3	80	20	100	100
	Practical-Pathology	DMLT-103(P)	1	-	-	-	-	
4	Microbiology	DMLT-104	2	3	80	20	100	100
	Practical- Microbiology	DMLT-104(P)	1	-	-	-	-	
5	Biochemistry	DMLT-105	2	3	80	20	100	100
	Practical- Biochemistry	DMLT-105(P)	1	-	-	-	-	
	Subsidiary subjects							
6	English	DMLT-E-106	2	2	40	10	50	50
7	Computer Organization & PC Software	DMLT-E-107	1	2	40	10	50	50
	Practical- Computer Organization & PC Software	DMLT-E-107(P)	1	2	25	25	50	50
Total								650

SYLLABUS OF FIRST YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: HUMAN ANATOMY

Course code: DMLT 101

Theory classes: 60

hours Practical classes

: 30 hours

Unit 1. Introduction: human body as

a whole Theory:

- Definition of anatomy and its divisions
- Terms of location, positions and planes
- Cell and its organelles
- Epithelium-definition, classification, describe with examples, function
- Glands- classification, describe serous & mucous glands with examples
- Basic tissues – classification with examples

Practical:

- Histology of types of epithelium
- Histology of serous, mucous & mixed salivary gland

Unit 2. Locomotion and

support Theory:

- Cartilage – types with example & histology
- Bone – Classification, names of bone cells, parts of long bone, microscopy of compact bone, names of all bones, vertebral column, intervertebral disc, fontanelles of fetal skull
- Joints – Classification of joints with examples, synovial joint (in detail for radiology)
- Muscular system: Classification of muscular tissue & histology
- Names of muscles of the body

Practical:

- Histology of the 3 types of cartilage
- Demo of all bones showing parts, radiographs of normal bones & joints
- Histology of compact bone (TS & LS)
- Demonstration of muscles of the body (as functional groups)
- Histology of skeletal (TS & LS), smooth & cardiac muscle

Unit 3. Cardiovascular

system Theory:

- Heart-size, location, chambers, exterior & interior
- Blood supply of heart
- Systemic & pulmonary circulation
- Branches of aorta, common carotid artery, subclavian artery, axillary artery, brachial artery, superficial palmar arch, femoral artery, internal iliac artery

- Peripheral pulse
- Inferior venacava, portal vein, portosystemic anastomosis
- Great saphenous vein
- Dural venous sinuses
- Lymphatic system- cisterna chyli & thoracic duct
- Histology of lymphatic tissues
- Names of regional lymphatics, axillary and inguinal lymph nodes in brief

Practical:

- Demonstration of heart and vessels in the body
- Histology of large artery, medium sized artery & vein, large vein
- Microscopic appearance of large artery, medium sized artery & vein, large vein
- pericardium
- Histology of lymph node, spleen, tonsil & thymus
- Normal chest radiograph showing heart shadows
- Normal

angiograms
Unit 4. Gastro-intestinal system Theory:

- Parts of GIT, Oral cavity (lip, tongue (with histology), tonsil, dentition, pharynx, salivary glands, Waldeyer's ring)
- Oesophagus, stomach, small and large intestine, liver, gall bladder, pancreas
- Radiographs of abdomen

Unit 5. Respiratory system Theory:

- Parts of RS, nose, nasal cavity, larynx, trachea, lungs, bronchopulmonary segments
- Histology of trachea, lung and pleura
- Names of paranasal air sinuses

Practical:

- Demonstration of parts of respiratory system.
- Normal radiographs of chest
- Histology of lung and trachea

Unit 6. Urinary system Theory:

- Kidney, ureter, urinary bladder, male and female urethra
- Histology of kidney, ureter and urinary bladder

Practical:

- Demonstration of parts of urinary system
- Histology of kidney, ureter, urinary bladder
- Radiographs of abdomen-IVP, retrograde cystogram

Unit 7. Reproductive system Theory:

- Parts of male reproductive system, testis, vas deferens, epididymis, prostate (gross & histology)
- Parts of female reproductive system, uterus, fallopian tubes, ovary (gross & histology)
- Mammary gland – gross

Practical:

- Demonstration of section of male and female pelvis with organs *in situ*
- Histology of testis, vas deferens, epididymis, prostate, uterus, fallopian tubes, ovary
- Radiographs of pelvis – hysterosalpingogram

**Unit 8. Endocrine
glands**

Theory:

- Names of all endocrine glands in detail on pituitary gland, thyroid gland, parathyroid gland, suprarenal gland – (gross & histology)

Practical:

- Demonstration of the glands
- Histology of pituitary, thyroid, parathyroid, suprarenal glands

Unit 9. Nervous

system Theory:

- Neuron
- Classification of NS
- Cerebrum, cerebellum, midbrain, pons, medulla oblongata, spinal cord with spinal nerve (Gross Anatomy)
- Histology of Cerebrum, cerebellum and spinal cord
- Meninges, Ventricles & cerebrospinal fluid
- Blood supply of brain (In Brief)
- Cranial nerves (Only Names)

Practical:

- ☐ Histology of peripheral nerve & optic nerve
- ☐ Demonstration of all plexuses and nerves in the body
- ☐ Demonstration of all part of brain
- ☐ Histology of cerebrum, cerebellum, spinal cord

Unit 10. Sensory organs:

Theory:

- Skin: Skin-histology
- Appendages of skin
- Eye: Parts of eye & lacrimal apparatus
- Extra-ocular muscles & nerve supply
- Ear: parts of ear- external, middle and inner ear and contents

Practical:

- Histology of thin and thick skin
- Demonstration and histology of eyeball
- Histology of cornea & retina

Unit 11. Embryology:

Theory:

- Spermatogenesis & oogenesis
- Ovulation, fertilization
- Fetal circulation
- Placenta

There shall be no University Practical Examination.

REFERENCE BOOKS

1 William Davis (P) understanding
Human Anatomy and Physiology
MC Graw Hill

2. Human Anatomy for Nursing & Allied Sciences - 1st edition
Dr. M.K. Anand, Dr. Meena Verma, The Arora Medical Publishers Pvt. Ltd

3. Fattana, Human

4. anatomy

(Description and
applied)

Saunders & C P Prism Publishers, Bangalore – 1991

5. ESTER . M. Grishcimer,

Physiology & Anatomy with Practical Considerations, J.P. Lippin Cott. Philadelphia

SYLLABUS OF FIRST YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: HUMAN PHYSIOLOGY

Course code: DMLT 102

Theory classes: 60

hours Practical classes

: 30 hours Theory:

Unit 1. Blood and Muscle Physiology:

- Composition & Function of Blood
- Erythropoiesis and Leucopoiesis
- Hemostasis
- Action potential and mechanism of Muscle contraction
- Neuromuscular junction

Unit 2. Digestive System and Excretory System

- Movement and Alimentary tract
- Deglutition and Mechanism of Vomiting
- Digestive juices
- Micturition
- Mechanism of Urine formation
- Regulation of acid-base balance

Unit 3. Cardiovascular and Respiratory System

- Heart rate and sound
- Blood pressure
- Cardiac cycle and output
- Mechanism of breathing
- Oxygen and Carbon dioxide Transport
- Pulmonary volume and capacity

Unit 4. Endocrinology and Reproductive System

- Spermatogenesis and Menstrual cycle
- Puberty
- Pregnancy and Lactation
- Hormones of Pituitary, Thyroid & Parathyroid Glands
- Hormones of Adrenal Gland and Pancreas

Unit 5. Nervous System and Special Senses

- Neuron and Neuroglia
- Properties of nerve fibre
- Reflex mechanism and Receptors
- Mechanism of vision and hearing
- Taste and smell

Practical:

- Estimation of Haemoglobin
- Bleeding time
- Clotting time

- Blood Grouping
- Erythrocyte
Sedimentation rate
- Packed Cell
Volume
- Arterial Blood
Pressure
- Pulse
- Heart rate
- Breathing rate

There shall be no University Practical

Examination.REFERENCE BOOKS

1. Guyton (Arthur) Text Book of
Physiology.Latest Ed. Prism
publishers
2. Ganong (William F) Review of Medical
Physiology.Latest Ed . Appleton
3. Jain AK, Concise Physiology, Latest Ed.

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SYLLABUS OF FIRST YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: PATHOLOGY

Course code: DMLT 103

Theory classes: 60 hours

Practical classes : 30

hours **Theory**

Unit 1. Histo Pathology

- Introduction to Histo Pathology
- Receiving of Specimen in the laboratory
- Grossing Techniques
- Mounting Techniques – various Mountants
- Maintenance of records and filing of the slides.
- Use & care of Microscope
- Various Fixatives, Mode of action, Preparation and Indication. Section Cutting
- Tissue processing for routine paraffin sections
- Decalcification of Tissues.
- Staining of tissues - H& E Staining
- Bio-Medical waste management

Unit 2. Clinical Pathology

- Introduction to Clinical Pathology
- Collection, Transport, Preservation, and Processing of various clinical Specimens
- Urine Examination – Collection and Preservation of urine. Physical, chemical, Microscopic Examination
- Examination of CSF and other body fluids.
- Sputum Examination.
- Examination of feces

Unit 3. Haematology

- Introduction to Haematology
- Normal constituents of Blood, their structure and function.
- Collection of Blood samples
- Various Anticoagulants used in Haematology
- Various instruments and glassware used in Haematology, Preparation and use of glassware
- Laboratory safety guidelines
- SI units and conventional units in Hospital Laboratory
- Hb, PCV
- ESR
- Normal Haemostasis
- Bleeding Time, Clotting Time, Prothrombin Time, Activated Partial Thromboplastin Time.

Unit 4. Blood Bank

- Introduction
- Blood grouping and Rh Types
- Cross matching

Practical:

- Urine Examination.

- Physical
- Chemical
- Microscopic
- Blood Grouping Rh typing.
- Hb Estimation, Packed Cell Volume[PCV], Erythrocyte Sedimentation rate{ESR}
- Bleeding Time, Clotting Time.
- Histopathology – Section cutting and H &E Staining.[For BSc MLT only]

There shall be no University Practical

Examination.REFERENCE BOOKS

1. Silvertone : Introduction to Medical Lab. Technology
2. Bancroft : Theory and Practical of Histology techniques
3. Textbook of Clinical Blood Banking Science by Zmijewski.

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4. Manual for Clinical Pathology by Sabitry Sanyal
5. Practical Pathology by Dr.P.Chakraborty & Gargi Chakraborty
6. Haematology for students and practitioners by Ramnik Sood
7. Histological techniques by K.Laxminarayan 8.Practical Pathology by Dr.K.Uma Chaturvedi & Tejsindersingh

SYLLABUS OF FIRST YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: MICROBIOLOGY

Course code: DMLT 104

Theory classes: 60 hours

Practical classes : 30
hours

Theory

Unit 1. Morphology

- Classification of microorganisms,
- Size, shape and structure of bacteria.
- Use of microscope in the study of bacteria.

Unit 2. Sterilisation and Disinfection

- Principles and use of equipments of sterilization namely Hot Air oven, Autoclave and serum inspissator. Pasteurization,
- Anti septic and disinfectants

Unit 3. Growth and nutrition

- Nutrition, growth and multiplications of bacteria,
- Use of culture media in diagnostic bacteriology.
- Antimicrobial sensitivity test

Unit 4. Immunology

- Infection & Immunity
- Antigen, Immunoglobuline (in brief)
- Principles and interpretation of commonly done serological tests namely Widal, VDRL, ASO, CRP, RF & ELISA. Rapid tests for HIV and HBsAg (Technical details to be avoided)
- Types of Vaccine and immunization schedule

Unit 5. Systematic Bacteriology

- Morphology, cultivation, diseases caused, laboratory diagnosis including specimen collection of the following bacteria (the classification, antigenic structure and pathogenicity to be avoided)
 - *Staphylococci, Streptococci, Pneumococci,*
 - *Gonococci, Meningococci,*
 - *C. diphtheriae, Clostridia, Bacillus,*
 - *Shigella, Salmonella, Esch coli,*
 - *Klebsiella, Proteus, Pseudomonas*
 - *Mycobacteria*
 - *Vibrio cholerae, &*

- *Spirochetes-Treponema pallidum & Leptospira*

Unit 6. Parasitology

- Morphology, life cycle, laboratory diagnosis of following parasites
 - Protozoa - *E. histolytica*, *Plasmodium*,
 - Tape worms - *Taenia*
 - Intestinal nematodes - Round worm, Hookworm,

Unit 7. Mycology

- Morphology, diseases caused and lab diagnosis of following fungi.
 - *Candida*, *Cryptococcus*,
 - Dermatophytes ,
 - opportunistic fungi.

Unit 8. Virology

- General properties of viruses, diseases caused, lab diagnosis and prevention of following viruses,
 - Herpes,
 - Hepatitis,
 - HIV
 - Rabies and
 - Poliomyelitis.

Unit 9. Hospital infection

- ☐ Causative agents, transmission methods,
- ☐ Prevention and control Hospital infection.

Unit 10. Principles and practice Biomedical waste management

Practical

- Compound Microscope.
- Grams stain
- Acid Fast staining
- Demonstration and sterilization of equipments – Hot Air oven, Autoclave, Bacterial filters.
- Demonstration of commonly used culture media, culture methods
Nutrient broth, Nutrient agar, Blood agar, Chocolate agar, MacConkey medium, LJ media, Robertson Cooked meat media, Potassium tellurite media with growth, Mac with LF & NLF, NA with staph
- Demonstration of commonly used Biochemical Reactions for identification of bacteria
 - Coagulase test
 - Catalase test
 - IMViC
 - TSI
 - Urease, Oxidase
- Antibiotic susceptibility test
- Anaerobic culture methods.
- Demonstration of common serological tests – Widal, VRDL, ELISA.
- Stool exam for Helminthic ova
- Visit to hospital for demonstration of Biomedical waste management.

There shall be no University Practical

Examination. REFERENCE BOOKS

1. Anathanarayana & Panikar Medical Microbiology
2. Roberty Cruickshank – Medical Microbiology – The Practice of Medical Microbiology

3. Chatterjee – Parasitology – Interpretation to Clinical medicine.
4. Rippon – Medical Mycology
5. Monica Cheesebrough,

SYLLABUS OF FIRST YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: BIOCHEMISTRY

Course code: DMLT 105

Theory classes: 60 hours

Practical classes : 30
hours

Theory

Unit.1 Introduction, specimen collection and Handling

- I ☐ Introduction to Bio-chemistry including code of ethics for Medical Lab technicians and Medical Lab Organization.
- ☐ Reception, Registration and Bio-chemical parameters investigated.
- ☐ Types of vials used in blood /specimen collection
- ☐ Anticoagulants
- ☐ Preservatives
- ☐ Blood collection
- ☐ Precautions
- ☐ Safety, first aid, Biological and chemical hazards
- ☐ Processing of samples
- ☐ Preservation
- ☐ Disposal of samples
- ☐ Introduction to laboratory apparatus :
 - Pipettes - different types (Graduated, volumetric, Pasteur, Automatic etc.), Calibration of glass pipettes
 - Burettes, Beakers, Flasks, Funnels, Cuvettes,

Unit 2. Units of measurements and Basics of Instrumentation

- ☐ Conventional and SI units
 - Molecular weight, equivalent weight of elements and compounds, normality, molarity,
 - Preparation of molar solutions, normal solutions, Percent solutions
- I. Colorimetry : Photoelectric methods, instrumentation, principles and laws involved, Operation, maintenance, applications.
- II. Spectrophotometry : Principle, types and applications.
- III. Weighing : Different types of balances used, care and maintenance.
- IV. pH meter-Principle, Use, care and maintenance of pH meter and electrodes
- ☐ Basic lab operations like -Separation of Solids from liquids,
 - a) Centrifugation : Principle, Different types of Centrifuges, care and maintenance, applications
 - b) Filtration using funnel

Unit.3 Carbohydrates :

Definition, biological importance, classification, qualitative tests, Metabolism(brief), Blood glucose.

Unit.4 Lipids :

Definition, biological importance, classification, Acid value, Iodine value, saponification value, Metabolism(brief).

Unit.5 Aminoacids and Proteins :

Definition, biological importance, classification, qualitative tests.

Unit.6 Vitamins and Minerals :

Vitamins : Classification of Vitamins, Sources, Daily requirements, Deficiency diseases. (In Brief) Minerals (Iron, calcium, Iodine): Sources, Daily requirements, Deficiency diseases .

Unit.7 Enzymes

Nature, Classification and Clinical enzymes.

Unit.8 Nucleic acids- Chemistry and functional aspects

Purine bases, Pyrimidine bases, nucleosides, Nucleotides, DNA & RNA, Their functions Brief outline of Replication, Transcription, translation.

Unit.9

- PH, buffers, acid-base balance, disorders.
- Digestion and absorption of Biomolecules
- Water, Chemicals and related substances
- ★ Purity of chemicals
- ★ Corrosives

Practical:

- Reception and registration
- Collection of Capillary blood
- Collection of Venous blood
- Separation of Serum from clotted blood
- Separation of plasma from blood
- Lab glass ware
 - a) Identification
 - b) Handling
 - c) Care and Maintenance
 - d) Uses
- Lab instruments
 - a) Centrifuges
 - b) Balances
 - c) Photo Electric colorimeter
 - d) Spectrophotometer
- Preparation of
 - a) Percentage solutions
 - b) Normal solutions
 - c) Molar solutions
- Qualitative identification of tests of sugars
- Qualitative identification of tests of proteins
- Qualitative identification of tests for amino acids
- Estimation of Blood glucose
- Estimation of Blood urea
- Normal and pathological urine.

There shall be no University Practical Examination.

REFERENCE BOOKS

1. TEITZ – Clinical chemistry
Vasudevan (DM) Sreekumari(S) Text
book of Biochemistry for Medical
students ,Latest Ed
2. Varley – Clinical chemistry
3. 3. Kaplan – Clinical chemistry

SYLLABUS OF FIRST YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: ENGLISH

Course code: DMLT E 106

Theory classes: 60 hours

Aim

These two course will aim at helping the course participants develop their communication skills in English by training them in handling all the four language skills effectively. The learners will be able to listen, speak, read and write in English adequately so that they could participate in various activities and perform satisfactory the different tasks listed below.

Overall Objectives

The objectives are to develop abilities

- ☐ To process information using a variety of media
- ☐ To use appropriate phrases for performing language functions
- ☐ To edit, select and present information in a format / perspective
- ☐ To listen and reduce information to a point form
- ☐ To read and to expand from points to paragraph
- ☐ To predict, comprehend, infer and synthesize information
- ☐ To question, probe and arrive at information through discussions, dialogues and interviews
- ☐ To answer questions, choose and provide data etc.

A. Reading

The objectives are to enable the students to

- ☐ Read for information news features, articles, newspaper and text
- ☐ Read intensively a collection of short stories given in a compiled text (See for the text and the lessons selected from it below)

Book prescribed

- ☐ L.A.Hill (1970), **Contemporary Short Stories**. Chennai: Oxford University Press. The following stories have been selected for use on the course.
- ☐ The happy Prince
- ☐ A Horseman in the sky
- ☐ The Wolves of Cernogratz
- ☐ The half Mile
- ☐ The Mark of Vishnu
- ☐ The Halfyard Ham
- ☐ Locomotion 38
- ☐ The Ghost Ship
- ☐ Uneasy Homecoming
- ☐ The Trust Property

B. Writing

The objectives are to enable the students to

- ☐ Form words properly using prefixes / suffixes (See list 4 in the Appendix)
- ☐ Use phrasal verbs (See list 3 in the Appendix)
- ☐ Use appropriate and related registers (See list 5 in the Appendix)
- ☐ Writing paragraphs, developing points / ideas
- ☐ Writing resume, job applications, letters of invitations (inviting / accepting/ declining), letters of complaint to civil authorities
- ☐ Answering questions based on the prescribed text: **Contemporary Short Stories**

Books Recommended

- Champa Tickoo and Jaya Sasikumar (2000). **Writing with a Purpose**, Chennai, OUP
- David Jolly (1988). **Writing Tasks: An authentic task approach to individual writing needs.**

C. Listening

The objectives are to enable the students to listen and understand

- Short lecture, descriptions, and narrations, rapid talks, passages read aloud and/or dictated and identify Language functions (See list 2 in the Appendix)
- Conversations based on familiar situations, and
- Note Making

Books Recommended

- Spoken English-D Sasikumar and PV Dhamija (with Audio Cassette) Tata McGraw Hill

D. Speaking

The objectives are to enable the students to

- Use greeting and formula in everyday conversations.
- Use various notions and function of everyday usage (See list 2 in the Appendix)
- Use grammatically correct and appropriately structures to organize thought (See list 1 Containing Syntactic items in the Appendix)
- Give short formal and informal talks, speeches

Books Recommended

- Grant Taylor. **English Conversation Practice.** New Delhi: Tata McGraw Hill
- R.P.Bhatnagar and R.T.Bell (1999) **Communication in English**, Hyderabad: Orient Longman

SYLLABUS OF FIRST YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: COMPUTER ORGANIZATION & PC SOFTWARE

Course code: DMLT E 107

Objective:

At the end of this course, a student would be able to :

- identify various components of computer hardware and
- Use some software in order to manage data related to the profession.

Teaching hours:	Theory:	30 hours
	Practicals:	30 hours

Curriculum:

SECTION A

Unit 1. Computer Organization -I

Generations of a computer, types of a computer, some important terms: hardware, software, program, operating system, interpreter, compiler, assembler, high level languages, bits and bytes.

Introduction to number systems

Unit 2. Computer Organization -II

Processors, CPU organization, primary memory, memory addresses, secondary memory, memory hierarchies, magnetic disks, CDRoms, DVDs, input/output devices: keyboards, monitors, mice, printers, modems

The concept of character codes

SECTION B

Unit 1: PC Software- I

Introduction to spreadsheets, the concept of cells and cell addresses, formulas, some important functions, introduction to charts

Introduction, features and applications of a DBMS

Database objects

Tables – creation, modification, deletion

Working with data – insertion, modification, finding, sorting, grouping, viewing and sharing data

Unit 2. PC Software- II

Forms – creation of forms; modification, viewing and validating data using forms, subforms Reports – creation, modification, opening, viewing

Creating mailing labels

REFERENCE BOOKS:

- Tanenbaum A. S., Structured Computer Organization, 4th Edition, Prentice-Hall of India Pvt.Ltd., 2002.
- Elmasri, Navathe, Somyajulu, Gupta, Fundamentals of Database Systems, Pearson Education, 2006.
- Progue, Irwin, Roardon, Microsoft Office Access 2007 Bible, Wiley Publishing Inc., 2007.

- Taxali R. K., P C Software for Windows 98 Made Simple, Tata McGraw-Hill, 2001.
- Hall D. V., Microprocessors and Interfacing, McGraw-Hill Book Company, 1986.
- Desai Bipin C., An introduction to Database Systems, 7th Edition, Pearson Education Asia, 2001.

..... **COMPLITION OF FIRST YEAR DIPLOMA IN MEDICAL LAB TECNICIAN**

DISTRIBUTION OF TEACHING HOURS FOR
SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

Sr. No.	Subject	Course No.	Teaching Hours
Main Subjects			
1	Pathology	DMLT-201	60
	Pathology-Practical	DMLT-201(P)	45
2	Microbiology	DMLT-202	60
	Microbiology-Practical	DMLT-202- (P)	25
3	Biochemistry	DMLT-203	60
	Biochemistry-Practical	DMLT-203- (P)	25
4	Bio-ethics	DMLT-204	40
5	Health Care	DMLT-205	60
Main Subjects- Teaching hours			345
Subsidiary subjects			
6	English	DMLT-E-206	25
	English practical	DMLT-S-206-(P)	25
7	Computer skills	DMLT-S-202	20
Subsidiary subjects- Teaching hours			70
Teaching hours-Theory/Practicals			415
Laboratory Posting			330
Total Teaching hours			745

**DISTRIBUTION OF SUBJECTS, CREDITS
AND SCHEME OF EXAMINATION FOR
SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN**

Sr. No.	Subject	Course No.	No. Credits per week	Duration of Uni. Exam	External Marks	Internal Marks	Total	Grand Total
1	Pathology	DMLT- -201	2	3	80	20	100	150
	Practical - Pathology	DMLT-201(P)	1	1 day	40	10	50	
2	Microbiology	DMLT--202	2	3	80	20	100	100
	No practical Exam		1					
3	Biochemistry	DMLT- 203	2	3	80	20	100	100
	No practical Exam		1					
4	Bioethics	DMLT- 204	1	2	40	10	50	50
5	Health Care	DMLT-205	2	2	80	20	50	100
	Subsidiary subjects							
6	English	DMLT-E-206	2	2	40	10	50	50
		DMLT-E-206(P)	1	1	25	25	50	50
7	Computer skills	DMLT-E-206	1	2	40	10	50	50
Total								650

SYLLABUS OF SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: PATHOLOGY

Course code: DMLT 201

**Teaching Hours: Theory: 60 hours
 Practical: 45 hours**

Theory:

Unit 1. Hematology

- Hemopoiesis, Stem cells, formed elements and their functions
- Anticoagulants used in various hematological studies
- Routine hematological tests and normal values
- Determination of Hemoglobin and Hematocrit
- Enumeration of RBC, WBC & Platelets
- Absolute Eosinophil count
- Reticulocyte count
- Calculation of Red cell Indices
- Preparation of staining of blood film for morphology of red cells and differential count.
- Automated Hematology cell counter

- **Special Hematological tests:**
- Sickling tests
- Osmotic fragility test
- Determination HbF and HbA₂
- Hemoglobin Electrophoresis
- Investigation of G6PD deficiency
- Plasma haptoglobin and demonstration of hemosiderin in urine
- Tests for Autoimmune hemolytic anemia
- Measurement of abnormal Hb pigments

- **Hemostasis and Coagulation**
- Normal hemostasis, mechanism of blood coagulation and normal fibrinolytic system
- Collection of blood and anticoagulants used in coagulation studies
- Investigation of hemostatic mechanism-BT, CT, whole blood coagulation time test, PT, PTT.
- Thrombin Time, Plasma Fibrinogen, FDP, D-Dimer
- Demonstration of LE cells.

Unit 2. Immunohematology

- ABO Blood group and Rh system
- Subgroups of A and B , Other blood groups and Bombay group

- HLA antigens and their significance

I

Unit 3. Histopathology

- **Instrumentation :** (a) Automated Tissue Processor
(b) Microtome, Microtome-knives, Knife sharpener
(c) Freezing microtome and Cryostat
- **Techniques :**
 - (a) Routine paraffin section cutting
 - (b) Frozen section and Cryostat section studies
- **Mounting techniques: Various mountants and mounting techniques**

Unit 4. Cytology

1. Normal cell structure, functions, cytologic criteria of malignancy
 2. Instruments in Cytology
 3. Types of specimens, methods of collection & preparation of cell block
 4. Different fixatives and methods of fixation
 5. Staining : (a) Papanicolaou's stain- principle , preparation and staining techniques
(b) May Grunwald Giemsa stain
(c) H & E stain
- (c) Female Genital tract**
1. Normal cytology
 2. Techniques of collection of specimen for cervical cytology study
 3. Hormonal cytology and cytological indices
- **Respiratory tract, Gastrointestinal tract and Urinary tract**
 1. Normal cytology
 2. Collection of sample, preparation of smears and staining

PRACTICALS

1. Determination of Hemaglobin and Hematocrit
2. Red blood cell count
3. Total white blood cell count
4. Platelet count
5. Differential count of white blood cells
6. Absolute Eosinophil count
7. Reticulocyte count
8. Paraffin section cutting
9. Staining by Hematoxylin & Eosin and other special stains

SYLLABUS OF SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: MICROBIOLOGY

Course code: DMLT 202

**Teaching Hours: Theory: 60 hours
 Practicals: 25 hours**

Theory:

Unit 1. General Microbiology

- History and Pioneers in Microbiology: Contributions of Antony Van Leeuwenhoek, Louis Pasteur, Joseph Lister, Robert Koch (Koch's Postulates),
- Bacterial Taxonomy: Nomenclature and classification of microbes (in brief)
- Microscopy, Stained preparation, Size & Shape
- Morphology of bacteria: Structures of a bacterial cell and their functions
- Physiology of Bacteria: Nutrition, Gaseous requirement, temperature requirement and other growth requirements
- Culture media in diagnostic bacteriology.
- Culture methods
- Identification of bacteria
- Antimicrobial sensitivity test

Unit 2. Immunology:

- Antigens
- Immunoglobulins
- Immunity
- Complement system
- Infection: Sources of infection, Modes of transmission, Factors predisposing to microbial Pathogenicity, Types of infectious diseases

Antigen and antibody reactions

- General Features of antigen-antibody reaction
- Precipitation, Agglutination
- Complement Fixation Test
- Neutralisation, Opsonisation
- Immunofluorescence, RIA, EIA
- Western Blot
- Immunochromatography

Unit 3. Mycology.

- The morphology and reproduction in fungi
- Classification of fungi
- Morphology, diseases caused and lab diagnosis of:-
- Opportunistic fungi- Cryptococcus, Candidiasis, Aspergillus, Zygomycetes.

- Fungi causing superficial mycoses- Dermatophytes,
- Subcutaneous mycoses- Mycetoma.

- Fungi causing superficial mycoses- *Pityriasis versicolor*, *Tinea Nigra*, *Piedra*
- Subcutaneous mycoses- *Rhinosporidium*, *Sporothrix*, *Dematiaceous fungi*
- Anti-mycotic agents
- systemic infections-*Blastomyces*, *Coccidioides*, *Paracoccidioides*, *Histoplasma*

4. Parasitology

Protozoology-

1. *Entamoeba histolytica*
2. *Balantidium coli*
3. *Giardia*
4. *Toxoplasma*
5. Malaria
6. *Leishmania*

Helminthology

- Cestodes - *Taenia*, *E. granulosus*, *D.latum*, *H.nana*
- Trematodes - *Schistosoma*, *Fasciola*
- Nematodes - *Ascaris*, *Ancylostoma deudenale*, *Strongyloides*, *Trichuris*, *Trichinella*, *Dracunculus*, Filarial worms

PRACTICALS: Microbiology

General Microbiology:

- Staining: Gram's , Acid fast
- Sterilization methods
- Media preparation
- Culture methods

Parasitology:

1. Stool examination for parasitic eggs/cysts
 - a. Saline mount
 - b. Iodine mount
 - c Concentration methods

Mycology:

1. Slide culture technique
2. KOH mount
3. Identification of fungal cultures
 - a. Colony characteristics and Microscopic examination of *Candida*, *Cryptococcus*, *Trichophyton*, *Microsporum*, *Aspergillus niger*, *Asp fumigatus*,

SYLLABUS OF SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: BIOCHEMISTRY

Course code: DMLT 203

**Teaching Hours: Theory: 60 hours
 Practicals: 25 hours**

UNIT 1. Instrumentation

- Colorimetry , Spectrophotometry , Chromatography, Flame photometry, Fluorimetry
- Autoanalysers, electrolyte analyzer, Gas analyzer
- RIA , ELISA , Chemiluminescence, Electrophoresis

UNIT 2. General Biochemistry of Carbohydrates

- Digestion & absorption of carbohydrates
- Classification of carbohydrate
- Biomedical importance
- Chemical & Physical properties of carbohydrate
- Carbohydrate Metabolism: Glycolysis, TCA

UNIT 3. General Biochemistry of Proteins

- Digestion & absorption of Proteins
- Classification of proteins & amino acid
- Structure & function of proteins & amino acid
- Classification & Properties of Plasma proteins
- Protein metabolism : Transamination, Deamination, Decarboxylation of amino acid

UNIT 4. General Biochemistry of Lipids

- Digestion & absorption of lipid.
- Definition, Classification, Types & Function
- TAG, Phospholipids & other compound lipids
- Metabolism of lipids: Beta-oxidation

UNIT 5. Nucleic acids

- Nucleobases, Nucleosides, Nucleotides
- Nucleic acids: Structure & Types
- Replication, Transcription, Translation

UNIT 6. Enzymes

- Definition & Classification
- Factors affecting enzyme activity

- Enzyme Inhibition

UNIT 7. Vitamins & Minerals

- Minerals : Calcium, Iron, Phosphorus, Iodine, Sodium & Potassium.
- Vitamins : Water soluble and Fat soluble (Including Deficiency Disease)

UNIT 8. Biophysics

- Viscosity, Surface tension, colloids, Osmotic pressure
- Donnan membrane equilibrium

PRACTICALS: Biochemistry

- Qualitative analysis of carbohydrates, proteins, amino acids.
- Estimation blood sugar and Blood Urea
- CSF Analysis
- Bile Analysis
- Acid hydrolysis of starch
- Enzyme hydrolysis of starch
- Qualitative screening test for normal and abnormal urine sample.
- Protein precipitation, separation of proteins, electrophoresis of serum
- Colour reaction of protein.

SUGGESTED BOOKS :

- Dr. Praful B. Godkar, Text Books of Medical Laboratory Technology
- Anathanarayana & Panikar – A Text Book of Medical Microbiology
- Monica Cheesbrough, District Laboratory Practice in Tropical countries – Part I & Part II
- P. Chakraborty- A Text Book of Microbiology
- Chatterjee , KD – Parasitology
- Vasudevan & Shreekumar : Biochemistry for Medical students
- Dacie, Practical Haematology
- K. Laxminarayan : Histological techniques
- Dr. Mukherjee, Medical Laboratory Technology, Volume I , II & III
- Silvertone : Introduction to Medical Lab. Technology
- Manual for Clinical Pathology by Sabitry Sanyal
- Harper's Biochemistry

SYLLABUS OF SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: BIO-ETHICS

Course code: DMLT 204

Goals

1. Provide a sense of responsibility and professionalism when interacting with patients, peers, fellow employees, and other health care providers.
2. Communicate effectively and professionally.
3. Instill the importance of honesty and professionalism in the workplace.

By the end of this module, the student should be able to:

1. Exhibit behavior consistent with the ethical practice of Medical Technologist.
2. Maintain confidentiality of all patients and test results.
3. Demonstrate an appreciation for the special knowledge and talent of other members of the health care team.
4. Explain the transmission of the AIDS/HIV and state how the virus affects the Immune system.

Methods of Presentation

Lecture, Discussion, Audio-Visual materials

Duration : 40 hours

COURSE CONTENT

1. Values of life (Philosophy)/in clinical practice & Definition of medical ethics. **2 hour**
2. History of Medical Ethics: **4 hour**
 - Indian perspectives : Charaka, Susruta
 - The Hippocratic Oath
 - Declaration of Helsinki
 - WHO Declaration of Geneva
 - International code of Medical Ethics
3. Ethical problems of life **4 hour**
 - Right to life, prenatal screening / sex selection Abortion, feticide
 - Assisted reproductive technologies
 - Genetic testing
 - Genetic engineering, cloning
 - Care of terminally ill
 - Death and dying
 - Euthanasia

- | | | |
|----|---|--------|
| 4. | Family and society in medical ethics : | 4 hour |
| | <ul style="list-style-type: none"> • Children : Age to consent for treatment parent- Child – clinician conflict • Mental Disorders and disabilities • HIV / AIDs | |
| 5. | Etiquette and mannerism | 4 hour |
| 6. | Good communication skill | 4 hour |
| | <ul style="list-style-type: none"> • Truthfulness, Building trust, Honesty with patients • Communication with colleagues, seniors and subordinates | |
| 7. | Confidentiality | 2 hour |
| | <ul style="list-style-type: none"> • Malpractice, negligence • Medical ethics and law | |
| 8. | Code of ethics: (Please refer Annexure for elaborations) | |
| | <ul style="list-style-type: none"> • Duties to Patients | 2 hour |
| | <ul style="list-style-type: none"> • Duties to Colleagues and other Professionals: | 2 hour |
| | <ul style="list-style-type: none"> • Duties to Yourself: | 2 hour |
| | <ul style="list-style-type: none"> • Duties to Society: | 2 hour |
| | <ul style="list-style-type: none"> • Duties to your Profession: | 2 hour |
| | <ul style="list-style-type: none"> • Specific issues: | 2 hour |

Internal Evaluation:	
(Problem based questions, Short notes, MCQ, Viva)	2 hour

EVALUATION : TOTAL: 50 marks

Internal evaluation:	10 marks
External Exam (One paper of 2 hours):	40 marks
• Problem oriented question • Short notes • Short answer questions	

There will no Practical Exam for this course.

SUGGESTED BOOKS/LITERATURE:

1. MEDICAL ETHICS, by C.M.Francis, Jaypee Brothers
2. Current Problems in Medical ethics, by George V. Lobo, St. Paul's Society, Allahabad.
3. Ethics for Doctors, Nurses & Patients by H.P. Dunn, St. Pauls Bandar, Mumbai.

CODE OF ETHICS: DMLT

Code of Ethics, under different categories, has been elaborated hereunder as applied to the profession of Medical Technician/Technologist. It is however suggested that these elaborations are only indicative and not exclusive. There could be many more situations/events, depending on the nature of work involved in different types of specialization of Medical Technology; which would also be deemed to be a part of the curriculum as and when identified.

1. Code of Ethics: Duties to Patients:

- accountability for the quality and integrity of the services they provide.
- respect patients' privacy and dignity
- treat patients politely and with consideration
- apply the principle of informed consent as an on-going process
- recognize the rights of patients to maintain confidentiality of information in the course of professional duties, unless they agree to disclosure or the law demands
- patients' permission before sharing information with their spouses, partners or relatives.
- always seek to give priority to the service to be provided to patients solely on the basis of clinical need.

• Code of Ethics: Duties to Colleagues and other Professionals:

- Should not make a patient doubt a colleagues' knowledge or skills by making comments about them that cannot be fully justified.
- ☐ Work with and respect other health care professionals in pursuit of the best healthcare possible for all patients.
- ☐ Should not discriminate against colleagues, including professionals applying for posts, because of views of their race, culture, ethnicity, social status, lifestyle, perceived economic worth, age, gender, disability, communicable disease status, sexual orientation, religious or spiritual beliefs, or any condition of vulnerability.
- ☐ Refrain from speaking ill of colleagues or other health care professionals.
- ☐ Actively strive to establish cooperative and respectful working relationships with other health

care professionals with the primary objective of ensuring a high standard of care for the patients they serve.

☐ Share their knowledge with colleagues and promote learning.

- **Code of Ethics: Duties to Yourself :**

- Maintain and improve the standard of your performance by keeping your professional knowledge and skills up to date throughout your working life. In particular, regularly take part in educational activities that relate to medical laboratory science.
- Acknowledge the limits of your professional knowledge and competence. Do not pretend to know everything.
- Use equipment and laboratory ware correctly and with care.
- Refrain from engaging in activities that may affect your health and lead to impairment.
- Aware laws and regulations governing medical laboratory technology and shall apply them in the practice of your profession.
- Not wasting reagents and other laboratory supplies unnecessarily.
- Never taking anything from place of work that does not belong to you

- **Code of Ethics: Duties to Society**

- Refrain from providing a service that is not needed, whether it provides financial gain or not.
- Refrain from unnecessary wastage, and from participating in improper financial arrangements, especially those that escalate costs and disadvantage individuals or institutions unfairly.
- Dedicate to serve the healthcare needs of the public

- **Code of Ethics: Duties to your Profession**

- Uphold and maintain the dignity and respect of medical laboratory profession and strive to maintain a reputation of honesty, integrity and reliability.
- Contribute to the advancement of the profession by improving the body of knowledge, adopting scientific advances that benefit the patient, maintaining high standards of practice and education, and seeking fair socioeconomic working conditions for members of the profession.

- **Specific issues:** Any other issues specific to a particular specialization of Medical Technology profession not categorized in any of the above.

SYLLABUS OF SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: HEALTH CARE

Course Code: DMLT-205

Theory classes: 60 hours

Unit 1. Introduction to Health

- Definition of Health
- Determinants of Health
- Health Indicators of India
- Health Team

Unit 2. Health Policy and Programmes

- Concept.
- National Health Policy
- National Health Programmes (Briefly Objectives and scope)
- Population of India and Family welfare programme in India

Unit 3. Introduction to Nursing

- What is Nursing ? Nursing principles.
- Inter-Personnel relationships.

Bandaging : Basic turns; Bandaging extremities; Triangular Bandages and their application.

- Nursing Position, Bed making, prone, lateral, dorsal, dorsal re-cumbent, Fowler's positions, comfort measures, Aids and rest and sleep.

Lifting And Transporting Patients: Lifting patients up in the bed. Transferring from bed to wheel chair. Transferring from bed to stretcher.

Unit 4. Bed Side Management:

- Giving and taking Bed pan, Urinal :
- Observation of stools, urine. Observation of sputum,
- Understand use and care of catheters, enema giving.
- **Methods Of Giving Nourishment:** Feeding, Tube feeding, drips, transfusion
- Recording of body temperature, respiration and pulse,
- **Simple aseptic technique:** Sterlization and disinfection.
- Surgical Dressing: Observation of dressing procedures

Unit 5. First Aid :

- Syllabus as for Certificate Course of Red Cross Society

SUGGESTED BOOKS/LITERATURE:

- MEDICAL HEALTH CARE, by C.M.Francis, Jaypee Brothers
- Current Problems in HEALTH CARE, by George V. Lobo, St. Paul's Society, Allahabad.

- Hospital management Nurses & Patients by H.P. Dunn, St. Pauls Bandar, Mumbai.

SYLLABUS OF SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: ENGLISH

Course Code: DMLT-E-206

Teaching hours:	Theory:	25 hours
	Practicals:	25 hours

Curriculum:

The objectives are to develop writing and short hand skills

- ☐ To process information using a variety of media
 - ☐ To use appropriate phrases for performing language functions
 - ☐ To edit, select and present information in a format / perspective
 - ☐ To listen and reduce information to a point form
 - ☐ To read and to expand from points to paragraph
 - ☐ To predict, comprehend, infer and synthesize information
 - ☐ To question, probe and arrive at information through discussions, dialogues and interviews
 - ☐ To answer questions, choose and provide data etc.
- Communication with patients and management.

(Theory) : 2 Credits : 2 hours week

E. Reading

The objectives are to enable the students to

- ☐ Read for information news features, articles, newspaper and text
- ☐ Read intensively a collection of short stories given in a compiled text (See for the text and the lessons selected from it below)

Practical exam:

Writing

The objectives are to enable the students to

- ☐ Form words properly using prefixes / suffixes (See list 4 in the Appendix)
- ☐ Use phrasal verbs (See list 3 in the Appendix)
- ☐ Use appropriate and related registers (See list 5 in the Appendix)
- ☐ Writing paragraphs, developing points / ideas
- ☐ Short hand note in detail.
- ☐ Communication with patients and management.

Book prescribed

L.A.Hill (1970), **Contemporary Short Stories**. Chennai: Oxford University Press. The following stories have been selected for use on the course.

- ☐ The happy Prince
- ☐ A Horseman in the sky
- ☐ The Wolves of Cemogratz
- ☐ The half Mile
- ☐ The Mark of Vishnu

- ☐ The Halfyard Ham
 - ☐ Locomotion 38
 - ☐ The Ghost Ship
 - ☐ Uneasy Homecoming
 - ☐ The Trust Property
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SYLLABUS OF SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: COMPUTER SKILLS

Course Code: DMLT-E-207

Theory classes: 20 hours

Objective:

At the end of this course, a student would be able to :

- ☐ identify various components of computer hardware and
- ☐ use some software in order to manage data related to the profession.

Unit 1. Computer Organization -I

Generations of a computer, types of a computer, some important terms: hardware, software, program, operating system, interpreter, compiler, assembler, high level languages, bits and bytes.

Introduction to number systems

Processors, CPU organization, primary memory, memory addresses, secondary memory, memory hierarchies, magnetic disks, CDRoms, DVDs, input/output devices: keyboards, monitors, mice, printers, modems

The concept of character codes

Unit 2. Computer

Organization –II

MICROSOFT OFFICE

Introduction to spreadsheets, the concept of cells and cell addresses, formulas, some important functions, introduction to charts

Tables – creation, modification, deletion

Working with data – insertion, modification, finding, sorting, grouping, viewing and sharing data

Forms – creation of forms; modification, viewing and validating data using forms, subforms Reports – creation, modification, opening, viewing

Creating mailing labels

REFERENCE BOOKS:

1. Tanenbaum A. S., Structured Computer Organization, 4th Edition, Prentice-Hall of India Pvt. Ltd., 2002.
2. Elmasri, Navathe, Somyajulu, Gupta, Fundamentals of Database Systems, Pearson Education, 2006.
3. Progue, Irwin, Roardon, Microsoft Office Access 2007 Bible, Wiley Publishing Inc., 2007.
4. Taxali R. K., P C Software for Windows 98 Made Simple, Tata McGraw-Hill, 2001.
5. Hall D. V., Microprocessors and Interfacing, McGraw-Hill Book Company, 1986.
6. Desai Bipin C., An introduction to Database Systems, 7th Edition, Pearson Education Asia, 2001.

COMPLITION OF SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

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VIBRANT NURSING COLLEGE
MANAGED BY
SHREE SWAMINARAYAN EDUCATION TRUST

CURRICULUM

FACULTY OF PARAMEDICAL SCIENCE

Proposal

For

**Diploma in Hospital Management
(D.H.M.)**

**VEER NARMAD SOUTH GUJARAT
UNIVERSITY, SURAT**

VIBRANT CAMPUS, AT PO. MASMA, SURAT-OLPAD ROAD, SURAT-394540
Email: vibrantnursingsurat@gmail.com Contact : 98257 26019, 95120 39003.

Objective of the course:

- 1) To provide an environment that enables students to benefit and learn nuances of Hospital Management from their collective learning experiences.
- 2) To offer opportunities to develop the ability to think analytically and build capacity for independent learning.
- 3) To develop capabilities to complete a challenging extended piece of independent study in a learning environment where project work choices are supported by faculty research.

Expected Outcome of the course:

- 1) Demonstrate adequate knowledge and mastery of techniques relevant to hospital management and/or to demonstrate a clear understanding of concepts, information and techniques at the forefront of the hospital management discipline
- 2) Develop awareness of the responsibilities of senior hospital management, including understanding the role and functions of hospitals and their health care context and prepare to handle the management and development issues faced by a hospital manager, including structure and organization; planning and managing resources; and reviewing and evaluating services.
- 3) Recognize how operational problems and situations are handled in practice by undertaking and reporting at a hospital attachment
- 4) Formulate ideas and develop and participate in implementation of plans
- 5) Take a proactive and self-reflective role in working and to develop professional relationship

COURSE TITLE: Diploma in Hospital Management (DHM)

• **OBJECTIVES:**

To gain comprehensive understanding of all aspects relating to financial statements, principles, procedures of accounting and their application to different practical situations

• **DURATION AND NATURE OF COURSE:**

The duration of the D.H.M. programme shall be one-year + 6 Month OTP

• **Medium: - English/Gujarati**

• **Tenure: Jan to Jun (Sem.-1) & July to Dec (Sem.-2)**

• **Intake capacity: 60**

• **Attendance:**

A candidate shall be considered to have pursued a regular course of study if he/she attends 75% of the total number of sessions conducted in each semester during his/her study and duly certified by the coordinator/principle to have attended the 75% of sessions separately in each course in the respective semester.

To be eligible for the evaluations through Term End Examinations, candidate shall be required to secure minimum attendance of 75%, failing which a candidate shall not be allowed to appear in the Examination. Condonation of attendance where required as per university rules.

- **Passing Standard:**

Minimum marks in Each Paper to pass is 40%.

- **Eligibility:** Candidates who have passed 10+2 examination in any stream conducted by any recognized School Certification Board or Equivalent Examination;

- **Admission Process:** Admission will be offered strictly on the basis of merit list.

Admissions under reservation category will be followed as per University rules.

- **Job profiles in accounting field is as follows:**

Hospital, public sector health Department etc.

Diploma in Hospital Management (D.H.M.)

Course Structure SEMESTER – I Subject Code	Paper No.	Course Name	Internal Marks	External Marks	Total Marks	Credits	Total Teaching Hours
DHM 01	01	Principles of Hospital Management	30	70	100	04	15 Wks x 4 hrs = 60
DHM 02	02	Managerial Accounting & Computer Basics	30	70	100	04	15 Wks x 4 hrs = 60
DHM 03	03	Hospital Planning and marketing	30	70	100	04	15 Wks x 4 hrs = 60

SEMESTER – II Subject Code	Paper No.	Course Name	Internal Marks	External Marks	Total Marks	Credits	Total Teaching Hours
DHM 04	04	Hospital Administration	30	70	100	04	15 Wks x 4 hrs = 60
DHM 05	05	Hospital & Human Resource Management	30	70	100	04	15 Wks x 4 hrs = 60

DHM 06	06	Laws Related to Hospital Services	30	70	100	04	15 Wks x 4 hrs = 60
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DIPLOMA IN HOSPITAL MANAGEMENT(DHM)

SEMESTER – I

Paper No-01: Principles and Practices of Management and Organizational Behavior

Subject Code: DHM 01

Course credit: 04

Teaching Hours: 60

Marks:70

Unit	Content
1	Basic concepts of Management: Definition - Evolution of Management Thought - Functions of Management - Planning - Nature and Purpose - Setting Objectives - Management by Objectives - Organizing - Nature and Purpose - Departmentation - Line and Staff Authority -Decentralization – Centralization - Authority Responsibility - Accountability and Power.
2	Directing - Communication – Process of Communication Hierarchy - Maslow's Need of Hierarchy and Herzberg two factor theory - Leading – Trait Theory, Blake and Montain's Managerial Grid, Hersey Blanchard's Situational Leadership. - Process of Controlling - PERT - CPM - Work Study - Quality Circles

3	Decision making - Nature & purpose - Principles Decision Making Definition - Step Of Decision Making - Group Decision Making - Advantage & Dis Advantage - Guideline of Effective Decision Making - Decision Tree -Buries Of Decision Making - Meaning of Personality - Development of Personality - Nature & dimensions of attitude - Organizational Commitment
4	Motives - Characteristics - Classification of Motives - Primary Motives – Secondary Motives - Morale - Definition & relationship with productivity - Morale Indicators: Theories of Work motivation - Maslow's Theory of Need Hierarchy - Herzberg's Theory of Job Loading
5	Group Dynamics & Teams - Theories of Group Formation - Formal Organization & Informal Groups & their interaction - Importance of teams - Formation of teams -Team Work

Suggested Readings and Reference Books:

References Book:-

1. Essentials of Management – By Harold Koontz & Heinz Weihrich – 7th Ed. – Tata McGraw Hill.
2. Essentials of Management – By Joseph L. Massie – Prentice Hall India.
3. Management of OrganisationBehaviour –By Paul Hersey & Blanchard – Prentice Hall India.
4. OrganisationalBehaviour – By John W. Newstrom – Tata McGraw Hill.
5. OrganisationalBehaviour – By Fred Luthans – McGraw Hill Intl.

Paper No-02:Managerial Accounting &Computer basics

Subject Code: DHM 02

Course credit: 04

Teaching Hours: 60

Marks: 70

Unit	Content
1	Introduction - Origin of Accounting & its importance Taxation, Audit, etc. . Double Entry System of Accounts - Transactions – Debit & Credit - Classification of Accounts .Journal - Types of Journals/Subsidiary Books - Passing of Journal Entries, writing of narrations.
2	Ledger - Posting in Ledger - Balancing of Ledger Accounts, Preparation of Trial Balance, Depreciation, Preparation of Final Accounts, Working Capital Management - Needs of Working Capital Changes in Financial Statements, Budgetary Control, Elements of Cost of a Product/Service
3	Computer basics: Definition of a Computer, Computer generations, Types of computers, Memory, CPU, I-O devices, Secondary storages, Magnetic Tape, Disk, CD-ROM. Other recent developments-Scanners, Digitizer, Plotters, Printers Representation of Data: Information Software Concepts: Introduction to Programming, Flowcharts and Algorithms. Types of Softwares System software's, Application software's, Firmware software's Operating System-Introduction: Definition of an Operating System, Functions of an OS, Types of an OS, concept of I-O port. File management-FAT, file handling functions. Software and hardware interrupts. File Management: Types of computer MS-DOS, UNIX, MS- WINDOWS, Difference between two OS (Single & multi-user os) Operating system applications. . Office Automation Software (MS-Office 2000/MS-Office 2003: Word processing Software MS-Word.) Spreadsheet Software MS-Excel, Database Management Software MS-Access, Presentation Software MS-Powerpoint and other applications.. Introduction to Virus and Vaccines, Various types of Viruses & Vaccines
4	Basic Concept of Networking and Data Communications: Introduction to Networking & types of Networking. Basic communication concepts, Topologies, Protocols, Ethernet, TCP/IP etc. Introduction to Internet

	Technology: Explanation of Internet and its applications like Emailing, Chatting Browsing Data Uploading/Downloading etc.
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Suggested Readings and Reference Books:

1. Useful Reading for Hospital Management – By Col. Khare& Others.
2. Basic Accounts & Finance for Non-Accounts – By Prof. D.K.Chatterjee- Himalaya Publishing House
3. Handbook on Accounting for Hospital Management– By Prof. D. K.Chatterjee - Himalaya Publishing House
4. Operating System Concept: by Peterson Biberachaty.
5. Operating System: by Millan Milenkoric.
6. Fundamentals of Computers: by Rajaraman.
7. Know your PC: by Peter Norton.
8. Computer Networks: by Andrew S. Tenenbaum.
9. Computer Network and Distributed Processing: by James martin.

Paper No-03:Hospital Planning and Marketing

Subject Code: DHM 03

Course credit: 04

Teaching Hours: 60

Marks: 70

Unit	Content
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1	Types of Hospital Organization & Statutory Requirements for Planning, Steps in Hospital Planning: Need Assessment - Appointment of Planning Teams/Consultants - Appointment of Architect - Size of the Hospital - Design of the Hospital - Selection of the Contractor - Preparation of Architect's Brief. - Selection of the Size, Preparation of the Master plan. - Preparation of Schedule of Accommodation. - Layout, Grouping, Zoning & Phasing of Activities.
2	Circulation & Movements of Patients, Staff, Visitors of certain departments such as ICU, OT, Pediatric, Maternity ward. Planning for Water supply, Electricity, Drainage & Sewage disposal, Planning for Equipments & Purchase, Planning for various categories of Staff, Administrative action for Appointment, Training
3	Marketing Concepts, Need, principles, Significance, Customer Satisfaction, Market research, Marketing planning, Marketing Strategies, Profiles, Control and growth in marketing, Market Analysis, Segmentation
4	Targets, Product Mix, Pricing Mix. Marketing of hospital and Healthcare services: The Market mix, market plans, pricing decisions, etc Role of marketing in health care organizations, Strategic Marketing management- Concepts, planning & implementation methods
5	Concepts of Donor marketing - attracting funds, Planning and its promotion in a competitive market Corporate Health Services & Corporate health tie-ups

Suggested Readings and Reference Books:

1. Hospital Planning & Administration – WHO Monograph Series 54 – By R. Llewelyn, Davis & H.M.C. Macaulay – Indian Edition – Jaypee Brothers, New Delhi.
2. Hospital & Nursing Homes : Planning, Organisation, & Management – By Syed Amin Tabish – Jaypee Brothers, New Delhi
3. Principles of Hospital Administration & Planning – By B.M. Sakharkar – Jaypee Brothers

4. Hospital Administration – By C.M. Francis & MariocDesouza – Jaypee Brothers, New Delhi
5. Hospital Administration & Planning – By A.G. Chandorkar – Paras Medical Publisher.
06. Hospitals Planning, Design & Management – By Kunders & Gopinath.
6. Healthcare System & Management – By S.L. Goel – Deep & Deep Publisher
7. Management of Hospital – By S.L. Goel & R. Kumar – Deep & Deep Publisher

Paper No-04: Hospital Administration I

Subject Code: DHM 04

Course credit: 04

Teaching Hours: 60

Marks: 70

Unit	Content
1	Routine Admission/Discharge Procedures/Discharge Summary, Hospital Utilisation Statistics - Average Length of Stay (ALS) - Bed Occupancy Rate - Turn Over Interval Daily Reports / Returns. - Hospital Census - Matron's Report - Medical Officer's Report - Casualty Report, Medico-Legal Cases - Report from ICU / ICCU – Security Report - Maintenance Department Report - OT List
2	Patient's Complaints. Medical Certificates, Hospital Committees - Role, Composition, Frequency of Meetings, Minutes of the Meetings, Follow up Actions, Patient Satisfaction Survey. • Interviews, Questionnaires, Observations, Group Discussions, Patient Opinion Polls, Report Writing.

3	Duty Roster of various categories of Staff, Availability of Materials - Critical Items, Stock Level, Procurement Methods. Administration of Patient Related Schemes - Medical Insurance (Cashless Benefit), CGHS, ECHS, CSMA, TPA, ESI.
4	Front Office: Duties & Responsibilities, Duties & Responsibilities of the Hospital Administrator/CEO. - In Profit Making Hospitals - In Non- Profit Making Hospitals Disaster Management/Disaster Plan, Hospital Security - Staff, Patients, New born babies, Female staff/Patients, Stores, Application of Hospital Information System (HIS) & Management Information System (MIS), Negotiation Skills - Purchase of Stores / Equipment, Union Matters, Collective Bargaining, Hospital Waste Management, Methods of Infection Control
5	Fire Fighting, Dealing with Crisis Situation, - Mob violence, Bomb threat, Terrorist strike, Mass casualties, Political agitation, Prisoners Standard Operating Procedures (SOPs).

Suggested Readings and Reference Books:

1. Sana's Guidelines for Hospital Infection Control – By Mohd. S. Khan – Jaypee Brothers, New Delhi.
2. Hospital Waste Management & it's Monitoring – By Madhuri Shama – Jaypee Brothers, New Delhi.
3. Medical Stores Management – By Shakti Gupta & Sunil Kant - Jaypee Brothers, New Delhi
4. Medical Records, Organisation & Management – By G.P. Mogli – Jaypee Brothers, New Delhi
5. Emergency Medical Services & Disaster Management – By D.K. Dave & Shakti Gupta – Jaypee Brothers, New Delhi
6. Hospital Waste Management – By A.G. Chandorkar – Paras Medical Publisher.
7. Hospital Infection Control – By S.A. Tabish – Academia, New Delhi.

Paper No-05:Human Resource Management

Subject Code: DHM 05

Course credit: 04

Teaching Hours: 60

Marks: 70

Unit	Content
1	Human Resource Management Functions of Human Resource Management – The Managerial Perspective - Objectives of Personnel Department - Human Resource Development (HRD), Position of the Personnel Department - Organization of the Personnel Department - Line – Staff Relationship - Manpower Planning & Development - Manpower Needs.
2	Job Analysis, Job Description & Specifications for Hospital Staff, Selection & Recruitment, Orientation, Manpower Developing & Training - Counseling
3	Career Planning, Promotion Policies - Separation - Employee Turnover – Wage Administration, Salary Administration, Employee Benefits & Social Security - Performance Appraisals: Techniques & Practices - Industrial Relations - Unions & their role - Settlement of disputes - Industrial Dispute Act - Collective bargaining.
4	Employee Communication, Dynamics of Behaviour at Individual Level – Group Dynamics, Issues Relating to Management of Professionals - Consultants, Specialists, Medical Officers, Nursing Staff, Other Paramedical Staff

5	Development of staff - In service Training, on job Training, Higher Courses, Specialised Training, Discipline - Punctuality - Dress code - Identification Behaviours of staff - Disciplinary action - Law of natural justice.
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Suggested Readings and Reference Books: Reference Book

1. Personnel Management & Industrial Relations – By Rustom S. Davar – Vikas Publishing House
2. Human Resource Management – By Garry Dessler – Prentice Hall India
3. Human Resource & Personnel Management – By Aswathappa – Tata McGraw Hill
4. Human Resource Management – By Khan

Paper No-06: Laws related to Hospital Services

Subject Code: DHM 06

Course credit: 04

Teaching Hours: 60

Marks: 70

Unit	Content
1	Introduction & Legal Procedures - Court, Affidavit, Evidence, Complaint, Investigation, Oath, Offence, Warrant, Summons - Medico Legal Aspects of Emergency Services, Inquest - Police Inquest, Magistrate's Inquest, Criminal Courts in India & their Powers, General Important Legal Knowledge Pertaining to IPC, CRPC, Civil PC, Evidence Act.

2	Introduction to Indian Constitution - Preamble, Fundamental Rights, Rights & Responsibilities of Medical Person; Hippocratic Oath, Declaration of Geneva, List of Offences & Professional Misconduct of Doctors, as per Medical Council of India, Organisational & Procedural Laws
3	Indian Contract Act - Nursing Home-Registration Act - Birth-Death Registration Act, Labour Laws Applicable to a Hospital - Indian Trade Union Act 1926/Industrial Dispute Act 1947 - The Bombay Shops & Establishment Act - The Workmen's Compensations Act.
4	The Industrial Employment (Standing Orders) Act 1946 - Payment of Wages Act. - Employee Provident Fund Act - Maternity Benefit Act 11. Medical Establishment, Professional Negligence, Errors & Commission, Insurance Policy - General Claims Procedure, Laws Related to Medical Procedures - Medical Termination of Pregnancy Act 1971(MTP Act) - Prenatal Diagnostic Techniques, Regulations & Prevention of Misuse Act 1994 (PNDT Act)
5	Transplantation of human organs Act 1994, Consumer Protection Act 1986, Medical Negligence & Compensation, Medical Ethics/Doctor Patient Relationship, Preventive Steps for Doctors/Hospitals to Avoid Litigation - Consent Form - Life Support - Dying Declaration - Death Certificate - High Risk - Post Mortem - Illustrative Cases of Medical Negligence in India - Surgery - OBST/GYNAEC - Medicine - Pediatrics - Other Disciplines/Anaesthesia, Legal Requirements of Licences/Certificates for a Hospital

Reference Book

1. Parikh's Text Book of Medical Jurisprudence & Toxicology – By Dr. C.K. Parikh – CBS Publications
2. Medical Negligence & Compensation – By Jagdish Singh – Bharat Law, Jaipur.
3. Medical Negligence & Legal Remedies – By Anoop K. Kaushal – Universal
4. Medical Termination of Pregnancy Act.

Preconception & Prenatal Diagnostic Techniques (Prohibition of sex selection) Act
1994.



VIBRANT NURSING COLLEGE
MANAGED BY
SHREE SWAMINARAYAN EDUCATION TRUST

CURRICULUM

FACULTY OF PARAMEDICAL SCIENCE

Proposal

For

Diploma in Fire Safety (DFS)

**VEER NARMAD SOUTH GUJARAT
UNIVERSITY, SURAT**

VIBRANT CAMPUS, AT PO. MASMA, SURAT- OLPAD ROAD, SURAT-394540
Email: vibrantnursingsurat@gmail.com Contact : 98257 26019, 95120 39003.

Objective of the course:

On completion of this Fire Safety Course, participants will be able to:-

- ❖ Describe the chemistry of fire
- ❖ Identify fire hazards in the workplace
- ❖ Follow evacuation procedures
- ❖ Select and use appropriate firefighting equipment

Expected Outcome of the course:

- The Fire Safety Order requires that fire safety training is provided to staff when they commence employment and that refresher training is provided on a regular basis.
- Fire is often the biggest safety risk any businesses ever has. Without fire safety training your insurances may not be valid and your staff are left vulnerable. This course will help to understand the major causes of fires in the work place and Learn how to prevent fires, Look for possible fire hazards and report them.
- Learn to aware of fire safety devices in their office and building, Be familiar with the building's emergency procedures, Know what to do if a fire breaks out.
- Learn how to evacuate quietly and calmly.

Diploma in Fire and Safety Syllabus

	Paper No. Subject Code	Paper Name	Marks	Passing Standard
Semester I	DFS101 23596	Fire tech & design	100	40
	DFS102 23597	Principles of Management	100	40
	DFS103 23598	Construction safety	100	40
	DFS104 23599	Industrial safety	100	40
Semester II	DFS105 23600	Environmental safety	100	40
	DFS106 23601	Safety of People in the Event of Fire	100	40
	DFS107 23602	Organization Behaviour	100	40
	DFS108 23603	Field Training	100	40

Unit	Contents	Marks/Weightage
1	Classification of fire portable fire extinguishers pumps and primers foam and foam making equipment	18
2	Hose and hose fitting water relay systems breathing apparatus small gears	18
3	Fire protective clothing ladders Ropes and lines, bends & hitches fire prevention	17
4	Special appliances firefighting codes and standards electrical fire hazards structures under fire.	17

Reference Book: -

1. Handbook of Fire Technology- by R.S. Gupta, 2005.
2. Brown, Tim. "What We Can Learn from Barn Raisers." Design Thinking: Thoughts by Tim Brown. Design Thinking, y 2015.
3. Knapp, Jake. "The 8 Steps to Creating a Great Storyboard." Co. Design. Fast Company & Inc.,
4. van der Lelie, Corrie. "The Value of Storyboards in the Product Design Process." Journal of Personal and Ubiquitous Computing 10.203 (2006): 159-162.web. 9 July 2015. [PDF].
5. Miltenson, Alisson. "Design Research 101: Prototyping Your Service with a Storyboard." Peer Insight. Peer Insight, 31 May 2013. Web. 9 July 2015.

Paper 102 Principles of Management

Unit	Contents	Marks/Weightage
1	Definition of Management, Science or Art, management and Administration, Development of Management Thought Contribution of Taylor and Fayol, Functions of Management, Planning: Nature & Purpose, Steps involved in Planning, Objectives, Setting Objectives, Process of Managing by Objectives, Strategies, Policies & Planning Premises, Forecasting, Decision-making.	18
2	Organizing: Nature and Purpose, Formal and Informal Organization, Organization Chart, Structure and Process, Departmentation by difference strategies, Line and Staff authority – Benefits and Limitations – De-Centralization and Delegation of Authority – Staffing – Selection Process – Techniques – HRD – Managerial Effectiveness.	18
3	Directing: Scope, Human Factors, Creativity and Innovation, Harmonizing Objectives, Leadership, Types of Leadership Motivation, Hierarchy of Needs, Motivation theories, Motivational Techniques, Job Enrichment, Communication, Process of Communication, Barriers and Breakdown, Effective Communication, Electronic media in Communication.	17
4	Controlling: System and process of Controlling, Requirements for effective control, The Budget as Control Technique, Information Technology in Controlling, Productivity, Problems and Management, Control of Overall Performance, Direct and Preventive Control, Reporting, The Global Environment, Globalization and Liberalization, International Management and Global theory of Management.	17

Reference / Text-Books/ Additional Reading:

1. Wehrich Heinz and Koontz Harold-Management A Global and Entrepreneurial Perspective Mc Graw Hill 12th Edition 20012
2. Stoner, Freeman & Gilbert Jr--Management Organizational Behaviour
3. Prentice Hall of India 6th Edition or later edition
4. Rao VSP Management, Text & Cases Excel Books Latest Edition

Unit	Content	Marks/Weightage
1	Site planning and housekeeping types of scaffolds erection & dismantling scaffold inspection	18
2	Safety in scaffolding — an overview Investigation of scaffold accident provisions on scaffold under the building other construction workers central rules, 1998 safety in excavations, trenching and shoring	18
3	Road work and pilling operation ladders use of safety nets and fall protection systems concrete and concert foams and shoring	17
4	Importance of civil work in construction industry Material handling important safety requirements and inspections.	17

Reference Book

1. K.N. Vaid (Ed.), Construction Safety Management, National Institute of Construction Management and Research, Bombay.
2. V.J. Davies & K. Tomasin, Construction Safety Handbook, Thomas Telford Publishing, London.
3. James B. Fullman, Construction Safety, Security & Loss Prevention, John Wiley & Sons
4. Linger L, Modern Methods of Material Handling
5. R.T. Ratay, Handbook of Temporary Structures in Construction, McGraw-Hill
6. National Building Code of India 2005, SP-7, Bureau of Indian Standards, New Delhi.
7. Contract Labour Act and Central Rules
8. Building & Other Construction Workers (RE &CS) Act, 1996 and Central Rules.

Unit	Content	Marks/Weightage
1	Fundamentals of industrial safety different types of industries different types of safety systems and equipment safety policy and safety terminology	18
2	Work permit systems job safety analysis hazop study fault tree analysis	18
3	Emergency planning safety inventory systems safety survey occupational health hazards safety organization and duties of a safety officer	17
4	Accident prevention methods safety committee accident investigation safety management systems laws related to safety (factories ACT 1948 explosive ACT, electricity ACT etc.)	17

Reference Book

1. Industrial Safety, Health Environmental Management System: R.K. Jain, Sunil S. Rao
2. Industrial Safety, Health Environmental Management System: R.K. Jain Sunil S. Rao, Khana Publishers
3. Ronald P. Blake, Industrial Safety: Prentice Hall, New Delhi, 1973

Semester II**Paper 105 ENVIRONMENTAL SAFETY**

Unit	Contents	Marks/Weightage
1	Air pollutants, Pollution sources Automobile pollution-hazards of air pollution-consent of clean coal combustion technology, fly ash control of combustion in combustion chambers-ultraviolet radiation, infrared radiation from sun hazards due to depletion of ozone deforestation ozone holes-automobile exhaust chemical factory stack emissions .	18
2	Hazardous waste management in India Waste identification, characterization and classification Technological options for collection, treatment and disposal of hazardous waste selection charts for the treatment of different hazardous waste Methods of collection and disposal of solid wastes Health hazards, Toxic and radioactive waste incineration and vitrification, Hazards due to bio Process, Dilution and restrictions Recycling and reuse.	18
3	Sampling and analysis, Dust monitor, Gas analyzer, particle size analyzer Lux meter pH meter gas chromatograph atomic absorption spectrometer. Gravitational settling chambers cyclone separators scrubbers electrostatic precipitator bag filter maintenance control of gaseous emission by adsorption, absorption and combustion methods	17
4	pollution control board laws pollution control in process industries like cement, paper, paper, petroleum products textile tanneries thermal power plants dying and pigment industries ecofriendly energy	17

Reference Book

1. Textbook of Environmental Studies (Erach Bharucha) UGC, New Delhi
2. Environmental Noise Pollution, P. E. Cuniff, McGraw Hill, New York, 1987.
3. Encyclopedia of Ecology, Environment Swaroop. R, Mishra, S.N. Mital, New Delhi Jauri, V.P.
4. Environmental Concerns Saigo & Cunningham
5. Unit Operations and Processes in Environmental Engineering, T. D. Reynolds, P. Richards. PWS Series in Engineering, Boston, 2010.

Unit	Contents	Marks/Weightage
1	Recognition of possible fire sources and emergency procedures in the event of a fire, the course also offers an in-depth study of fire investigation and the construction techniques for eliminating fires, History of fires, types of detecting devices and extinguishing agents and systems, construction techniques, and fire investigation, National Fire Protection Association and Occupational Safety and Health Administration standards	18
2	Devising procedures in the event of fire, How people perceive and react to fire danger, The measures needed to overcome behavioural problems and to ensure the safe evacuation of people in the event of fire, Assisting disabled people to escape	18
3	Safety goals and objectives, Monitoring safety progress, Identifying hazards and risks, Safety and financial benefits, Safety and the balanced scorecard, Setting targets and ensuring commitment, Developing safework systems, Policies and procedures, Safety values and principles	17
4	Allocating responsibility and authority, Rehabilitation after an incident, Workplace inspections, Measuring and reporting, Developing and effective safety culture, Building an incident free workplace, Removing obstacles to safety, Safety and accountability, Developing safety habits in the workplace, Fire Protection and Analysis	17

1. —Smokejumper: a memoir by one of america's most select airborne firefighters by jason a. Ramos
2. —Essentials of firefighting and fire department operations by ifsta
3. —The rural firefighting handbook by dominiccoletti and larrydavis
4. "Fire command" by alan v. Brunacini

Paper 107**Organization Behaviour**

Unit	Contents	Marks/Weightage
1	What is Organizational Behaviour Understanding the national culture and the Indian setting Changes occurring in the Context and their impact on Organizational Behaviour	18
2	Understanding Personality, Values, Attitude and their impact on Behaviour at work Understanding Motivation at work.	18
3	Understanding the process of Perception: How we make sense of our environment Understanding Interpersonal Communication and Transactions Understanding Groups and Teams	17
4	Using Leadership for managing change towards organizational effectiveness Understanding Organizational Culture and changing it for effectiveness Basic Theories of Leadership Contemporary Issues in Leadership Practice	17

Reference / Textbooks/ Additional Reading:

1. Text would be prescribed by the instructor in the class

Practical Training:

The students would go under practical field training with coordination of established fire and safety organizations. For which an approval should be sought from the academic session in the beginning of the semester.

Paper 108**Field Training**

Students are required to undergo a practical Training in any of fire Fighting organization for a period of 10 full days under supervision of a faculty.

FACULTY OF PARAMEDICAL SCIENCE

Syllabus Proposal

For

**DIPLOMA IN OPERATION THEATER
TECHNICIAN (D.O.T.T.)**

Effective from Academic Year 2021-2022

Veer Narmad South Gujarat

University Surat

- R. DOT. 1:** **Eligibility for the admission:**
Candidates who have passed 10+2 examination conducted by any recognized School Certification Board or Equivalent Examination;
- R. DOT. 2:** **Duration of the course:**
Duration shall be for a period of TWO years
- R. DOT. 3:** **Medium of instruction:**
The medium of instruction and examination shall be in English.
- R. DOT. 4:** **Attendance**
Candidate shall be required to attend at least 75% of the Lectures and Practical separately in each year.
- R. DOT. 5:** **Subjects, Credits and Scheme of examination**
Main and Subsidiary subjects are common in first year for all the courses of Medical Technology. The subject-wise details of examination for the first year have been given in Table 1.
There shall be three examinations one each at the end of 1st & 2nd year.
- R. DOT. 6:** Eligible candidate desirous for appearing in the University examination of any/all theory papers must forward his/her application in the prescribed form from the respective college to the University on or before the date prescribed for the purpose under the relevant ordinance.
- R. DMLT. 7:** **INTERNAL ASSESSMENT:**
The internal assessment will be done based on continuous evaluation method. Every year, there will be two internal examinations for both the theory and the practical. For the award of internal marks in theory and practical, the better of the two internal examinations will be considered along with other components like attendance, seminar presentations, workshops & conferences attended and journal submission.
Internal marks calculation - 20% of total marks of a subject (Separately for theory and practical):
The better of two internal examinations: 10% of total marks
Attendance: 5% of total marks
Seminar presentations, workshops &
Conferences attended and journal submission: 5% of total marks
A candidate must obtain minimum of 35% marks of internal evaluation in each paper for both theory and practical separately. Failing which he/she would not be eligible in that paper(s)/ head of passing.

The subsidiary subjects in whom only the internal exam will be conducted, a candidate must obtain minimum of 35% of the total marks before appearing for University examination.

**UNIVERSITY (EXTERNAL) EXAMINATION:
PASSING CRITERIA:**

Every student has to have an aggregate score of minimum 35% marks of both the internal and University (external) Examination of 100 % marks in theory and practical examination combined together to pass in the University Examination. It is not compulsory to pass in section – I and section – II separately.

But, the student has to score minimum 35 % of marks separately in theory and practical in the University Examination of 80 marks in theory and practical examination and internal examination.

R. DOT. 8: Promotion and A.T.K.T.

- a. Candidates, who have passed separately in theory and practical of all subject heads (course) in F.Y.D.O.T and S.Y D.O.T Shall be promoted to degree certificate.
- b. Candidates, who fail in any three of the subject heads (courses) in F.Y. D.O.T Shall be granted A.T.K.T. And shall be allowed to attend S.Y.D.O.T as the case may be. Candidate can re-appear in the following subject-heads in the subsequent exam.
- c. Candidate would however not be allowed for certificate from. unless and untill s/he passes all subjects of F.Y. D.O.T

DISTRIBUTION OF TEACHING HOURS FOR
FIRST YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

Sr. No.	Subject	Course No.	Teaching Hours
Main Subjects			
1	Human Anatomy	DOT-101	60
	Practical – Anatomy	DOT-101(P)	30
2	Human Physiology	DOT-102	60
	Practical – Physiology	DOT-102(P)	30
3	Pathology	DOT-103	60
	Practical-Pathology	DOT-103(P)	30
4	Microbiology	DOT-104	60
	Practical- Microbiology	DOT-104(P)	30
5	Biochemistry	DOT-105	60
	Practical- Biochemistry	DOT-105(P)	30
Main Subjects- Teaching hours			450
Subsidiary subjects			
6	English	DOT-E-106	60
7	Computer Organization & PC Software	DOT-E-107	30
	Computer Organization & PC Software practical	DOT-E-107(P)	30
Subsidiary subjects- Teaching hours			120
Teaching hours-Theory/Practicals			570
Hospital Posting			360
Total Teaching hours			930

DISTRIBUTION OF SUBJECTS, CREDITS
AND SCHEME OF EXAMINATION FOR
FIRST YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

Table 1. Subjects, Credits and Scheme of Examination

Sr. No.	Subject	Course.No.	No. Credits per week	Duration of Uni. Exam	External Marks	Internal Marks	Total	Grand Total
1	Human Anatomy	DOT-101	2	3	80	20	100	100
	Practical – Anatomy	DOT-101(P)	1	-	-	-	-	
2	Human Physiology	DOT-102	2	3	80	20	100	100
	Practical – Physiology	DOT-102(P)	1	-	-	-	-	
3	Pathology	DOT-103	2	3	80	20	100	100
	Practical-Pathology	DOT-103(P)	1	-	-	-	-	
4	Microbiology	DOT-104	2	3	80	20	100	100
	Practical- Microbiology	DOT-104(P)	1	-	-	-	-	
5	Biochemistry	DOT-105	2	3	80	20	100	100
	Practical- Biochemistry	DOT-105(P)	1	-	-	-	-	
	Subsidiary subjects							
6	English	DOT-E-106	2	2	40	10	50	50
7	Computer Organization & PC Software	DOT-E-107	1	2	40	10	50	50
	Practical- Computer Organization & PC Software	DOT-S-107(P)	1	2	25	25	50	50
Total								650

SYLLABUS OF FIRST YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

SUBJECT NAME: HUMAN ANATOMY

Course code: DOT 101

Theory classes: 60 hours

Practical classes : 30 hours

Unit 1. Introduction: human body as a whole

Theory:

- Definition of anatomy and its divisions
- Terms of location, positions and planes
- Cell and its organelles
- Epithelium-definition, classification, describe with examples, function
- Glands- classification, describe serous & mucous glands with examples
- Basic tissues – classification with examples

Practical:

- Histology of types of epithelium
- Histology of serous, mucous & mixed salivary gland

Unit 2. Locomotion and support

Theory:

- Cartilage – types with example & histology
- Bone – Classification, names of bone cells, parts of long bone, microscopy of compact bone, names of all bones, vertebral column, intervertebral disc, fontanelles of fetal skull
- Joints – Classification of joints with examples, synovial joint (in detail for radiology)
- Muscular system: Classification of muscular tissue & histology
- Names of muscles of the body

Practical:

- Histology of the 3 types of cartilage
- Demo of all bones showing parts, radiographs of normal bones & joints
- Histology of compact bone (TS & LS)
- Demonstration of muscles of the body (as functional groups)
- Histology of skeletal (TS & LS), smooth & cardiac muscle

Unit 3. Cardiovascular system

Theory:

- Heart-size, location, chambers, exterior & interior
- Blood supply of heart
- Systemic & pulmonary circulation
- Branches of aorta, common carotid artery, subclavian artery, axillary artery, brachial artery, superficial palmar arch, femoral artery, internal iliac artery
- Peripheral pulse
- Inferior venacava, portal vein, portosystemic anastomosis
- Great saphenous vein
- Dural venous sinuses
- Lymphatic system- cisterna chyli & thoracic duct
- Histology of lymphatic tissues
- Names of regional lymphatics, axillary and inguinal lymph nodes in brief

Practical:

- Demonstration of heart and vessels in the body
- Histology of large artery, medium sized artery & vein, large vein
- Microscopic appearance of large artery, medium sized artery & vein, large vein
- pericardium
- Histology of lymph node, spleen, tonsil & thymus
- Normal chest radiograph showing heart shadows
- Normal angiograms

Unit 4. Gastro-intestinal system

Theory:

- Parts of GIT, Oral cavity (lip, tongue (with histology), tonsil, dentition, pharynx, salivary glands, Waldeyer's ring)
- Oesophagus, stomach, small and large intestine, liver, gall bladder, pancreas
- Radiographs of abdomen

Unit 5. Respiratory system

Theory:

- Parts of RS, nose, nasal cavity, larynx, trachea, lungs, bronchopulmonary segments
- Histology of trachea, lung and pleura
- Names of paranasal air sinuses

Practical:

- Demonstration of parts of respiratory system.
- Normal radiographs of chest
- Histology of lung and trachea

Unit 6. Urinary system

Theory:

- Kidney, ureter, urinary bladder, male and female urethra
- Histology of kidney, ureter and urinary bladder

Practical:

- Demonstration of parts of urinary system
- Histology of kidney, ureter, urinary bladder
- Radiographs of abdomen-IVP, retrograde cystogram

Unit 7. Reproductive system

Theory:

- Parts of male reproductive system, testis, vas deferens, epididymis, prostate (gross & histology)
- Parts of female reproductive system, uterus, fallopian tubes, ovary (gross & histology)
- Mammary gland – gross

Practical:

- Demonstration of section of male and female pelves with organs *in situ*
- Histology of testis, vas deferens, epididymis, prostate, uterus, fallopian tubes, ovary
- Radiographs of pelvis – hysterosalpingogram

Unit 8. Endocrine glands

Theory:

- Names of all endocrine glands in detail on pituitary gland, thyroid gland, parathyroid gland, suprarenal gland – (gross & histology)

Practical:

- Demonstration of the glands
- Histology of pituitary, thyroid, parathyroid, suprarenal glands

Unit 9. Nervous system

Theory:

- Neuron
- Classification of NS
- Cerebrum, cerebellum, midbrain, pons, medulla oblongata, spinal cord with spinal nerve (Gross Anatomy)
- Histology of Cerebrum, cerebellum and spinal cord
- Meninges, Ventricles & cerebrospinal fluid
- Blood supply of brain (In Brief)
- Cranial nerves (Only Names)

Practical:

- ☐ Histology of peripheral nerve & optic nerve
- ☐ Demonstration of all plexuses and nerves in the body
- ☐ Demonstration of all part of brain
- ☐ Histology of cerebrum, cerebellum, spinal cord

Unit 10. Sensory organs:

Theory:

- Skin: Skin-histology
- Appendages of skin
- Eye: Parts of eye & lacrimal apparatus
- Extra-ocular muscles & nerve supply
- Ear: parts of ear- external, middle and inner ear and contents

Practical:

- Histology of thin and thick skin
- Demonstration and histology of eyeball
- Histology of cornea & retina

Unit 11. Embryology:

Theory:

- Spermatogenesis & oogenesis
- Ovulation, fertilization
- Fetal circulation
- Placenta

There shall be no University Practical Examination.

REFERENCE BOOKS

1 William Davis (P) understanding Human Anatomy and Physiology MC Graw Hill

2. Human Anatomy for Nursing & Allied Sciences - 1st edition
Dr. M.K. Anand, Dr. Meena Verma, The Arora Medical Publishers Pvt. Ltd

3. Fattana, Human anatomy
(Description and applied)
Saunders & C P Prism Publishers, Bangalore -- 1991

4. ESTER. M. Grishcimer,
Physiology & Anatomy with Practical Considerations, J.P. Lippin Cott. Philadelphia

SYLLABUS OF FIRST YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

SUBJECT NAME: HUMAN PHYSIOLOGY

Course code: DOT 102

Theory classes: 60 hours

Practical classes : 30 hours

Theory:

Unit 1. Blood and Muscle Physiology:

- Composition & Function of Blood
- Erythropoiesis and Leucopoiesis
- Hemostasis
- Action potential and mechanism of Muscle contraction
- Neuromuscular junction

Unit 2. Digestive System and Excretory System

- Movement and Alimentary tract
- Deglutition and Mechanism of Vomiting
- Digestive juices
- Micturition
- Mechanism of Urine formation
- Regulation of acid-base balance

Unit 3. Cardiovascular and Respiratory System

- Heart rate and sound
- Blood pressure
- Cardiac cycle and output
- Mechanism of breathing
- Oxygen and Carbon dioxide Transport
- Pulmonary volume and capacity

Unit 4. Endocrinology and Reproductive System

- Spermatogenesis and Menstrual cycle
- Puberty
- Pregnancy and Lactation
- Hormones of Pituitary, Thyroid & Parathyroid Glands
- Hormones of Adrenal Gland and Pancreas

Unit 5. Nervous System and Special Senses

- Neuron and Neuroglia
- Properties of nerve fibre
- Reflex mechanism and Receptors
- Mechanism of vision and hearing
- Taste and smell

Practical:

- Estimation of Haemoglobin
- Bleeding time
- Clotting time
- Blood Grouping
- Erythrocyte Sedimentation rate
- Packed Cell Volume
- Arterial Blood Pressure
- Pulse
- Heart rate
- Breathing rate

There shall be no University Practical Examination.

REFERENCE BOOKS

1. Guyton (Arthur) Text Book of Physiology.

- Latest Ed. Prism publishers
2. Ganong (William F) Review of Medical Physiology.
Latest Ed . Appleton
 3. Jain AK, Concise Physiology, Latest Ed.

SYLLABUS OF FIRST YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

SUBJECT NAME: PATHOLOGY

Course code: DOT 103

Theory classes: 60 hours

Practical classes : 30 hours

Theory

Unit 1. Histo Pathology

- Introduction to Histo Pathology
- Receiving of Specimen in the laboratory
- Grossing Techniques
- Mounting Techniques – various Mountants
- Maintenance of records and filing of the slides.
- Use & care of Microscope
- Various Fixatives, Mode of action, Preparation and Indication. Section Cutting
- Tissue processing for routine paraffin sections
- Decalcification of Tissues.
- Staining of tissues - H& E Staining
- Bio-Medical waste management

Unit 2. Clinical Pathology

- Introduction to Clinical Pathology
- Collection, Transport, Preservation, and Processing of various clinical Specimens
- Urine Examination – Collection and Preservation of urine. Physical, chemical, Microscopic Examination
- Examination of CSF and other body fluids.
- Sputum Examination.
- Examination of feces

Unit 3. Haematology

- Introduction to Haematology
- Normal constituents of Blood, their structure and function.
- Collection of Blood samples
- Various Anticoagulants used in Haematology
- Various instruments and glassware used in Haematology, Preparation and use of glassware
- Laboratory safety guidelines
- SI units and conventional units in Hospital Laboratory
- Hb, PCV
- ESR
- Normal Haemostasis
- Bleeding Time, Clotting Time, Prothrombin Time, Activated Partial Thromboplastin Time.

Unit 4. Blood Bank

- Introduction
- Blood grouping and Rh Types
- Cross matching

Practical:

- Urine Examination.
- Physical
- Chemical
- Microscopic
- Blood Grouping Rh typing.
- Hb Estimation, Packed Cell Volume[PCV], Erythrocyte Sedimentation rate{ESR}
- Bleeding Time, Clotting Time.
- Histopathology – Section cutting and H & E Staining.[For BSc MLT only]

There shall be no University Practical Examination.

REFERENCE BOOKS

1. Silvertone : Introduction to Medical Lab. Technology
2. Bancroft : Theory and Practical of Histology techniques

3. Textbook of Clinical Blood Banking Science by Zmijewski.
4. Manual for Clinical Pathology by Sabitry Sanyal
5. Practical Pathology by Dr.P.Chakraborty & Gargi Chakraborty
6. Haematology for students and practitioners by Ramnik Sood
7. Histological techniques by K.Laxminarayan

SYLLABUS OF FIRST YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

SUBJECT NAME: MICROBIOLOGY

Course code: DOT 104

Theory classes: 60 hours

Practical classes : 30 hours

Theory

Unit 1. Morphology

- Classification of microorganisms,
- Size, shape and structure of bacteria.
- Use of microscope in the study of bacteria.

Unit 2. Sterilisation and Disinfection

- Principles and use of equipments of sterilization namely Hot Air oven, Autoclave and serum inspissator. Pasteurization,
- Anti septic and disinfectants

Unit 3. Growth and nutrition

- Nutrition, growth and multiplications of bacteria,
- Use of culture media in diagnostic bacteriology.
- Antimicrobial sensitivity test

Unit 4. Immunology

- Infection & Immunity
- Antigen, Immunoglobuline (in brief)
- Principles and interpretation of commonly done serological tests namely Widal, VDRL, ASO, CRP, RF & ELISA. Rapid tests for HIV and HBsAg (Technical details to be avoided)
- Types of Vaccine and immunization schedule

Unit 5. Systematic Bacteriology

- Morphology, cultivation, diseases caused, laboratory diagnosis including specimen collection of the following bacteria (the classification, antigenic structure and pathogenicity to be avoided)
 - *Staphylococci, Streptococci, Pneumococci,*
 - *Gonococci, Meningococci,*
 - *C. diphtheriae, Clostridia, Bacillus,*
 - *Shigella, Salmonella, Esch coli,*
 - *Klebsiella, Proteus, Pseudomonas*
 - *Mycobacteria*
 - *Vibrio cholerae, &*
 - *Spirochetes-Treponema pallidum & Leptospira*

Unit 6. Parasitology

- Morphology, life cycle, laboratory diagnosis of following parasites
 - Protozoa - *E. histolytica, Plasmodium,*
 - Tape worms - *Taenia*
 - Intestinal nematodes - Round worm, Hookworm,

Unit 7. Mycology

- Morphology, diseases caused and lab diagnosis of following fungi.
 - *Candida, Cryptococcus,*
 - Dermatophytes ,
 - opportunistic fungi.

Unit 8. Virology

- General properties of viruses, diseases caused, lab diagnosis and prevention of following viruses,
 - Herpes,
 - Hepatitis,
 - HIV
 - Rabies and
 - Poliomyelitis.

Unit 9. Hospital infection

- ☐ Causative agents, transmission methods,
- ☐ Prevention and control Hospital infection.

Unit 10. Principles and practice Biomedical waste management

Practical

- Compound Microscope.
- Grams stain
- Acid Fast staining
- Demonstration and sterilization of equipments – Hot Air oven, Autoclave, Bacterial filters.
- Demonstration of commonly used culture media, culture methods
Nutrient broth, Nutrient agar, Blood agar, Chocolate agar, Mac conkey medium, LJ media, Robertson Cooked meat media, Potassium tellurite media with growth, Mac with LF & NLF, NA with staph
- Demonstration of commonly used Biochemical Reactions for identification of bacteria
 - Coagulase test
 - Catalase test
 - IMViC
 - TSI
 - Urease, Oxidase
- Antibiotic susceptibility test
- Anaerobic culture methods.
- Demonstration of common serological tests – Widal, VRDL, ELISA.
- Stool exam for Helminthic ova
- Visit to hospital for demonstration of Biomedical waste management.

There shall be no University Practical Examination.

REFERENCE BOOKS

1. Anathanarayana & Panikar Medical Microbiology
2. Roberty Cruickshank – Medical Microbiology – The Practice of Medical Microbiology
3. Chatterjee – Parasitology – Interpretation to Clinical medicine.
4. Rippon – Medical Mycology
5. Monica Cheesebrough,

SYLLABUS OF FIRST YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

SUBJECT NAME: BIOCHEMISTRY

Course code: DOT 105

Theory classes: 60 hours

Practical classes : 30 hours

Theory

Unit.1 Introduction, specimen collection and Handling

- ☐ Introduction to Bio-chemistry including code of ethics for Medical Lab technicians and Medical Lab Organization.
- ☐ Reception, Registration and Bio-chemical parameters investigated.
- ☐ Types of vials used in blood /specimen collection
- ☐ Anticoagulants
- ☐ Preservatives
- ☐ Blood collection
- ☐ Precautions
- ☐ Safety, first aid, Biological and chemical hazards
- ☐ Processing of samples
- ☐ Preservation
- ☐ Disposal of samples
- ☐ Introduction to laboratory apparatus :
 - Pipettes - different types (Graduated, volumetric, Pasteur, Automatic etc.), Calibration of glass pipettes
 - Burettes, Beakers, Flasks, Funnels, Cuvettes,

Unit 2. Units of measurements and Basics of Instrumentation

- ☐ Conventional and SI units
 - Molecular weight, equivalent weight of elements and compounds, normality, molarity,
 - Preparation of molar solutions, normal solutions, Percent solutions
- I. Colorimetry : Photoelectric methods, instrumentation, principles and laws involved, Operation, maintenance, applications.
- II. Spectrophotometry : Principle, types and applications.
- III. Weighing : Different types of balances used, care and maintenance.
- IV. pH meter-Principle, Use, care and maintenance of pH meter and electrodes
- ☐ Basic lab operations like -Separation of Solids from liquids,
 - a) Centrifugation : Principle, Different types of Centrifuges, care and maintenance, applications
 - b) Filtration using funnel

Unit.3 Carbohydrates :

Definition, biological importance, classification, qualitative tests, Metabolism(brief), Blood glucose.

Unit.4 Lipids :

Definition, biological importance, classification, Acid value, Iodine value, saponification value, Metabolism(brief).

Unit.5 Aminoacids and Proteins :

Definition, biological importance, classification, qualitative tests.

Unit.6 Vitamins and Minerals :

Vitamins : Classification of Vitamins, Sources, Daily requirements, Deficiency diseases. (In Brief)

Minerals (Iron, calcium, Iodine): Sources, Daily requirements, Deficiency diseases .

Unit.7 Enzymes

Nature, Classification and Clinical enzymes.

Unit.8 Nucleic acids: Chemistry and functional aspects
Purine bases, Pyrimidine bases, nucleosides, Nucleotides, DNA, & RNA, Their functions
Brief outline of Replication, Transcription, translation.

Unit.9

- PH, buffers, acid-base balance, disorders.
- Digestion and absorption of Biomolecules
- Water, Chemicals and related substances
- ★ Purity of chemicals
- ★ Corrosives

Practical:

- Reception and registration
- Collection of Capillary blood
- Collection of Venous blood
- Separation of Serum from clotted blood
- Separation of plasma from blood
- Lab glass ware
 - a) Identification
 - b) Handling
 - c) Care and Maintenance
 - d) Uses
- Lab instruments
 - a) Centrifuges
 - b) Balances
 - c) Photo Electric colorimeter
 - d) Spectrophotometer
- Preparation of
 - a) Percentage solutions
 - b) Normal solutions
 - c) Molar solutions
- Qualitative identification of tests of sugars
- Qualitative identification of tests of proteins
- Qualitative identification of tests for amino acids
- Estimation of Blood glucose
- Estimation of Blood urea
- Normal and pathological urine.

There shall be no University Practical Examination.

REFERENCE BOOKS

1. TEITZ – Clinical chemistry
Vasudevan (DM), Sreekumari(S) Text book of
Biochemistry for Medical students ,Latest Ed
2. Varley – Clinical chemistry
3. 3. Kaplan – Clinical chemistry

SYLLABUS OF FIRST YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

SUBJECT NAME: ENGLISH

Course code: DOT-E-106

Theory classes: 60 hours

Overall Objectives

The objectives are to develop abilities

- ☐ To process information using a variety of media
- ☐ To use appropriate phrases for performing language functions
- ☐ To edit, select and present information in a format / perspective
- ☐ To listen and reduce information to a point form
- ☐ To read and to expand from points to paragraph
- ☐ To predict, comprehend, infer and synthesize information
- ☐ To question, probe and arrive at information through discussions, dialogues and interviews
- ☐ To answer questions, choose and provide data etc.

A. Reading

The objectives are to enable the students to

- ☐ Read for information news features, articles, newspaper and text
- ☐ Read intensively a collection of short stories given in a compiled text (See for the text and the lessons selected from it below)

Book prescribed

- ☐ L.A.Hill (1970), **Contemporary Short Stories**. Chennai: Oxford University Press. The following stories have been selected for use on the course.

- ☐ The happy Prince
- ☐ A Horseman in the sky
- ☐ The Wolves of Cernogratz
- ☐ The half Mile
- ☐ The Mark of Vishnu
- ☐ The Halfyard Ham
- ☐ Locomotion 38
- ☐ The Ghost Ship
- ☐ Uneasy Homecoming
- ☐ The Trust Property

B. Writing

The objectives are to enable the students to

- ☐ Form words properly using prefixes / suffixes (See list 4 in the Appendix)
- ☐ Use phrasal verbs (See list 3 in the Appendix)
- ☐ Use appropriate and related registers (See list 5 in the Appendix)
- ☐ Writing paragraphs, developing points / ideas
- ☐ Writing resume, job applications, letters of invitations (inviting / accepting/ declining), letters of complaint to civil authorities
- ☐ Answering questions based on the prescribed text: **Contemporary Short Stories**

Books Recommended

- Champa Tickoo and Jaya Sasikumar (2000). **Writing with a Purpose**, Chennai, OUP
- David Jolly (1988). **Writing Tasks: An authentic task approach to individual writing needs**.

C. Listening

The objectives are to enable the students to listen and understand

- Short lecture, descriptions, and narrations, rapid talks, passages read aloud and/or dictated and identify Language functions (See list 2 in the Appendix)
- Conversations based on familiar situations, and
- Note Making

Books Recommended

- Spoken English-D Sasikumar and PV Dhamija (with Audio Cassette) Tata McGraw Hill

D. Speaking

The objectives are to enable the students to

- Use greeting and formula in everyday conversations.
- Use various notions and function of everyday usage (See list 2 in the Appendix)
- Use grammatically correct and appropriately structures to organize thought (See list 1 Containing Syntactic items in the Appendix)
- Give short formal and informal talks, speeches

Books Recommended

- Grant Taylor. English Conversation Practice. New Delhi: Tata McGraw Hill
- R.P.Bhatnagar and R.T.Bell (1999) **Communication in English**, Hyderabad: Orient Longman

SYLLABUS OF FIRST YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

SUBJECT NAME: COMPUTER ORGANIZATION & PC SOFTWARE

Course code: DOT-E-107

At the end of this course, a student would be able to :
Identify various components of computer hardware and
Use some software in order to manage data related to the profession.

Teaching hours:	Theory:	30 hours
	Practicals:	30 hours

Curriculum:

SECTION A

Unit 1. Computer Organization -I

Generations of a computer, types of a computer, some important terms: hardware, software, program, operating system, interpreter, compiler, assembler, high level languages, bits and bytes.
Introduction to number systems

Unit 2. Computer Organization -II

Processors, CPU organization, primary memory, memory addresses, secondary memory, memory hierarchies, magnetic disks, CDROMs, DVDs, input/output devices: keyboards, monitors, mice, printers, modems
The concept of character codes

SECTION B

Unit 1: PC Software- I

Introduction to spreadsheets, the concept of cells and cell addresses, formulas, some important functions,
Introduction to charts
Introduction, features and applications of a DBMS Database objects
Tables – creation, modification, deletion
Working with data – insertion, modification, finding, sorting, grouping, viewing and sharing data

Unit 2. PC Software- II

Forms – creation of forms; modification, viewing and validating data using forms, subforms Reports – creation, modification, opening, viewing
Creating mailing labels

REFERENCE BOOKS:

- Tanenbaum A. S., Structured Computer Organization, 4th Edition, Prentice-Hall of India Pvt. Ltd., 2002.
- Elmasri, Navathe, Somyajulu, Gupta, Fundamentals of Database Systems, Pearson Education, 2006.
- Progue, Irwin, Roardon, Microsoft Office Access 2007 Bible, Wiley Publishing Inc., 2007.
- Taxali R. K., P C Software for Windows 98 Made Simple, Tata McGraw-Hill, 2001.
- Hall D. V., Microprocessors and Interfacing, McGraw-Hill Book Company, 1986.
- Desai Bipin C., An introduction to Database Systems, 7th Edition, Pearson Education Asia, 2001.

..... **COMPLITION OF FIRST YEAR DIPLOMA IN OPERATION THEATER TECNICIAN.....**

DISTRIBUTION OF TEACHING HOURS FOR
SECOND YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

Sr. No.	Subject	Course No.	Teaching Hours
Main Subjects			
1	Basic Anesthesia Technology	DOT-201	60
2	Advanced Anesthesia Technology	DOT-202	60
3	Medicines relevant to OT	DOT-203	60
4	Introduction to Operation Theater Technology	DOT-204	60
	Introduction to Operation Theater Technology- Practical	DOT-204-P	60
5	Health Care	DOT-205	45
Main Subjects- Teaching hours			345
Subsidiary subjects			
6	English	DOT-E-206	25
	English Practical	DOT-E-206-(P)	25
7	Computer skills	DOT-7-207	20
Subsidiary subjects- Teaching hours			70
Teaching hours-Theory/Practicals			415
Laboratory Posting			330
Total Teaching hours			745

DISTRIBUTION OF SUBJECTS, CREDITS
AND SCHEME OF EXAMINATION FOR
SECOND YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

Basic Anesthesia Technology	DOT- 201	2	3	80	20	100	100
Advanced Anesthesia Technology	DOT-202	2	3	80	20	100	100
Medicines relevant to OT	DOT-203	2	3	80	20	100	100
Introduction to Operation Theater Technology	DOT- 204	1	2	80	20	100	100
Introduction to Operation Theater Technology- Practical	DOT-204-(p)	1	2	40	10	50	50
Health Care	DOT-205	2	2	40	10	50	50
Subsidiary subjects							
English	DOT-E- 206	1	2	40	10	50	50
	DOT-E- 206(P)	1	1	25	25	50	50
Computer skills	DOT-E-202	2	3	40	10	50	50
Total							650

SYLLABUS OF SECOND YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

SUBJECT NAME: BASIC ANAESTHESIA TECHNOLOGY

Course code: DOT-201

Theory classes: 60 hours

NO.	TOPIC	Domain	Hours as per MCI
	<u>Medical Gas</u>	Must Know 1. compressed gas cylinders 2.Colour coding different gas cylinder and pipe line system 3. Cylinder storage space and things to remember while empty and full cylinder storing. 4.Diameter index safety system 5. Medical gas pipe line system and station outlets. 6. Alarms and safety devices in pipe line gas supply. Desirable to Know 7. Oxygen concentrator working principle, their uses and care. Nice to know 8.Air compressor	8 Hrs
	<u>Gas administration devices</u>	Must Know 1.Anaesthesia masks : Types / sizes 2.Flow meters 3.Gas Regulators Desirable to Know 1.Flow restrictors	8 Hrs
	<u>Oxygen Therapy</u>	Must Know 1. Definition, causes and responses to hypoxemia. 2. Clinical signs of hypoxemia. 3. Goals of oxygen therapy. 4.Evaluation of patients receiving oxygen therapy 5. Hazards of oxygen therapy.	8 Hrs
	<u>Anaesthesia Machine</u>	Must Know 1.Boyles Machine and its function. 2.Modern anesthesia machine. 3.Hanger and Yoke system 4.Cylinder pressure gauge 5.Pin index 6.Pressure regulator 7. Vaporizers- TYPES, Hazards, Maintenance, Filling and drainage. 8.Flow meter assembly	11 Hrs
	<u>Breathing System</u>	Must Know	9Hrs

	1. Open, Semi closed and Closed Circuits, Classification of breathing system 2. Mapleson breathing system 3. Jackson and Rees system 4. Bain circuit 5. Non rebreathing valves- Ambu valves	
<u>Injection Techniques</u>	Must Know 1. Intra muscular and insertion of Intra Venous cannulas. 2. Handling of sterilized syringes and needles.	7Hrs
<u>Fluids and Electrolytes</u>	Must Know 1. Type of fluid (Crystalloids & Colloids) 2. Steps to prepare I.V. drip 3. Indication of specific fluid and their complication	7 Hrs
<u>Gas Analyzers and monitoring</u>	Must know 1. Pulse oxymeter 2. Oxygen Analyser / sensor 3. EtCO2 Monitor / Capnography Nice to Know 4. Transcutaneous oxygen monitor	8 Hrs
<u>Resuscitation Techniques</u>	Must know 1. Basic life support (Airway, Breathing, and Circulation) 2. Equipment utilized for it, 3. Drugs used in CPR, 4. Defibrillation	8 Hrs
<u>Artificial Airways</u>	Must Know 1. Types of airways (Nasal/Oral) and features, 2. Sizes, colour coding, and methods of insertion 3. Indications for use	8 Hrs
<u>Pre op and Post op care</u>		10 Hrs

Must Know

1. Checking and preparation of Anaesthesia trolley and Eqpt
2. Pre operative preparation of patient.
3. Management of pre operative and post operative rooms.
4. Transportation Techniques of patient in conscious, semi conscious and unconscious patient to and fro – operation theatre.

<u>Anesthesia Equipment Maintenance / sterilization</u>	Must Know 1. Cleaning, Disinfection & sterilisation 2. Physical / chemical methods	8 Hrs
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|--|--|--|
| | 3. Testing of sterilization
4. Critical /semicritical /Non critical devices
5. Levels of Disinfection
Desirable to Know
1. Reusable items | |
|--|--|--|

SYLLABUS OF SECOND YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

SUBJECT NAME: ADVANCED ANAESTHESIA TECHNOLOGY

Course code: DOT-202

Theory classes: 60 hours

NO.	TOPIC	Domain	Teaching Hours
	<u>Anaesthesia</u>	Must know 1. Evolution of modern anaesthesia. 2. Peripheral pulse – locations 3. Methods of BP measurement 4. Dye allergies, 5. Monitoring, Equipment options in the MRI Nice to know 1. History of anaesthesia	10 Hrs
	<u>Anaesthesia Gadgets</u> <u>Tubes.</u>	Must know 1. Different type of laryngoscopes and blades 2. Description of plain and cuffed endotracheal tubes, 3. Indication, Method of insertion, complications 4. Sterilization 5. Specialised ET Tubes: Armored tubes, Ring, Adair and Elwyn tube (RAE), Micro laryngeal tubes, Double lumen tubes, Bronchial blocker 7. LMA, Supraglottic airway devices (SAD), Ambu bag, 8. Tracheotomy Nice to Know 1. Protocol for tracheotomy decannulation	10 Hrs
	<u>Anaesthesia Monitoring</u>	Must know 1. Monitoring during anesthesia. 2. Multi parameter monitor 3. Arterial blood pressure – NIBP, IBP, Manual BP 4. Electrocardiogram (ECG) 5. SpO2, EtCO2 6. Neuromuscular monitoring 7. Clinical monitoring	9 Hrs
	<u>Suction Apparatus</u>	Must know	8 Hrs

		1. Foot operated, 2. Electrically operated suction apparatus and its General Principal, uses and care 3. Central pipeline suction, colour coding	
	<u>Medical Ethics</u>	Must know 1. Relevant medico legal aspects. 2. Responsibilities and duties. 3. Ethical behavior and conduct Nice to Know 1. Medico legal aspects and relation to consumer protection act.	7 Hrs
	<u>Drugs used in OT / ICU</u>	Must know 1. Drugs used during General anaesthesia and Regional anaesthesia, 2. Intravenous anaesthetic agents uses and complications. 3. Inhalational Anaesthetics 4. Pre- medication indication, Type of drugs used for premedication, Doses and side effects. 5. Narcotic agents and other Analgesics 6. Anti hypertensive drugs Desirable to Know 1. Anticholinesterase drugs 2. Antiarrhythmic, Nice to Know 1. Vasopressors 2. Anticoagulant drugs.	16 Hrs
	<u>Blood Transfusion</u>	Must know 1. Various types of blood and blood products 2. Pre transfusion Checks 4. Blood administration set 3. Transfusion reactions Desirable to Know 1. Grouping and cross matching	7 Hrs
	<u>Mental Sickness and Cardiology</u>	Must know 1. Various ECG leads, their placement and normal ECG. 2. Shock : Types, signs & symptoms and management 3. Electroconvulsive (ECT) shock therapy, drug effects on seizure duration Desirable to Know 1. Hemodynamic responses and appropriate treatment	9 Hrs
	<u>Artificial Ventilation and Related Equipment</u>	Must know 1. Operation room Ventilators and ICU ventilators 2. Complication in patients on Ventilators 3. General care of patient on Ventilator 4. Disinfection and sterilization of ventilators	8 Hrs
	<u>Anesthesia techniques</u>	Must know 1. General Anaesthesia Technique 2. Regional / Local Anaesthesia Techniques	17 Hrs

3. Topical Anaesthesia Technique
4. TIVA
5. Balanced Anaesthesia
6. MAC

SYLLABUS OF SECOND YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

SUBJECT NAME: MEDICINE RELEVANT TO OPERATION THEATRE

Course code: DOT-203

Theory classes: 60 hours

NO.	Topic	Domain	Teaching Hours
	Diabetes Mellitus	Must Know 1. Signs and symptoms Diabetes Mellitus 2. Causes- Type- 1, Type -2 3. Prevention 4. Management 5. Diabetic emergencies -Complications Desirable to know 1. Gestational diabetes, 2. Other types Nice to Know 1. Lifestyle, Medications, Surgery, Support	4 Hrs
	Hypertension	Must Know 1. Signs and symptoms 2. Causes 3. Prevention Desirable to know 1. Diagnosis 2. Management Nice to Know 1. Pathophysiology	4 Hrs
	Ischemic heart disease	Must Know 1. Signs and symptoms IHD 2. Risk factors Desirable to know	4 Hrs

		3.Diagnosis 4.Prevention 5.Management	
Obesity		Must Know 1.Classification of obesity 2.Effects on health 3.Causes Nice to Know 1. Management	4 Hrs
Elderly patient		Must Know 1.Differences between adult and geriatric medicine 2.Aging-associated diseases Desirable to Know 1.Pharmacology 2.Practical concerns	4 Hrs
Pregnancy shock		Must Know 1. Shock 2.Types and Causes of pregnancy shock 3.Managements of various types of shocks Desirable to Know 1.Clinical Picture of various Shocks	4 Hrs
COPD		Must Know 1. Signs and symptoms of COPD 2.Cause of COPD Desirable to Know 1Pathophysiology 2. Diagnosis 3.Management	4 Hrs
Anemia		Must Know 1. Signs and symptoms 2.Causes Desirable to Know 1.Diagnosis 2.Treatments Nice to Know 1.Epidemiology	4 Hrs
Chronic renal failure		Must Know 1.Signs and symptoms 2.Causes Nice to Know 1.Diagnosis 2. Treatment	4 Hrs
Chronic liver disease/failure		Must Know	3 Hrs

		1. Causes of chronic liver disease 2. Physical signs Nice to Know Desirable to Know 1. Recognition 2. Risk factors for various liver diseases 3. Treatment	
Paediatric patient infant/neonate		Desirable to Know - What is Pediatrics? - Physical characteristics of newborn - Internal physiological changes at birth Nice to Know 2. Neonatal Nursing : Care and feeding of newborn 3. Potential diseases of neonatal period	4 Hrs
Epilepsy		Must Know 1. Signs and symptoms 2. Causes Nice to Know 3. Prevention 4. Management Must Know Desirable to Know 1. Pathophysiology 2. Diagnosis	4 Hrs
CVA		Must Know 1. Types of stroke 2. Causes Nice to Know 1. Pathophysiology	3 Hrs

		2.Evaluation	
		3.Treatment	

SYLLABUS OF SECOND YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

SUBJECT NAME: INTRODUCTION TO OPERATION THEATRE TECHNOLOGY, SURGICAL EQUIPMENTS & MACHINERY

Course code: DOT-204

Theory classes: 60 hours

Practical classes: 60 hours

NO.	Topic	Domain	Teaching Hours
	<u>OT Techniques</u>	Must Know 1. Cleaning, Carbolization and Maintenance of OT. 2. Scrubbing Techniques. 3. Handling sterilized articles in operation theatre. 4. Types of Operation Lights and other sources of lights their care and handling.	14 Hrs

		5. Setting and use of Image intensifier 6. O.T. environment and storing in OT	
	<u>Sterilization and CSSD</u>	Must Know 1. Methods of instruments cleaning, cleaning agents, detergents, mechanical washing ultrasonic cleaner. 2. Lubrication and inspection of instruments. 3. Care of micro surgical and titanium instruments. 4. Principal of sterilization and disinfection 5. Different methods of sterilization 6. Precaution to be taken during sterilization 7. Methods of checking for efficiency of sterilization. 8. CSSD Desirable to Know 1. Recent advances in the methods of sterilization 2. Recent amendment in EPA (Environmental Protection Agency) with reference to waste disposable.	15 hrs
	<u>Introduction of surgery</u>	Must Know 1. Basic principal of surgery. 2. Asepsis	14 Hrs
	<u>Wound Management</u>	Must know 1. Different types of bandages. 2. Surgical Needle & Needle holders. 3. Types of suture material. 4. Techniques of stitching and removal of stitches.	13 Hrs
	<u>Surgical Instruments</u>	Must know 1. Instruments used for cleaning and draping for a surgical procedure. 2. Classification of General surgical instruments 3. Orthopedic surgery instruments 4. Obstetrics and Gynecological surgery instruments 5. Laparoscopic instruments used for Cholecystectomy and Laparoscopic Gynecology procedures Desirable to Know 1. Urological surgery Instruments 2. Reconstructive surgery instruments	15 Hrs
	<u>Applied Surgery</u> Eye injury.	Must Know 1. Intra-operative & postoperative problems and complications of general surgery. 2. Management of emergency caesarean section. 3. Laparoscopic gynecology procedures. 4. Surgical management of Fracture, Joint replacement and arthroscopy. 5. Surgical management of endoscopies. 6. Care and maintenance of Para surgical equipment (Cautery, OT lights, OT Table) 7. Esmarch bandage, simple tourniquet, pneumatic	29 Hrs
3			

	tourniquet uses, care and maintenance 8. Major abdominal incision. Desirable to know 9. Positioning of patient for different operation. 10. Surgical Consideration in TURP and PCNL 11. Surgical management in major burns. Nice to Know 12. Surgical management of laryngectomy and cochlear implant. 13. Management of perforating	
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REFERENCES:

COMMENDED BOOKS FOR STUDY

Anatomy and Physiology for nurses Author Ross & Wilson
 Principles and practice of nursing Author Sister Nancy
 Introduction to Medical Laboratory Technology Author Dr E.J. Baker
 Operation Theatre Technique Author Brigden
 Safety in Operating Theatre Author Mainland and Dudley
 Operation Room Technique Author Berry
 Central sterile Supply Author Oxford University Press
 Introduction to anaesthesia Author Dripps /Vandam/Eckenhoff
 Anaesthesia Equipments Author Ward
 Clinical application of ventilator support Author Robert R Kirby
 Monitoring in Anaesthesia and critical care Medicine Author Caesey D.Blitt

Electronic Techniques in Anaesthesia and Surgery Author D.W.Hill

SYLLABUS OF SECOND YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

SUBJECT NAME: HEALTH CARE

Course Code: DOT-205

Theory classes: 45 hours

Unit 1. Introduction to Health

- Definition of Health
- Determinants of Health
- Health Indicators of India
- Health Team

Unit 2. Health Policy and Programmes

- Concept.
- National Health Policy
- National Health Programmes (Briefly Objectives and scope)
- Population of India and Family welfare programme in India

Unit 3. Introduction to Nursing

- What is Nursing ? Nursing principles.
- Inter-Personnel relationships.

Bandaging : Basic turns; Bandaging extremities; Triangular Bandages and their application.

- Nursing Position, Bed making, prone, lateral, dorsal, dorsal re-cumbent, Fowler's positions, comfort measures, Aids and rest and sleep.

Lifting And Transporting Patients: Lifting patients up in the bed. Transferring from bed to wheel chair. Transferring from bed to stretcher.

Unit 4. Bed Side Management:

- Giving and taking Bed pan, Urinal :
- Observation of stools, urine. Observation of sputum,
- Understand use and care of catheters, enema giving.
- **Methods Of Giving Nourishment:** Feeding, Tube feeding, drips, transfusion
- Recording of body temperature, respiration and pulse,
- **Simple aseptic technique:** Sterilization and disinfection.
- **Surgical Dressing:** Observation of dressing procedures

Unit 5. First Aid :

- Syllabus as for Certificate Course of Red Cross Society

SUGGESTED BOOKS/LITERATURE:

- MEDICAL HEALTH CARE, by C.M.Francis, Jaypee Brothers
- Current Problems in HEALTH CARE, by George V. Lobo, St. Paul's Society, Allahabad.
- Hospital management Nurses & Patients by H.P. Dunn, St. Pauls Bandar, Mumbai.

SYLLABUS OF SECOND YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

SUBJECT NAME: ENGLISH

Course Code: DOT-E-206

Teaching hours:	Theory:	25 hours
	Practicals:	25 hours

Curriculum:

The objectives are to develop writing and short hand skills

- ☐ To process information using a variety of media
 - ☐ To use appropriate phrases for performing language functions
 - ☐ To edit, select and present information in a format / perspective
 - ☐ To listen and reduce information to a point form
 - ☐ To read and to expand from points to paragraph
 - ☐ To predict, comprehend, infer and synthesize information
 - ☐ To question, probe and arrive at information through discussions, dialogues and interviews
 - ☐ To answer questions, choose and provide data etc.
- Communication with patients and management.

(Theory) : 2 Credits : 2 hours week

E. Reading

The objectives are to enable the students to

- ☐ Read for information news features, articles, newspaper and text
- ☐ Read intensively a collection of short stories given in a compiled text (See for the text and the lessons selected from it below)

Practical exam:

Writing

The objectives are to enable the students to

- ☐ Form words properly using prefixes / suffixes (See list 4 in the Appendix)
- ☐ Use phrasal verbs (See list 3 in the Appendix)
- ☐ Use appropriate and related registers (See list 5 in the Appendix)
- ☐ Writing paragraphs, developing points / ideas
- ☐ Short hand note in detail.
- ☐ Communication with patients and management.

Book prescribed

L.A.Hill (1970), **Contemporary Short Stories**. Chennai: Oxford University Press. The following stories have been selected for use on the course.

- ☐ The happy Prince
- ☐ A Horseman in the sky
- ☐ The Wolves of Cernogratz
- ☐ The half Mile
- ☐ The Mark of Vishnu
- ☐ The Halfyard Ham
- ☐ Locomotion 38
- ☐ The Ghost Ship
- ☐ Uneasy Homecoming
- ☐ The Trust Property

SYLLABUS OF SECOND YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

SUBJECT NAME: COMPUTER SKILLS

Course Code: DOT-E-207

Theory classes: 20 hours

Objective:

At the end of this course, a student would be able to :

- ☐ identify various components of computer hardware and
- ☐ use some software in order to manage data related to the profession.

Unit 1. Computer Organization -I

Generations of a computer, types of a computer, some important terms: hardware, software, program, operating system, interpreter, compiler, assembler, high level languages, bits and bytes.

Introduction to number systems

Processors, CPU organization, primary memory, memory addresses, secondary memory, memory hierarchies, magnetic disks, CDROMs, DVDs, input/output devices: keyboards, monitors, mice, printers, modems

The concept of character codes

Unit 2. Computer Organization -II

MICROSOFT OFFICE

Introduction to spreadsheets, the concept of cells and cell addresses, formulas, some important functions, introduction to charts

Tables – creation, modification, deletion

Working with data – insertion, modification, finding, sorting, grouping, viewing and sharing data

Forms – creation of forms; modification, viewing and validating data using forms, subforms Reports – creation, modification, opening, viewing

Creating mailing labels

REFERENCE BOOKS:

1. Tanenbaum A. S., Structured Computer Organization, 4th Edition, Prentice-Hall of India Pvt. Ltd., 2002.
2. Elmasri, Navathe, Somyajulu, Gupta, Fundamentals of Database Systems, Pearson Education, 2006.
3. Progue, Irwin, Roardon, Microsoft Office Access 2007 Bible, Wiley Publishing Inc., 2007.
4. Taxali R. K., P C Software for Windows 98 Made Simple, Tata McGraw-Hill, 2001.
5. Hall D. V., Microprocessors and Interfacing, McGraw-Hill Book Company, 1986.
6. Desai Bipin C., An introduction to Database Systems, 7th Edition, Pearson Education Asia, 2001.

COMPLITION OF SECOND YEAR DIPLOMA IN MEDICAL LAB TECNICIAN

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☐ eloping points / ideas

SYLLABUS OF SECOND YEAR DIPLOMA IN OPERATION THEATER TECHNICIAN

SUBJECT NAME: COMPUTER SKILLS

Course Code: DOT-E-207

Theory classes: 20 hours

Objective:

At the end of this course, a student would be able to :

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- ☐ use some software in order to manage data related to the profession.

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Introduction to number systems

Processors, CPU organization, primary memory, memory addresses, secondary memory, memory hierarchies, magnetic disks, CDROMs, DVDs, input/output devices: keyboards, monitors, mice, printers, modems

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Unit 2. Computer Organization -II

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Introduction to spreadsheets, the concept of cells and cell addresses, formulas, some important functions, introduction to charts

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COMPLITION OF SECOND YEAR DIPLOMA IN MEDICAL LAB TECNICIAN

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☐ eloping points / ideas

FACULTY OF DISASTER MANAGEMENT

**Syllabus Proposal
For**

Diploma in Fire Safety

Effective from Academic Year 2021-2022

Veer Narmad South Gujarat University Surat

Diploma in Fire and Safety Syllabus

	Paper No. Subject Code	Paper Name	Marks	Passing Standard
Semester I	DFS101 23596	Fire tech & design	100	40
	DFS102 23597	Principles of Management	100	40
	DFS103 23598	Construction safety	100	40
	DFS104 23599	Industrial safety	100	40
Semester II	DFS105 23600	Environmental safety	100	40
	DFS106 23601	Safety of People in the Event of Fire	100	40
	DFS107 23602	Organization Behaviour	100	40
	DFS108 23603	Field Training	100	40

Paper 101**FIRE TECH & DESIGN**

Unit	Contents	Marks/Weightage
1	Classification of fire portable fire extinguishers pumps and primers foam and foam making equipment	18
2	Hose and hose fitting water relay systems breathing apparatus small gears	18
3	Fire protective clothing ladders Ropes and lines, bends & hitches fire prevention	17
4	Special appliances firefighting codes and standards electrical fire hazards structures under fire.	17

Reference Book: -

1. Handbook of Fire Technology- by R.S. Gupta, 2005.
2. Brown, Tim. "What We Can Learn from Barn Raisers." Design Thinking: Thoughts by Tim Brown. Design Thinking, y 2015.
3. Knapp, Jake. "The 8 Steps to Creating a Great Storyboard." Co. Design. Fast Company & Inc.,
4. van der Lelie, Corrie. "The Value of Storyboards in the Product Design Process." Journal of Personal and Ubiquitous Computing 10.203 ~~2006~~:159-162;web. 9 July 2015. [PDF].
5. Miltenson, Alisson. "Design Research 101: Prototyping Your Service with a Storyboard." Peer Insight. Peer Insight, 31 May 2013. Web. 9 July 2015.

Paper 102 Principles of Management

Unit	Contents	Marks/Weightage
1	Definition of Management, Science or Art, management and Administration, Development of Management Thought Contribution of Taylor and Fayol, Functions of Management, Planning: Nature & Purpose, Steps involved in Planning, Objectives, Setting Objectives, Process of Managing by Objectives, Strategies, Policies & Planning Premises, Forecasting, Decision-making.	18
2	Organizing: Nature and Purpose, Formal and Informal Organization, Organization Chart, Structure and Process, Departmentation by difference strategies, Line and Staff authority – Benefits and Limitations – 1De-Centralization and Delegation of Authority – Staffing – Selection Process - Techniques – HRD – Managerial Effectiveness.	18
3	Directing: Scope, Human Factors, Creativity and Innovation, Harmonizing Objectives, Leadership, Types of Leadership Motivation, Hierarchy of Needs, Motivationtheories, Motivational Techniques, Job Enrichment, Communication, Process of Communication, Barriers and Breakdown, Effective Communication, Electronic media inCommunication.	17
4	Controlling: System and process of Controlling, Requirements for effective control, The Budget as Control Technique, Information Technology in Controlling, Productivity, Problems and Management, Control of Overall Performance, Direct and Preventive Control, Reporting, The Global Environment, Globalization and Liberalization, International Management and Global theory of Management.	17

Reference / Text-Books/ Additional Reading:

1. Wehrich Heinz and Koontz Harold-Management A Global and Entrepreneurial Perspective Mc Graw Hill 12thEdition 20012
2. Stoner, Freeman & Gilbert Jr –Management Organizational Behaviour
3. Prentice Hall of India 6th Edition or later edition
4. Rao VSP Management, Text & Cases Excel Books Latest Edition

Unit	Content	Marks/Weightage
1	Site planning and housekeeping types of scaffolds erection & dismantling scaffold inspection	18
2	Safety in scaffolding — an overview Investigation of scaffold accident provisions on scaffold under the building other construction workers central rules, 1998 safety in excavations, trenching and shoring	18
3	Road work and pilling operation ladders use of safety nets and fall protection systems concrete and concert foams and shoring	17
4	Importance of civil work in construction industry Material handling important safety requirements and inspections.	17

Reference Book

1. K.N. Vaid (Ed.), Construction Safety Management, National Institute of Construction Management and Research, Bombay.
2. V.J. Davies & K. Tomasin, Construction Safety Handbook, Thomas Telford Publishing, London.
3. James B. Fullman, Construction Safety, Security & Loss Prevention, John Wiley & Sons
4. Linger L, Modern Methods of Material Handling
5. R.T. Ratay, Handbook of Temporary Structures in Construction, McGraw-Hill
6. National Building Code of India 2005, SP-7, Bureau of Indian Standards, New Delhi.
7. Contract Labour Act and Central Rules
8. Building & Other Construction Workers (RE &CS) Act, 1996 and Central Rules.

Unit	Content	Marks/Weightage
1	Fundamentals of industrial safety different types of industries different types of safety systems and equipment safety policy and safety terminology	18
2	Work permit systems job safety analysis hazop study fault tree analysis	18
3	Emergency planning safety inventory systems safety survey occupational health hazards safety organization and duties of a safety officer	17
4	Accident prevention methods safety committee accident investigation safety management systems laws related to safety (factories ACT 1948 explosive ACT, electricity ACT etc.)	17

Reference Book

1. Industrial Safety, Health Environmental Management System: R.K. Jain, Sunil S. Rao
2. Industrial Safety, Health Environmental Management System: R.K. Jain Sunil S. Rao, Khana Publishers
3. Ronald P. Blake, Industrial Safety: Prentice Hall, New Delhi, 1973

Semester II**Paper 105 ENVIRONMENTAL SAFETY**

Unit	Contents	Marks/Weightage
1	Air pollutants, Pollution sources Automobile pollution-hazards of air pollution-consent of clean coal combustion technology, fly ash control of combustion in combustion chambers-ultraviolet radiation, infrared radiation from sun hazards due to depletion of ozone deforestation ozone holes-automobile exhaust chemical factory stack emissions .	18
2	Hazardous waste management in India Waste identification, characterization and classification Technological options for collection, treatment and disposal of hazardous waste selection charts for the treatment of different hazardous waste Methods of collection and disposal of solid wastes Health hazards, Toxic and radioactive waste incineration and vitrification, Hazards due to bio Process, Dilution and restrictions Recycling and reuse.	18
3	Sampling and analysis, Dust monitor, Gas analyzer, particle size analyzer Lux meter pH meter gas chromatograph atomic absorption spectrometer. Gravitational settling chambers cyclone separators scrubbers electrostatic precipitator bag filter maintenance control of gaseous emission by adsorption, absorption and combustion methods	17
4	pollution control board laws pollution control in process industries like cement, paper, paper, petroleum products textile tanneries thermal power plants dying and pigment industries ecofriendly energy	17

Reference Book

1. Textbook of Environmental Studies (Erach Bharucha) UGC, New Delhi
2. Environmental Noise Pollution, P. E. Cunniff, McGraw Hill, New York, 1987.
3. Encyclopedia of Ecology, Environment Swaroop. R, Mishra, S.N. Mitlal, New Delhi Jaurl, V.P.
4. Environmental Concerns Saigo & Cunningham
5. Unit Operations and Processes in Environmental Engineering, T. D. Reynolds, P. Richards. PWS Series in Engineering, Boston, 2010.

Unit	Contents	Marks/Weightage
1	Recognition of possible fire sources and emergency procedures in the event of a fire, the course also offers an in-depth study of fire investigation and the construction techniques for eliminating fires, History of fires, types of detecting devices and extinguishing agents and systems, construction techniques, and fire investigation, National Fire Protection Association and Occupational Safety and Health Administration standards	18
2	Devising procedures in the event of fire, How people perceive and react to fire danger, The measures needed to overcome behavioural problems and to ensure the safe evacuation of people in the event of fire, Assisting disabled people to escape	18
3	Safety goals and objectives, Monitoring safety progress, Identifying hazards and risks, Safety and financial benefits, Safety and the balanced scorecard, Setting targets and ensuring commitment, Developing safe work systems, Policies and procedures, Safety values and principles	17
4	Allocating responsibility and authority, Rehabilitation after an incident, Workplace inspections, Measuring and reporting, Developing and effective safety culture, Building an incident free workplace, Removing obstacles to safety, Safety and accountability, Developing safety habits in the workplace, Fire Protection and Analysis	17

1. —Smokejumper: a memoir by one of america's most select airborne firefighters! by jason a. Ramos
2. —Essentials of firefighting and fire department operations!by ifsta
3. -The rural firefighting handbook!by dominiccoletti and larrydavis
4. "Fire command" by alan v. Brunacini

Paper 107**Organization Behaviour**

Unit	Contents	Marks/Weightage
1	What is Organizational Behaviour Understanding the national culture and the Indian setting Changes occurring in the Context and their impact on Organizational Behaviour	18
2	Understanding Personality, Values, Attitude and their impact on Behaviour at work Understanding Motivation at work.	18
3	Understanding the process of Perception: How we make sense of our environment Understanding Interpersonal Communication and Transactions Understanding Groups and Teams	17
4	Using Leadership for managing change towards organizational effectiveness Understanding Organizational Culture and changing it for effectiveness Basic Theories of Leadership Contemporary Issues in Leadership Practice	17

Reference / Textbooks/ Additional Reading:

1. Text would be prescribed by the instructor in the class

Practical Training:

The students would go under practical field training with coordination of established fire and safety organizations. For which an approval should be sought from the academic session in the beginning of the semester.

Paper 108**Field Training**

Students are required to undergo a practical Training in any of fire Fighting organization for a period of 10 full days under supervision of a faculty.

FACULTY OF PARAMEDICAL SCIENCE

**Syllabus Proposal
For**

DIPLOMA IN SANITARY INSPECTOR

Effective from Academic Year 2021-2022

Veer Narmad South Gujarat University Surat

❖ **Course Title:** Diploma in Sanitary Inspector (DSI)

❖ **Learning Objectives**

The objective of the course is to impart technical training supplemented by practical training programme to candidates aspiring to join Health and Sanitation departments of Municipal Bodies, Local Govt. Bodies, District Councils, Railways, Five-Star Hotels, Food and Drugs Administration, Airports or similar services in other organizations.

- Should have knowledge of food safety and the ability to apply it to establishments such as restaurants.
- Apply the principles of natural and mechanical ventilation, as needed
- Should be able to dispose of waste (solid, liquid and sewage) appropriately with minimum harm to the environment.
- Applying the techniques of sterilization and disinfection of various articles
- Should be able to survey housing colonies to assess sanitary standards and prescribe corrective measures.
- Should assist in sanitation management at fairs and festivals.
- Should understand communicable diseases and their prevention.
- Should be able to assist in or independently conduct disinfection of areas in a hospital such as wards, operation theatres, labour rooms, etc.
- Conducting programmes on personal hygiene.
- Should be able to conduct visits to various establishments for assessment of cleanliness and hygienic practices and ensure the desirable standards are maintained.

❖ **Duration of course** - One Academic year

❖ **Tenure:** June to November & December to May

❖ **Admission Criteria:** The candidate must have completed 10+2 with any stream

❖ **Medium of Instruction:** English/Gujarati

❖ **Intake Capacity:** 60 (Minimum 10 students are to be admitted to commence the course)

❖ **Course Fee:** Rs.40,000/- (Fourty Thousand Only)

STRUCTURE OF THE COURSE

Paper No.	Course Name	Internal Marks	External Marks	Total Marks	Credits
01	Basic Study (Foundation Course)	30	70	100	05
02	Diet and Nutrition	30	70	100	05
03	Land Hygiene/Sanitation and Sewage/Excreta Removal	30	70	100	05
04	Government Program for Disposal/Removal of biomedical waste	30	70	100	05
05	Project work	30	70	100	05
Total Credit					25

Paper No. 1: Basic Study (Foundation Course)

1. Basic understanding of the implementation of health services

- a. Method/Methodology of implementation of primary, secondary, and tertiary level health services.
- b. Community Partnership in Primary Health Care.
- c. Health systems in developing countries.
- d. Private department.
- e. National Health Mission (National Health Program and Schemes).
- f. National Health Policies and Various Health Days.

2. Aims, Objectives, Action Plan, and Target Achievements of National Health Program.

3. Basic Information about *Āyush* method

- a. Basic Information about *Āyurveda*.
- b. Basic Information about *Yoga* and Naturopathy.
- c. Basic Information about *Yunāni*.
- d. Basic Information about *Siddhā*.
- e. Basic Information about Homeopathy.
- f. The need of assimilating various methods.

4. Overview of Contemporary Health Sector in India.

5. Important Information Regarding Population

- a. Population census.
- b. Important life-events and its impact on population.
- c. Collection and Importance of information related to population.
- d. Population census and its impacts on health policy.
- e. The science of school of disease.
- f. The principles of the science of school of disease.
- g. Natural History of Diseases.
- h. Details of the study of the school of disease.

- i. The science of contagious and non-contagious diseases – Spread of diseases – Immune System – Cold-chain vaccination agent – Disease prevention survey.

6. Various words and terminologies used in medical language –Study of basic, detailed information about origin (of diseases) – The study and interpretation of the order and report of medical science.

7. Primary information and knowledge about computer and information science. In order to provide students basic knowledge about computer technology, the following topics have been included:

1. Introduction to Computer

- a. Characteristics of computer.
- b. Block diagrams.
- c. Generations of computer.
- d. Computer Languages.

2. Input – Output Device

- a. Input devices: Key-board – Paint and Draw devices – Data scanning devices – Digitized Electronic Card Reader –Voice Resign/Recognition device –Vision input device.
- b. Output devices: Monitor – Pointer – Platters – Screen Image Projector – Voice Response System

3. Processor and Memory – Central Processing Unit (C.P.U.) – Main memory.

4. Collection Instruments –Subsequent and Direct Use devices – Magnetic tape – Magnetic disc – Optical disc – Collective collection instruments.

5. Understanding Windows

History – Features – Desktop – Taskbar – Desktop Icons – Working with Folders – Creating Shortcut – Operating Windows (Starting – Shut Down – Moving – Size modification – Increasing and Decreasing, etc.).

6. Introduction to M.S. Word.

7. Introduction to Excel.
8. Introduction to PowerPoint.
9. Understanding Operating System.
10. Computer Networks.
11. Internet and its uses/functions.
12. Use of Engineering in Clinical Settings.

Paper No. 2: Diet and Nutrition

1. Classification of eatables and their importance for public health.
2. Assessment of daily required nutrition.
3. Assessment of the need for nutrients in a special group.
4. Balanced diet.
5. Assessing the nutritional status of the family.
6. The survey of nutrition education and its importance.
7. Preventive therapeutic nutrition.

Knowledge regarding General Safety – Occupational Health, and Hygiene Science

a. Dietetics Nutrition

Introduction to and classification of Health and Diseases – Nutritional Elements in Diet and their Sources

b. Nutrient

Carbohydrates – Protein - Vitamins and Minerals – Function – Sources and Dietary Needs.

c. Family Examination

Medical examination of all members– weight –height and circumference of the head – skin folds(in the case of children) –Blood test for Hemoglobin –Diet Survey –Weight of food before and after cooking.

d. Balanced Diet

Definition – Co-planning - Factors to take into consideration during planning– Nutritional needs of special groups.

e. Nutrition Education

Malnutrition – Less Weight during birth– Causes – Prevention –Protein energy malnutrition prevention – Special care regarding malnutrition – Special treatment given to malnourished children.

Water Sanitation

1. Classification of sources of water.
2. The difference between deep and shallow wells.
3. Method of Sanitary Well.
4. Demonstration of *Arogyaprada* well in town/village.
5. Water Supply Sanitary Inspector.
6. Collecting and dispatching samples for chemical and bacteriological survey.
7. Water purification in urban areas.
8. Water purification in rural areas.
9. Environmental Cleanliness (WHO definition) –Balanced and healthy water and its sources – Various uses of water and its need

Waterborne Diseases – Water Conservation – Water Quality - Hard Water and aspects of health – Physical, chemical, and biological criteria and various types of water pollution– The process of cleansing borewell water in small and large amounts– Plumbing system and its maintenance–Water distribution and storage method at community and home level.

Clean, Healthy Air

1. Demonstration of air condition plan for maintain temperature.
2. The importance of air circulation in sufficient quantity and its importance – types of air circulation (1); natural (2) mechanical – Air purification and disinfectant greenhouse effect – Types of ventilation – Air temperature – Humidity –Radiation and Evaporation and their measurements.

Paper No. 3: Land Hygiene/Sanitation and Sewage/Excreta Removal

1. Demonstration of sewage treatment plant.
2. Inspection of soil plant, manhole, and flushing tank.
3. Collection of sewage samples and interpretation of chemical and bacteriological analysis.
4. Inspection of sewage treatment plant, its maintenance, and method of disinfecting it.
5. Cleaning of sewage system – Oil operation and organization of mechanical aspects.
6. Detection/investigation of water pollution.

Removal of excreta and waste

1. Method of waste disposal.
2. Sanitary land filling and demonstration of compost pit.
3. Disposal of excreta.
4. Toilet construction and maintenance
 - Soak-pit.
 - Sanitary latrine.
 - RCA latrine.
 - Septic tank latrine.
 - Sewage treatment plant.
 - Accessible toilets.

5. Excreta Removal

Sewage stream is a waste that includes human feces – Water Pollution – Methods to prevent diseases due to improper removal/discharge:

1. Different types of toilets.
2. Methods of disinfectant use.

3. Bore hole type latrine.

4. R.C.A. toilet.

5. Septic tank toilet.

6. Biogas.

7. Method of disinfecting sewage.

6. Burial and cremation in case of accidents

1. Removal and burial of dead bodies / cremation and record-keeping.

2. Inspection of land for burial and cremation and disposal of ashes.

Land Cleanliness

1. To make samples for assessment of land pollution.

2. Disinfecting the land and changing pH.

3. Types of soil from public health perspective –Causes of soil moisture –Proportion of bacteria and parasites and land health.

Control of bacterial environment

1. Identification and use of insecticides.

2. The method of disinfecting various objects.

3. Understanding the different parts of sprinkler equipment.

4. Use and maintenance of sprinkler.

5. Use of antiseptics.

6. Use of mice-killing drugs.

Housing

1. Survey of home design for determining cleanliness criteria.
2. Fairs – Industrial Estates/Residence Inspection and Sanitation Management.
3. Food – Housing – Water – Lighting – Community Waste Disposal and alternative provisions for emergencies to prevent disease outbreak.

Professional Health

1. Inspecting the workplace.
2. Visit and inspection of factory for cleanliness.
3. Identification of hazardous areas and security arrangements.
4. Health and cleanliness survey of business/industrial areas – Causes, Effects, and Prevention of Environmental pollution.

Paper No. 4: Government Program for Disposal/Removal of biomedical waste

1. Survey of health services in different areas.
2. Planning of vaccination services.
3. Ensuring sanitization of Hospital Ward – Operation Theater–Labor room.
4. Participation in various programs.
5. Self-cleanliness awareness program.
6. Primary treatment in case of emergencies.

1. Infectious Diseases

Introduction – Airborne diseases – Diseases transmitted by diseases – Diseases transmitted by contact –Steps for prevention and control of diseases spread through other diseases and insects.

2. Immunity and Vaccination

Aims -- types and effects – Major contagious diseases such as T.B., Diphtheria, Measles, Typhoid -- National vaccination program for prevention

3. Disinfecting

Chemical Agent – Halogen –Potassium permanganate – bleaching powder – lime.

4. Non-communicable diseases

Introduction – new cases -- total cases – Diagnosis, Detention, and Prevention.

5. Individual/Personal Health

Factors influencing it – Habits – Hand washing - digestive tract – addiction and digestion maintenance– skin and dental care – exercise – proper nutrition.

6. Primary treatment

Treatment of general illness.

7. Rules and laws for Public Health.

Collecting food samples for investigation -- Paper work for legal action -- Home inspection for detecting adulteration (in milk -- ghee -- oil -- tea -- sugar).

Public Health Laws

- Indian Epidemic Act.
- Air purification and water pollution act.
- Laws to prevent food adulteration.
- Birth and death registration act.
- M.P.T Act.
- Traffic Act.
- Laws of Municipal and Local Bodies relating to house design and cleanliness.
- Factory Act and Workers State Insurance Act.
- Checking of school and mid-day meals -- Healthy habits for personal health and maintaining proper standards of cleanliness.

Exchange of information on health education

To prepare verbal and aural-visual messages.

Behavioral Science

Habits and rituals affect individual health. Bodily care -- Clothes -- Periods and Health--Care of extremely sensitive organs (eyes, ears).

Health education

Individual health -- Environmental health -- Use of collective resources -- Personal visit to Primary Health Center -- Health education through group discussion --For prevention of diseases and nutritious diet:

- Information about A.I.D.S
- Rejuvenation

- N.Q.A.S.
- Cleanliness mission.
- Maintain quality in public health and cleanliness.

Solid Waste Disposal

Sources of Production –storage–collection –arrangement for disposal – classification and effects – collection and transportation of solid waste from home and streets –method of creating compost/fertilizer.

Liquid Waste Disposal

Healthy methods of liquid waste disposal and dangers of liquid waste on health –gutter system – gutter system construction and maintenance – Water pollution through gutters and disinfecting polluted water.

Paper No. 5: Project Work

The student should prepare a detailed report on the subject of interest to the student and remain present for interview.

Visit the following areas for this project work and submit a 50-page report

- 50 houses in urban area.
- 50 houses in rural area.
- Sewage treatment plan.
- Visit a Solid waste disposal plant.
- Visit two hospitals: (1) urban; (2) rural.
- Visit chlorination and antiseptic work.
- Visit gram Panchayat.

Reference book

- Swach Bharat Abhiyan guidebook, Government of India.
- Healthcare waste management and biomedical waste management rules 2016
- Paramedical book – Jay Ganesh Seva Trust.
- Biology (Human body and functions) Std. 9-10-11-12, Govt. of Gujarat.
- Training module for paramedical staff – Govt. of Gujarat.

FACULTY OF PARAMEDICAL SCIENCE

Sr. No.	Name of Course	Credit/ Hours	Duration	Course Structure		Admission	Intake	Fees Rs.	Eligibility		Passing Criteria
				Internal	External				For Institution	For Teacher	
1	Diploma in Sanitary Inspector	25/375	1 Years	30%	70%	10+2 or Equivalent, Area in specialization (if any: Not Required	60	Rs. 40,000	UG and/or PG Institution (affiliated with SGGU) with relevant subject shall be eligible.	Diploma in Sanitary Inspector from any recognised Govt. institution.	40%

FACULTY OF PARAMEDICAL SCIENCE

**Syllabus Proposal
For**

**DIPLOMA IN MEDICAL LAB
TECHNICIAN**

Effective from Academic Year 2021-2022

Veer Narmad South Guajarat University Surat

- R. DMLT. 1:** **Eligibility for the admission:**
Candidates who have passed 10+2 examination in any stream conducted by any recognized School Certification Board or Equivalent Examination;
- R. DMLT. 2:** **Duration of the course:**
Duration shall be for a period of **TWO years**
- R. DMLT. 3:** **Medium of instruction:**
The medium of instruction and examination shall be in English.
- R. DMLT. 4:** **Attendance**
Candidate shall be required to attend at least 75% of the Lectures and Practical separately in each year.
- R. DMLT. 5:** **Subjects, Credits and Scheme of examination**
Main and Subsidiary subjects are common in first year for all the courses of Medical Technology. The subject-wise details of examination for the first year have been given in Table 1.
There shall be three examinations one each at the end of 1st & 2nd year.
- R. DMLT. 6:** Eligible candidate desirous for appearing in the University examination of any/all theory papers must forward his/her application in the prescribed form from the respective college to the University on or before the date prescribed for the purpose under the relevant ordinance.
- R. DMLT. 7:** **INTERNAL ASSESSMENT:**
The internal assessment will be done based on continuous evaluation method. Every year, there will be two internal examinations for both the theory and the practical. For the award of internal marks in theory and practical, the better of the two internal examinations will be considered along with other components like attendance, seminar presentations, workshops & conferences attended and journal submission.
Internal marks calculation - 20% of total marks of a subject (Separately for theory and practical):
The better of two internal examinations: 10% of total marks
Attendance: 5% of total marks
Seminar presentations, workshops &
Conferences attended and journal submission: 5% of total marks
A candidate must obtain minimum of 35% marks of internal evaluation in each paper for both theory and practical separately. Failing which he/she would not be eligible in that paper(s)/ head of passing.
- The subsidiary subjects in whom only the internal exam will be conducted, a candidate must obtain minimum of 35% of the total marks before appearing for University examination.

UNIVERSITY (EXTERNAL) EXAMINATION:

PASSING CRITERIA:

Every student has to have an aggregate score of minimum 35% marks of both the internal and University (external) Examination of 100 % marks in theory and practical examination combined together to pass in the University Examination. It is not compulsory to pass in section – I and section – II separately.

But, the student has to score minimum 35 % of marks separately in theory and practical in the University Examination of 80 marks in theory and practical examination and internal examination.

R. DMLT. 8:

Promotion and A.T.K.T.

- a. Candidates, who have passed separately in theory and practical of all subject heads (course) in F.Y.D.M.L.T. and S.Y D.M.L.T. Shall be promoted to degree certificate.
- b. Candidates, who fail in **any three** of the subject heads (courses) in F.Y. D.M.L.T. Shall be granted A.T.K.T. And shall be allowed to attend S.Y.D.M.L.T.as the case may be. Candidate can re-appear in the following subject-heads in the subsequent exam.
- c. Candidate would however not be allowed for certificate from. Unless and until s/he passes all subjects of F.Y. D.M.L.T.

DISTRIBUTION OF TEACHING HOURS FOR
FIRST YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

Sr. No.	Subject	Course No.	Teaching Hours
Main Subjects			
1	Human Anatomy	DMLT-101	60
	Practical – Anatomy	DMLT-101(P)	30
2	Human Physiology	DMLT-102	60
	Practical – Physiology	DMLT-102(P)	30
3	Pathology	DMLT-103	60
	Practical-Pathology	DMLT-103(P)	30
4	Microbiology	DMLT-104	60
	Practical- Microbiology	DMLT-104(P)	30
5	Biochemistry	DMLT-105	60
	Practical- Biochemistry	DMLT-105(P)	30
Main Subjects- Teaching hours			450
Subsidiary subjects			
6	English	DMLT-E-106	60
7	Computer Organization & PC Software	DMLT-E107	30
	Computer Organization & PC Software-practical	DMLT-E-107(P)	30
Subsidiary subjects- Teaching hours			120
Teaching hours-Theory/Practical's			570
Hospital Posting			360
Total Teaching hours			930

**DISTRIBUTION OF SUBJECTS, CREDITS
AND SCHEME OF EXAMINATION FOR
FIRST YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN**

Table 1. Subjects, Credits and Scheme of Examination

Sr. No.	Subject	Course No.	No. Credits per week	Duration of Uni. Exam	External Marks	Internal Marks	Total	Grand Total
1	Human Anatomy	DMLT-101	2	3	80	20	100	100
	Practical – Anatomy	DMLT-101(P)	1	-	-	-	-	
2	Human Physiology	DMLT-102	2	3	80	20	100	100
	Practical – Physiology	DMLT-102(P)	1	-	-	-	-	
3	Pathology	DMLT-103	2	3	80	20	100	100
	Practical-Pathology	DMLT-103(P)	1	-	-	-	-	
4	Microbiology	DMLT-104	2	3	80	20	100	100
	Practical- Microbiology	DMLT-104(P)	1	-	-	-	-	
5	Biochemistry	DMLT-105	2	3	80	20	100	100
	Practical- Biochemistry	DMLT-105(P)	1	-	-	-	-	
	Subsidiary subjects							
6	English	DMLT-E-106	2	2	40	10	50	50
7	Computer Organization & PC Software	DMLT-E-107	1	2	40	10	50	50
	Practical- Computer Organization & PC Software	DMLT-E-107(P)	1	2	25	25	50	50
Total								650

SYLLABUS OF FIRST YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: HUMAN ANATOMY

Course code: DMLT 101

Theory classes: 60 hours

Practical classes : 30 hours

Unit 1. Introduction: human body as a whole

Theory:

- Definition of anatomy and its divisions
- Terms of location, positions and planes
- Cell and its organelles
- Epithelium-definition, classification, describe with examples, function
- Glands- classification, describe serous & mucous glands with examples
- Basic tissues – classification with examples

Practical:

- Histology of types of epithelium
- Histology of serous, mucous & mixed salivary gland

Unit 2. Locomotion and support

Theory:

- Cartilage – types with example & histology
- Bone – Classification, names of bone cells, parts of long bone, microscopy of compact bone, names of all bones, vertebral column, intervertebral disc, fontanelles of fetal skull
- Joints – Classification of joints with examples, synovial joint (in detail for radiology)
- Muscular system: Classification of muscular tissue & histology
- Names of muscles of the body

Practical:

- Histology of the 3 types of cartilage
- Demo of all bones showing parts, radiographs of normal bones & joints
- Histology of compact bone (TS & LS)
- Demonstration of muscles of the body (as functional groups)
- Histology of skeletal (TS & LS), smooth & cardiac muscle

Unit 3. Cardiovascular system

Theory:

- Heart-size, location, chambers, exterior & interior
- Blood supply of heart
- Systemic & pulmonary circulation
- Branches of aorta, common carotid artery, subclavian artery, axillary artery, brachial artery, superficial palmar arch, femoral artery, internal iliac artery
- Peripheral pulse
- Inferior vena cava, portal vein, portosystemic anastomosis
- Great saphenous vein
- Dural venous sinuses
- Lymphatic system- cisterna chyli & thoracic duct
- Histology of lymphatic tissues
- Names of regional lymphatics, axillary and inguinal lymph nodes in brief

Practical:

- Demonstration of heart and vessels in the body
- Histology of large artery, medium sized artery & vein, large vein
- Microscopic appearance of large artery, medium sized artery & vein, large vein
- pericardium
- Histology of lymph node, spleen, tonsil & thymus
- Normal chest radiograph showing heart shadows
- Normal angiograms

Unit 4. Gastro-intestinal system

Theory:

- Parts of GIT, Oral cavity (lip, tongue (with histology), tonsil, dentition, pharynx, salivary glands, Waldeyer's ring)
- Oesophagus, stomach, small and large intestine, liver, gall bladder, pancreas
- Radiographs of abdomen

Unit 5. Respiratory system

Theory:

- Parts of RS, nose, nasal cavity, larynx, trachea, lungs, bronchopulmonary segments
- Histology of trachea, lung and pleura
- Names of paranasal air sinuses

Practical:

- Demonstration of parts of respiratory system.
- Normal radiographs of chest
- Histology of lung and trachea

Unit 6. Urinary system

Theory:

- Kidney, ureter, urinary bladder, male and female urethra
- Histology of kidney, ureter and urinary bladder

Practical:

- Demonstration of parts of urinary system
- Histology of kidney, ureter, urinary bladder
- Radiographs of abdomen-IVP, retrograde cystogram

Unit 7. Reproductive system

Theory:

- Parts of male reproductive system, testis, vas deferens, epididymis, prostate (gross & histology)
- Parts of female reproductive system, uterus, fallopian tubes, ovary (gross & histology)
- Mammary gland – gross

Practical:

- Demonstration of section of male and female pelves with organs *in situ*
- Histology of testis, vas deferens, epididymis, prostate, uterus, fallopian tubes, ovary
- Radiographs of pelvis – hysterosalpingogram

Unit 8. Endocrine glands

Theory:

- Names of all endocrine glands in detail on pituitary gland, thyroid gland, parathyroid gland, suprarenal gland – (gross & histology)

Practical:

- Demonstration of the glands
- Histology of pituitary, thyroid, parathyroid, suprarenal glands

Unit 9. Nervous system

Theory:

- Neuron
- Classification of NS
- Cerebrum, cerebellum, midbrain, pons, medulla oblongata, spinal cord with spinal nerve (Gross Anatomy)
- Histology of Cerebrum, cerebellum and spinal cord
- Meninges, Ventricles & cerebrospinal fluid
- Blood supply of brain (In Brief)
- Cranial nerves (Only Names)

Practical:

- ☐ Histology of peripheral nerve & optic nerve
- ☐ Demonstration of all plexuses and nerves in the body
- ☐ Demonstration of all part of brain
- ☐ Histology of cerebrum, cerebellum, spinal cord

Unit 10. Sensory organs:

Theory:

- Skin: Skin-histology
- Appendages of skin
- Eye: Parts of eye & lacrimal apparatus
- Extra-ocular muscles & nerve supply
- Ear: parts of ear- external, middle and inner ear and contents

Practical:

- Histology of thin and thick skin
- Demonstration and histology of eyeball
- Histology of cornea & retina

Unit 11. Embryology:

Theory:

- Spermatogenesis & oogenesis
- Ovulation, fertilization
- Fetal circulation
- Placenta

There shall be no University Practical Examination.

REFERENCE BOOKS

1 William Davis (P) understanding Human Anatomy and Physiology MC Graw Hill

2. Human Anatomy for Nursing & Allied Sciences - 1st edition
Dr. M.K. Anand, Dr. Meena Verma, The Arora Medical Publishers Pvt. Ltd

3. Fattana, Human anatomy
(Description and applied)
Saunders & C P Prism Publishers, Bangalore – 1991

4. ESTER . M. Grishcimer,
Physiology & Anatomy with Practical Considerations, J.P. Lippin Cott. Philadelphia

SYLLABUS OF FIRST YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: HUMAN PHYSIOLOGY

Course code: DMLT 102

Theory classes: 60 hours

Practical classes : 30 hours

Theory:

Unit 1. Blood and Muscle Physiology:

- Composition & Function of Blood
- Erythropoiesis and Leucopoiesis
- Hemostasis
- Action potential and mechanism of Muscle contraction
- Neuromuscular junction

Unit 2. Digestive System and Excretory System

- Movement and Alimentary tract
- Deglutition and Mechanism of Vomiting
- Digestive juices
- Micturition
- Mechanism of Urine formation
- Regulation of acid-base balance

Unit 3. Cardiovascular and Respiratory System

- Heart rate and sound
- Blood pressure
- Cardiac cycle and output
- Mechanism of breathing
- Oxygen and Carbon dioxide Transport
- Pulmonary volume and capacity

Unit 4. Endocrinology and Reproductive System

- Spermatogenesis and Menstrual cycle.
- Puberty
- Pregnancy and Lactation
- Hormones of Pituitary, Thyroid & Parathyroid Glands
- Hormones of Adrenal Gland and Pancreas

Unit 5. Nervous System and Special Senses

- Neuron and Neuroglia
- Properties of nerve fibre
- Reflex mechanism and Receptors
- Mechanism of vision and hearing
- Taste and smell

Practical:

- Estimation of Haemoglobin
- Bleeding time
- Clotting time
- Blood Grouping
- Erythrocyte Sedimentation rate
- Packed Cell Volume
- Arterial Blood Pressure
- Pulse
- Heart rate
- Breathing rate

There shall be no University Practical Examination.

REFERENCE BOOKS

1. Guyton (Arthur) Text Book of Physiology.
Latest Ed. Prism publishers
2. Ganong (William F) Review of Medical Physiology.
Latest Ed . Appleton
3. Jain AK, Concise Physiology, Latest Ed.

SYLLABUS OF FIRST YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: PATHOLOGY

Course code: DMLT 103

Theory classes: 60 hours

Practical classes : 30 hours

Theory

Unit 1. Histo Pathology

- Introduction to Histo Pathology
- Receiving of Specimen in the laboratory
- Grossing Techniques
- Mounting Techniques – various Mountants
- Maintenance of records and filing of the slides.
- Use & care of Microscope
- Various Fixatives, Mode of action, Preparation and Indication. Section Cutting
- Tissue processing for routine paraffin sections
- Decalcification of Tissues.
- Staining of tissues - H& E Staining
- Bio-Medical waste management

Unit 2. Clinical Pathology

- Introduction to Clinical Pathology
- Collection, Transport, Preservation, and Processing of various clinical Specimens
- Urine Examination – Collection and Preservation of urine. Physical, chemical, Microscopic Examination
- Examination of CSF and other body fluids.
- Sputum Examination.
- Examination of feces

Unit 3. Haematology

- Introduction to Haematology
- Normal constituents of Blood, their structure and function.
- Collection of Blood samples
- Various Anticoagulants used in Haematology
- Various instruments and glassware used in Haematology, Preparation and use of glassware
- Laboratory safety guidelines
- SI units and conventional units in Hospital Laboratory
- Hb, PCV
- ESR
- Normal Haemostasis
- Bleeding Time, Clotting Time, Prothrombin Time, Activated Partial Thromboplastin Time.

Unit 4. Blood Bank

- Introduction
- Blood grouping and Rh Types
- Cross matching

Practical:

- Urine Examination.
- Physical
- Chemical
- Microscopic
- Blood Grouping Rh typing.
- Hb Estimation, Packed Cell Volume[PCV], Erythrocyte Sedimentation rate{ESR}
- Bleeding Time, Clotting Time.
- Histopathology – Section cutting and H & E Staining.[For BSc MLT only]

There shall be no University Practical Examination.

REFERENCE BOOKS

1. Silvertone : Introduction to Medical Lab. Technology
2. Bancroft : Theory and Practical of Histology techniques
3. Textbook of Clinical Blood Banking Science by Zmijewski.

4. Manual for Clinical Pathology by Sabitry Sanyal
5. Practical Pathology by Dr.P.Chakraborty & Gargi Chakraborty
6. Haematology for students and practitioners by Ramnik Sood
7. Histological techniques by K.Laxminarayan 8.Practical Pathology by Dr.K.Uma Chaturvedi & Tejsindersingh

SYLLABUS OF FIRST YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: MICROBIOLOGY

Course code: DMLT 104

Theory classes: 60 hours

Practical classes : 30 hours

Theory

Unit 1. Morphology

- Classification of microorganisms,
- Size, shape and structure of bacteria.
- Use of microscope in the study of bacteria.

Unit 2. Sterilisation and Disinfection

- Principles and use of equipments of sterilization namely Hot Air oven, Autoclave and serum inspissator. Pasteurization,
- Anti septic and disinfectants

Unit 3. Growth and nutrition

- Nutrition, growth and multiplications of bacteria,
- Use of culture media in diagnostic bacteriology.
- Antimicrobial sensitivity test

Unit 4. Immunology

- Infection & Immunity
- Antigen, Immunoglobuline (in brief)
- Principles and interpretation of commonly done serological tests namely Widal, VDRL, ASO, CRP, RF & ELISA. Rapid tests for HIV and HBsAg (Technical details to be avoided)
- Types of Vaccine and immunization schedule

Unit 5. Systematic Bacteriology

- Morphology, cultivation, diseases caused, laboratory diagnosis including specimen collection of the following bacteria (the classification, antigenic structure and pathogenicity to be avoided)
 - *Staphylococci, Streptococci, Pneumococci,*
 - *Gonococci, Meningococci,*
 - *C. diphtheriae, Clostridia, Bacillus,*
 - *Shigella, Salmonella, Esch coli,*
 - *Klebsiella, Proteus, Pseudomonas*
 - *Mycobacteria*
 - *Vibrio cholerae, &*
 - *Spirochetes-Treponema pallidum & Leptospira*

Unit 6. Parasitology

- Morphology, life cycle, laboratory diagnosis of following parasites
 - Protozoa - *E. histolytica, Plasmodium,*
 - Tape worms - *Taenia*
 - Intestinal nematodes - Round worm, Hookworm,

Unit 7. Mycology

- Morphology, diseases caused and lab diagnosis of following fungi.
 - *Candida, Cryptococcus,*
 - *Dermatophytes ,*
 - opportunistic fungi.

Unit 8. Virology

- General properties of viruses, diseases caused, lab diagnosis and prevention of following viruses,
 - Herpes,
 - Hepatitis,
 - HIV
 - Rabies and
 - Poliomyelitis.

Unit 9. Hospital infection

- ☐ Causative agents, transmission methods,
- ☐ Prevention and control Hospital infection.

Unit 10. Principles and practice Biomedical waste management

Practical

- Compound Microscope.
- Grams stain
- Acid Fast staining
- Demonstration and sterilization of equipments – Hot Air oven, Autoclave, Bacterial filters.
- Demonstration of commonly used culture media, culture methods
Nutrient broth, Nutrient agar, Blood agar, Chocolate agar, Mac conkey medium, LJ media, Robertson Cooked meat media, Potassium tellurite media with growth, Mac with LF & NLF, NA with staph
- Demonstration of commonly used Biochemical Reactions for identification of bacteria
 - Coagulase test
 - Catalase test
 - IMViC
 - TSI
 - Urease, Oxidase
- Antibiotic susceptibility test
- Anaerobic culture methods.
- Demonstration of common serological tests – Widal, VRDL, ELISA.
- Stool exam for Helminthic ova
- Visit to hospital for demonstration of Biomedical waste management.

There shall be no University Practical Examination.

REFERENCE BOOKS

1. Anathanarayana & Panikar Medical Microbiology
2. Roberty Cruickshank – Medical Microbiology – The Practice of Medical Microbiology
3. Chatterjee – Parasitology – Interpretation to Clinical medicine.
4. Rippon – Medical Mycology
5. Monica Cheesebrough,

SYLLABUS OF FIRST YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: BIOCHEMISTRY

Course code: DMLT 105

Theory classes: 60 hours

Practical classes : 30 hours

Theory

Unit.1 Introduction, specimen collection and Handling

- ☐ Introduction to Bio-chemistry including code of ethics for Medical Lab technicians and Medical Lab Organization.
- ☐ Reception, Registration and Bio-chemical parameters investigated.
- ☐ Types of vials used in blood /specimen collection
- ☐ Anticoagulants
- ☐ Preservatives
- ☐ Blood collection
- ☐ Precautions
- ☐ Safety, first aid, Biological and chemical hazards
- ☐ Processing of samples
- ☐ Preservation
- ☐ Disposal of samples
- ☐ Introduction to laboratory apparatus :
 - Pipettes - different types (Graduated, volumetric, Pasteur, Automatic etc.), Calibration of glass pipettes
 - Burettes, Beakers, Flasks, Funnels, Cuvettes,

Unit 2. Units of measurements and Basics of Instrumentation

- ☐ Conventional and SI units
 - Molecular weight, equivalent weight of elements and compounds, normality, molarity,
 - Preparation of molar solutions, normal solutions, Percent solutions
- I. Colorimetry : Photoelectric methods, instrumentation, principles and laws involved, Operation, maintenance, applications.
- II. Spectrophotometry : Principle ,types and applications.
- III. Weighing : Different types of balances used, care and maintenance.
- IV. pH meter-Principle, Use, care and maintenance of pH meter and electrodes
- ☐ Basic lab operations like -Separation of Solids from liquids,
 - a) Centrifugation : Principle, Different types of Centrifuges, care and maintenance, applications
 - b) Filtration using funnel

Unit.3 Carbohydrates :

Definition, biological importance, classification, qualitative tests, Metabolism(brief), Blood glucose.

Unit.4 Lipids :

Definition, biological importance, classification, Acid value, Iodine value, saponification value, Metabolism(brief).

Unit.5 Aminoacids and Proteins :

Definition, biological importance, classification, qualitative tests.

Unit.6 Vitamins and Minerals :

Vitamins : Classification of Vitamins, Sources, Daily requirements, Deficiency diseases. (In Brief)
Minerals (Iron, calcium, Iodine): Sources, Daily requirements, Deficiency diseases .

Unit.7 Enzymes

Nature, Classification and Clinical enzymes.

Unit.8 Nucleic acids- Chemistry and functional aspects

Purine bases, Pyrimidine bases, nucleosides, Nucleotides, DNA & RNA, Their functions

Brief outline of Replication, Transcription, translation.

Unit.9

- PH, buffers, acid-base balance, disorders.
- Digestion and absorption of Biomolecules
- Water, Chemicals and related substances
- ★ Purity of chemicals
- ★ Corrosives

Practical:

- Reception and registration
- Collection of Capillary blood
- Collection of Venous blood
- Separation of Serum from clotted blood
- Separation of plasma from blood
- Lab glass ware
 - a) Identification
 - b) Handling
 - c) Care and Maintenance
 - d) Uses
- Lab instruments
 - a) Centrifuges
 - b) Balances
 - c) Photo Electric colorimeter
 - d) Spectrophotometer
- Preparation of
 - a) Percentage solutions
 - b) Normal solutions
 - c) Molar solutions
- Qualitative identification of tests of sugars
- Qualitative identification of tests of proteins
- Qualitative identification of tests for amino acids
- Estimation of Blood glucose
- Estimation of Blood urea
- Normal and pathological urine.

There shall be no University Practical Examination.

REFERENCE BOOKS

1. TEITZ – Clinical chemistry
Vasudevan (DM) Sreekumari(S) Text book of
Biochemistry for Medical students ,Latest Ed
2. Varley – Clinical chemistry
3. 3. Kaplan – Clinical chemistry

SYLLABUS OF FIRST YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: ENGLISH

Course code: DMLT E 106

Theory classes: 60 hours

Aim

These two course will aim at helping the course participants develop their communication skills in English by training them in handling all the four language skills effectively. The learners will be able to listen, speak, read and write in English adequately so that they could participate in various activities and perform satisfactory the different tasks listed below.

Overall Objectives

The objectives are to develop abilities

- ☐ To process information using a variety of media
- ☐ To use appropriate phrases for performing language functions
- ☐ To edit, select and present information in a format / perspective
- ☐ To listen and reduce information to a point form
- ☐ To read and to expand from points to paragraph
- ☐ To predict, comprehend, infer and synthesize information
- ☐ To question, probe and arrive at information through discussions, dialogues and interviews
- ☐ To answer questions, choose and provide data etc.

A. Reading

The objectives are to enable the students to

- ☐ Read for information news features, articles, newspaper and text
- ☐ Read intensively a collection of short stories given in a compiled text (See for the text and the lessons selected from it below)

Book prescribed

- ☐ L.A.Hill (1970), *Contemporary Short Stories*. Chennai: Oxford University Press. The following stories have been selected for use on the course.
- ☐ The happy Prince
- ☐ A Horseman in the sky
- ☐ The Wolves of Cernogratz
- ☐ The half Mile
- ☐ The Mark of Vishnu
- ☐ The Halfyard Ham
- ☐ Locomotion 38
- ☐ The Ghost Ship
- ☐ Uneasy Homecoming
- ☐ The Trust Property

B. Writing

The objectives are to enable the students to

- ☐ Form words properly using prefixes / suffixes (See list 4 in the Appendix)

- ☐ Use phrasal verbs (See list 3 in the Appendix)
- ☐ Use appropriate and related registers (See list 5 in the Appendix)
- ☐ Writing paragraphs, developing points / ideas
- ☐ Writing resume, job applications, letters of invitations (inviting / accepting/ declining), letters of complaint to civil authorities
- ☐ Answering questions based on the prescribed text: **Contemporary Short Stories**

Books Recommended

- Champa Tickoo and Jaya Sasikumar (2000). **Writing with a Purpose**, Chennai, OUP
- David Jolly (1988). **Writing Tasks: An authentic task approach to individual writing needs.**

C. Listening

The objectives are to enable the students to listen and understand

- Short lecture, descriptions, and narrations, rapid talks, passages read aloud and/or dictated and identify Language functions (See list 2 in the Appendix)
- Conversations based on familiar situations, and
- Note Making

Books Recommended

- Spoken English-D Sasikumar and PV Dhamija (with Audio Cassette) Tata McGraw Hill

D. Speaking

The objectives are to enable the students to

- Use greeting and formula in everyday conversations.
- Use various notions and function of everyday usage (See list 2 in the Appendix)
- Use grammatically correct and appropriately structures to organize thought (See list 1 Containing Syntactic items in the Appendix)
- Give short formal and informal talks, speeches

Books Recommended

- Grant Taylor. **English Conversation Practice.** New Delhi: Tata McGraw Hill
- R.P.Bhatnagar and R.T.Bell (1999) **Communication in English**, Hyderabad: Orient Longman

SYLLABUS OF FIRST YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: COMPUTER ORGANIZATION & PC SOFTWARE

Course code: DMLT E 107

Objective:

At the end of this course, a student would be able to :

- Identify various components of computer hardware and
- Use some software in order to manage data related to the profession.

Teaching hours:	Theory:	30 hours
	Practicals:	30 hours

Curriculum:

SECTION A

Unit 1. Computer Organization -I

Generations of a computer, types of a computer, some important terms: hardware, software, program, operating system, interpreter, compiler, assembler, high level languages, bits and bytes.

Introduction to number systems

Unit 2. Computer Organization -II

Processors, CPU organization, primary memory, memory addresses, secondary memory, memory hierarchies, magnetic disks, CDROMs, DVDs, input/output devices: keyboards, monitors, mice, printers, modems

The concept of character codes

SECTION B

Unit 1: PC Software- I

Introduction to spreadsheets, the concept of cells and cell addresses, formulas, some important functions, introduction to charts

Introduction, features and applications of a DBMS Database objects

Tables – creation, modification, deletion

Working with data – insertion, modification, finding, sorting, grouping, viewing and sharing data

Unit 2. PC Software- II

Forms – creation of forms; modification, viewing and validating data using forms, subforms Reports – creation, modification, opening, viewing

Creating mailing labels

REFERENCE BOOKS:

- Tanenbaum A. S., Structured Computer Organization, 4th Edition, Prentice-Hall of India Pvt. Ltd., 2002.
- Elmasri, Navathe, Somyajulu, Gupta, Fundamentals of Database Systems, Pearson Education, 2006.
- Progue, Irwin, Roardon, Microsoft Office Access 2007 Bible, Wiley Publishing Inc., 2007.
- Taxali R. K., P C Software for Windows 98 Made Simple, Tata McGraw-Hill, 2001.
- Hall D. V., Microprocessors and Interfacing, McGraw-Hill Book Company, 1986.
- Desai Bipin C., An introduction to Database Systems, 7th Edition, Pearson Education Asia, 2001.

.....**COMPLITION OF FIRST YEAR DIPLOMA IN MEDICAL LAB TECNICIAN**.....

**DISTRIBUTION OF TEACHING HOURS FOR
SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN**

Sr. No.	Subject	Course No.	Teaching Hours
Main Subjects			
1	Pathology	DMLT-201	60
	Pathology-Practical	DMLT-201(P)	45
2	Microbiology	DMLT-202	60
	Microbiology-Practical	DMLT-202- (P)	25
3	Biochemistry	DMLT-203	60
	Biochemistry-Practical	DMLT-203- (P)	25
4	Bio-ethics	DMLT-204	40
5	Health Care	DMLT-205	60
Main Subjects- Teaching hours			345
Subsidiary subjects			
6	English	DMLT-E-206	25
	English practical	DMLT-S-206-(P)	25
7	Computer skills	DMLT-S-202	20
Subsidiary subjects- Teaching hours			70
Teaching hours-Theory/Practicals			415
Laboratory Posting			330
Total Teaching hours			745

DISTRIBUTION OF SUBJECTS, CREDITS
AND SCHEME OF EXAMINATION FOR
SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

Sr. No.	Subject	Course No.	No. Credits per week	Duration of Uni. Exam	External Marks	Internal Marks	Total	Grand Total
1	Pathology	DMLT- -201	2	3	80	20	100	150
	Practical – Pathology	DMLT- 201(P)	1	1 day	40	10	50	
2	Microbiology	DMLT--202	2	3	80	20	100	100
	No practical Exam		1					
3	Biochemistry	DMLT- 203	2	3	80	20	100	100
	No practical Exam		1					
4	Bioethics	DMLT- 204	1	2	40	10	50	50
5	Health Care	DMLT-205	2	2	80	20	50	100
	Subsidiary subjects							
6	English	DMLT-E-206	2	2	40	10	50	50
		DMLT-E-206(P)	1	1	25	25	50	50
7	Computer skills	DMLT-E-206	1	2	40	10	50	50
Total								650

SYLLABUS OF SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: PATHOLOGY

Course code: DMLT 201

**Teaching Hours: Theory: 60 hours
 Practical: 45 hours**

Theory:

Unit 1. Hematology

- Hemopoiesis, Stem cells, formed elements and their functions
- Anticoagulants used in various hematological studies
- Routine hematological tests and normal values
- Determination of Hemoglobin and Hematocrit
- Enumeration of RBC, WBC & Platelets
- Absolute Eosinophil count
- Reticulocyte count
- Calculation of Red cell Indices
- Preparation of staining of blood film for morphology of red cells and differential count.
- Automated Hematology cell counter

- **Special Hematological tests:**
 - Sickling tests
 - Osmotic fragility test
 - Determination HbF and HbA2
 - Hemoglobin Electrophoresis
 - Investigation of G6PD deficiency
 - Plasma haptoglobin and demonstration of hemosiderin in urine
 - Tests for Autoimmune hemolytic anemia
 - Measurement of abnormal Hb pigments

- **Hemostasis and Coagulation**
 - Normal hemostasis, mechanism of blood coagulation and normal fibrinolytic system
 - Collection of blood and anticoagulants used in coagulation studies
 - Investigation of hemostatic mechanism-BT, CT, whole blood coagulation time test, PT, PTT.
 - Thrombin Time, Plasma Fibrinogen, FDP, D-Dimer
 - Demonstration of LE cells.

Unit 2. Immunohematology

- ABO Blood group and Rh system
- Subgroups of A and B , Other blood groups and Bombay group
- HLA antigens and their significance

Unit 3. Histopathology

- **Instrumentation :** (a) Automated Tissue Processor
(b) Microtome, Microtome-knives, Knife sharpener
(c) Freezing microtome and Cryostat
- **Techniques :**
 - (a) Routine paraffin section cutting
 - (b) Frozen section and Cryostat section studies
- **Mounting techniques: Various mountants and mounting techniques**

Unit 4. Cytology

1. Normal cell structure, functions, cytologic criteria of malignancy
2. Instruments in Cytology
3. Types of specimens, methods of collection & preparation of cell block
4. Different fixatives and methods of fixation
5. Staining : (a) Papanicolaou's stain- principle , preparation and staining techniques
(b) May Grunwald Giemsa stain
(c) H & E stain

(c) Female Genital tract

1. Normal cytology
 2. Techniques of collection of specimen for cervical cytology study
 3. Hormonal cytology and cytological indices
- **Respiratory tract, Gastrointestinal tract and Urinary tract**
 1. Normal cytology
 2. Collection of sample, preparation of smears and staining

PRACTICALS

1. Determination of Hemaglobin and Hematocrit
2. Red blood cell count
3. Total white blood cell count
4. Platelet count
5. Differential count of white blood cells
6. Absolute Eosinophil count
7. Reticulocyte count
8. Paraffin section cutting
9. Staining by Hematoxylin & Eosin and other special stains

SYLLABUS OF SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: MICROBIOLOGY

Course code: DMLT 202

Teaching Hours: Theory: 60 hours
Practicals: 25 hours

Theory:

Unit 1. General Microbiology

- History and Pioneers in Microbiology: Contributions of Antony Van Leeuwenhoek, Louis Pasteur, Joseph Lister, Robert Koch (Koch's Postulates),
- Bacterial Taxonomy: Nomenclature and classification of microbes (in brief)
- Microscopy, Stained preparation, Size & Shape
- Morphology of bacteria: Structures of a bacterial cell and their functions
- Physiology of Bacteria: Nutrition, Gaseous requirement, temperature requirement and other growth requirements
- Culture media in diagnostic bacteriology.
- Culture methods
- Identification of bacteria
- Antimicrobial sensitivity test

Unit 2. Immunology:

- Antigens
- Immunoglobulins
- Immunity
- Complement system
- Infection: Sources of infection, Modes of transmission, Factors predisposing to microbial Pathogenicity, Types of infectious diseases

Antigen and antibody reactions

- General Features of antigen-antibody reaction
- Precipitation, Agglutination
- Complement Fixation Test
- Neutralisation, Opsonisation
- Immunofluorescence, RIA, EIA
- Western Blot
- Immunochromatography

Unit 3. Mycology.

- The morphology and reproduction in fungi
- Classification of fungi
- Morphology, diseases caused and lab diagnosis of:-
- Opportunistic fungi- Cryptococcus, Candidiasis, Aspergillus, Zygomycetes.
- Fungi causing superficial mycoses- Dermatophytes,
- Subcutaneous mycoses- Mycetoma.

- Fungi causing superficial mycoses- *Pityriasis versicolor*, *Tinea Nigra*, *Piedra*
- Subcutaneous mycoses- *Rhinosporidium*, *Sporothrix*, *Dematiaceous fungi*
- Anti-mycotic agents
- systemic infections-*Blastomyces*, *Coccidioides*, *Paracoccidioides*, *Histoplasma*

4. Parasitology

Protozoology-

1. *Entamoeba histolytica*
2. *Balantidium coli*
3. *Giardia*
4. *Toxoplasma*
5. Malaria
6. *Leishmania*

Helminthology

- Cestodes - *Taenia*, *E. granulosus*, *D.latum*, *H.nana*
- Trematodes - *Schistosoma*, *Fasciola*
- Nematodes – *Ascaris*, *Ancylostoma deudendale*, *Strongyloides*, *Trichuris*, *Trichinella*, *Dracunculus*, Filarial worms

PRACTICALS: Microbiology

General Microbiology:

- Staining: Gram's , Acid fast
- Sterilization methods
- Media preparation
- Culture methods

Parasitology:

1. Stool examination for parasitic eggs/cysts
 - a. Saline mount
 - b. Iodine mount
 - c Concentration methods

Mycology:

1. Slide culture technique
2. KOH mount
3. Identification of fungal cultures
 - a. Colony characteristics and Microscopic examination of *Candida*, *Cryptococcus*, *Trichophyton*, *Microsporum*, *Aspergillus niger*, *Asp fumigatus*,

SYLLABUS OF SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: BIOCHEMISTRY

Course code: DMLT 203

**Teaching Hours: Theory: 60 hours
 Practicals: 25 hours**

UNIT 1. Instrumentation

- Colorimetry , Spectrophotometry , Chromatography, Flame photometry, Fluorimetry
- Autoanalysers, electrolyte analyzer, Gas analyzer
- RIA , ELISA , Chemiluminance, Electrophoresis

UNIT 2. General Biochemistry of Carbohydrates

- Digestion & absorption of carbohydrates
- Classification of carbohydrate
- Biomedical importance
- Chemical & Physical properties of carbohydrate
- Carbohydrate Metabolism: Glycolysis, TCA

UNIT 3. General Biochemistry of Proteins

- Digestion & absorption of Proteins
- Classification of proteins & amino acid
- Structure & function of proteins & amino acid
- Classification & Properties of Plasma proteins
- Protein metabolism : Transamination, Deamination, Decarboxylation of amino acid

UNIT 4. General Biochemistry of Lipids

- Digestion & absorption of lipid.
- Definition, Classification, Types & Function
- TAG, Phospholipids & other compound lipids
- Metabolism of lipids: Beta-oxidation

UNIT 5. Nucleic acids

- Nucleobases, Nucleosides, Nucleotides
- Nucleic acids: Structure & Types
- Replication, Transcription, Translation

UNIT 6. Enzymes

- Definition & Classification
- Factors affecting enzyme activity
- Enzyme Inhibition

UNIT 7. Vitamins & Minerals

- Minerals : Calcium, Iron, Phosphorus, Iodine, Sodium & Potassium.
- Vitamins : Water soluble and Fat soluble (Including Deficiency Disease)

UNIT 8. Biophysics

- Viscosity, Surface tension, colloids, Osmotic pressure
- Donnan membrane equilibrium

PRACTICALS: Biochemistry

- Qualitative analysis of carbohydrates, proteins, amino acids.
- Estimation blood sugar and Blood Urea
- CSF Analysis
- Bile Analysis
- Acid hydrolysis of starch
- Enzyme hydrolysis of starch
- Qualitative screening test for normal and abnormal urine sample.
- Protein precipitation, separation of proteins, electrophoresis of serum
- Colour reaction of protein.

SUGGESTED BOOKS :

- Dr. Praful B. Godkar, Text Books of Medical Laboratory Technology
- Anathanarayana & Panikar – A Text Book of Medical Microbiology
- Monica Cheesbrough, District Laboratory Practice in Tropical countries – Part I & Part II
- P. Chakraborty- A Text Book of Microbiology
- Chatterjee , KD – Parasitology
- Vasudevan & Shreekumar : Biochemistry for Medical students
- Dacie, Practical Haematology
- K. Laxminarayan : Histological techniques
- Dr. Mukherjee, Medical Laboratory Technology, Volume I, II & III
- Silvertone : Introduction to Medical Lab. Technology
- Manual for Clinical Pathology by Sabitry Sanyal
- Harper's Biochemistry

SYLLABUS OF SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: BIO-ETHICS

Course code: DMLT 204

Goals

1. Provide a sense of responsibility and professionalism when interacting with patients, peers, fellow employees, and other health care providers.
2. Communicate effectively and professionally.
3. Instill the importance of honesty and professionalism in the workplace.

By the end of this module, the student should be able to:

1. Exhibit behavior consistent with the ethical practice of Medical Technologist.
2. Maintain confidentiality of all patients and test results.
3. Demonstrate an appreciation for the special knowledge and talent of other members of the health care team.
4. Explain the transmission of the AIDS/HIV and state how the virus affects the Immune system.

Methods of Presentation

Lecture, Discussion, Audio-Visual materials

Duration : 40 hours

COURSE CONTENT

1. Values of life (Philosophy)/in clinical practice & Definition of medical ethics. **2 hour**
2. History of Medical Ethics: **4 hour**
 - Indian perspectives : Charaka, Susruta
 - The Hippocratic Oath
 - Declaration of Helsinki
 - WHO Declaration of Geneva
 - International code of Medical Ethics
3. Ethical problems of life **4 hour**
 - Right to life, prenatal screening / sex selection Abortion, feticide
 - Assisted reproductive technologies
 - Genetic testing
 - Genetic engineering, cloning
 - Care of terminally ill
 - Death and dying
 - Euthanasia

- | | | |
|----|--|--|
| 4. | Family and society in medical ethics : | 4 hour |
| | <ul style="list-style-type: none"> • Children : Age to consent for treatment parent- Child – clinician conflict • Mental Disorders and disabilities • HIV / AIDs | |
| 5. | Etiquette and mannerism | 4 hour |
| 6. | Good communication skill | 4 hour |
| | <ul style="list-style-type: none"> • Truthfulness, Building trust, Honesty with patients • Communication with colleagues, seniors and subordinates | |
| 7. | Confidentiality | 2 hour |
| | <ul style="list-style-type: none"> • Malpractice, negligence • Medical ethics and law | |
| 8. | Code of ethics: (Please refer Annexure for elaborations) | 2 hour |
| | <ul style="list-style-type: none"> • Duties to Patients • Duties to Colleagues and other Professionals: • Duties to Yourself: • Duties to Society: • Duties to your Profession: • Specific issues: | 2 hour
2 hour
2 hour
2 hour
2 hour
2 hour |

Internal Evaluation:	2 hour
(Problem based questions, Short notes, MCQ, Viva)	

EVALUATION : TOTAL: 50 marks

Internal evaluation:	10 marks
External Exam (One paper of 2 hours):	40 marks
• Problem oriented question • Short notes • Short answer questions	

There will no Practical Exam for this course.

SUGGESTED BOOKS/LITERATURE:

1. MEDICAL ETHICS, by C.M.Francis, Jaypee Brothers
2. Current Problems in Medical ethics, by George V. Lobo, St. Paul's Society, Allahabad.
3. Ethics for Doctors, Nurses & Patients by H.P. Dunn, St. Pauls Bandar, Mumbai.

CODE OF ETHICS: DMLT

Code of Ethics, under different categories, has been elaborated hereunder as applied to the profession of Medical Technician/Technologist. It is however suggested that these elaborations are only indicative and not exclusive. There could be many more situations/events, depending on the nature of work involved in different types of specialization of Medical Technology; which would also be deemed to be a part of the curriculum as and when identified.

1. Code of Ethics: Duties to Patients:

- accountability for the quality and integrity of the services they provide.
- respect patients' privacy and dignity
- treat patients politely and with consideration
- apply the principle of informed consent as an on-going process
- recognize the rights of patients to maintain confidentiality of information in the course of professional duties, unless they agree to disclosure or the law demands
- patients' permission before sharing information with their spouses, partners or relatives.
- always seek to give priority to the service to be provided to patients solely on the basis of clinical need.

• Code of Ethics: Duties to Colleagues and other Professionals:

- Should not make a patient doubt a colleagues' knowledge or skills by making comments about them that cannot be fully justified.
- ☐ Work with and respect other health care professionals in pursuit of the best health care possible for all patients.
- ☐ Should not discriminate against colleagues, including professionals applying for posts, because of views of their race, culture, ethnicity, social status, lifestyle, perceived economic worth, age, gender, disability, communicable disease status, sexual orientation, religious or spiritual beliefs, or any condition of vulnerability.
- ☐ Refrain from speaking ill of colleagues or other health care professionals.
- ☐ Actively strive to establish cooperative and respectful working relationships with other health care professionals with the primary objective of ensuring a high standard of care for the patients they serve.
- ☐ Share their knowledge with colleagues and promote learning.

• Code of Ethics: Duties to Yourself :

- Maintain and improve the standard of your performance by keeping your professional knowledge and skills up to date throughout your working life. In particular, regularly take part in educational activities that relate to medical laboratory science.
- Acknowledge the limits of your professional knowledge and competence. Do not pretend to know everything.
- Use equipment and laboratory ware correctly and with care.
- Refrain from engaging in activities that may affect your health and lead to impairment.
- Aware laws and regulations governing medical laboratory technology and shall apply them in the practice of your profession.
- Not wasting reagents and other laboratory supplies unnecessarily.
- Never taking anything from place of work that does not belong to you

- Code of Ethics: Duties to Society

- Refrain from providing a service that is not needed, whether it provides financial gain or not.
- Refrain from unnecessary wastage, and from participating in improper financial arrangements, especially those that escalate costs and disadvantage individuals or institutions unfairly.
- Dedicate to serve the healthcare needs of the public

- Code of Ethics: Duties to your Profession

- Uphold and maintain the dignity and respect of medical laboratory profession and strive to maintain a reputation of honesty, integrity and reliability.
- Contribute to the advancement of the profession by improving the body of knowledge, adopting scientific advances that benefit the patient, maintaining high standards of practice and education, and seeking fair socioeconomic working conditions for members of the profession.

- Specific issues: Any other issues specific to a particular specialization of Medical Technology profession not categorized in any of the above.

SYLLABUS OF SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: HEALTH CARE

Course Code: DMLT-205

Theory classes: 60 hours

Unit 1. Introduction to Health

- Definition of Health
- Determinants of Health
- Health Indicators of India
- Health Team

Unit 2. Health Policy and Programmes

- Concept.
- National Health Policy
- National Health Programmes (Briefly Objectives and scope)
- Population of India and Family welfare programme in India

Unit 3. Introduction to Nursing

- What is Nursing ? Nursing principles.
- Inter-Personnel relationships.

Bandaging : Basic turns; Bandaging extremities; Triangular Bandages and their application.

- Nursing Position, Bed making, prone, lateral, dorsal, dorsal re-cumbent, Fowler's positions, comfort measures, Aids and rest and sleep.

Lifting And Transporting Patients: Lifting patients up in the bed. Transferring from bed to wheel chair. Transferring from bed to stretcher.

Unit 4. Bed Side Management:

- Giving and taking Bed pan, Urinal :
- Observation of stools, urine. Observation of sputum,
- Understand use and care of catheters, enema giving.
- **Methods Of Giving Nourishment:** Feeding, Tube feeding, drips, transfusion
- Recording of body temperature, respiration and pulse,
- **Simple aseptic technique:** Sterlization and disinfection.
- **Surgical Dressing:** Observation of dressing procedures

Unit 5. First Aid :

- Syllabus as for Certificate Course of Red Cross Society

SUGGESTED BOOKS/LITERATURE:

- MEDICAL HEALTH CARE, by C.M.Francis, Jaypee Brothers
- Current Problems in HEALTH CARE, by George V. Lobo, St. Paul's Society, Allahabad.
- Hospital management Nurses & Patients by H.P. Dunn, St. Pauls Bandar, Mumbai.

SYLLABUS OF SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: ENGLISH

Course Code: DMLT-E-206

Teaching hours:	Theory:	25 hours
	Practicals:	25 hours

Curriculum:

The objectives are to develop writing and short hand skills

- ☐ To process information using a variety of media
 - ☐ To use appropriate phrases for performing language functions
 - ☐ To edit, select and present information in a format / perspective
 - ☐ To listen and reduce information to a point form
 - ☐ To read and to expand from points to paragraph
 - ☐ To predict, comprehend, infer and synthesize information
 - ☐ To question, probe and arrive at information through discussions, dialogues and interviews
 - ☐ To answer questions, choose and provide data etc.
- Communication with patients and management.

(Theory) : 2 Credits : 2 hours week

E. Reading

The objectives are to enable the students to

- ☐ Read for information news features, articles, newspaper and text
- ☐ Read intensively a collection of short stories given in a compiled text (See for the text and the lessons selected from it below)

Practical exam:

Writing

The objectives are to enable the students to

- ☐ Form words properly using prefixes / suffixes (See list 4 in the Appendix)
- ☐ Use phrasal verbs (See list 3 in the Appendix)
- ☐ Use appropriate and related registers (See list 5 in the Appendix)
- ☐ Writing paragraphs, developing points / ideas
- ☐ Short hand note in detail.
- ☐ Communication with patients and management.

Book prescribed

L.A.Hill (1970), **Contemporary Short Stories**. Chennai: Oxford University Press. The following stories have been selected for use on the course.

- ☐ The happy Prince
- ☐ A Horseman in the sky
- ☐ The Wolves of Cernogratz
- ☐ The half Mile
- ☐ The Mark of Vishnu
- ☐ The Halfyard Ham
- ☐ Locomotion 38
- ☐ The Ghost Ship
- ☐ Uneasy Homecoming
- ☐ The Trust Property

SYLLABUS OF SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: COMPUTER SKILLS

Course Code: DMLT-E-207

Theory classes: 20 hours

Objective:

At the end of this course, a student would be able to :

- ☐ identify various components of computer hardware and
- ☐ use some software in order to manage data related to the profession.

Unit 1. Computer Organization -I

Generations of a computer, types of a computer, some important terms: hardware, software, program, operating system, interpreter, compiler, assembler, high level languages, bits and bytes.

Introduction to number systems

Processors, CPU organization, primary memory, memory addresses, secondary memory, memory hierarchies, magnetic disks, CDROMs, DVDs, input/output devices: keyboards, monitors, mice, printers, modems

The concept of character codes

Unit 2. Computer Organization -II

MICROSOFT OFFICE

Introduction to spreadsheets, the concept of cells and cell addresses, formulas, some important functions, introduction to charts

Tables – creation, modification, deletion

Working with data – insertion, modification, finding, sorting, grouping, viewing and sharing data

Forms – creation of forms; modification, viewing and validating data using forms, subforms Reports – creation, modification, opening, viewing

Creating mailing labels

REFERENCE BOOKS:

1. Tanenbaum A. S., Structured Computer Organization, 4th Edition, Prentice-Hall of India Pvt. Ltd., 2002.
2. Elmasri, Navathe, Somyajulu, Gupta, Fundamentals of Database Systems, Pearson Education, 2006.
3. Progue, Irwin, Roardon, Microsoft Office Access 2007 Bible, Wiley Publishing Inc., 2007.
4. Taxali R. K., P C Software for Windows 98 Made Simple, Tata McGraw-Hill, 2001.
5. Hall D. V., Microprocessors and Interfacing, McGraw-Hill Book Company, 1986.
6. Desai Bipin C., An introduction to Database Systems, 7th Edition, Pearson Education Asia, 2001.

COMPLITION OF SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

FACULTY OF MANAGEMENT

Syllabus Proposal for

Diploma in Hospital Management (D.H.M.)

Effective from Academic Year (2021-2022)

**Veer Narmad South Gujarat University
Surat**

COURSE TITLE: Diploma in Hospital Management (DHM)

• OBJECTIVES:

To gain comprehensive understanding of all aspects relating to financial statements, principles, procedures of accounting and their application to different practical situations

- **DURATION AND NATURE OF COURSE:**

The duration of the D.H.M. programme shall be one-year + 6 Month OTP

- **Medium:** - English/Gujarati
- **Tenure:** Jan to Jun (Sem.-1) & July to Dec (Sem.-2)
- **Intake capacity:** 40
- **Attendance:**

A candidate shall be considered to have pursued a regular course of study if he/she attends 75% of the total number of sessions conducted in each semester during his/her study and duly certified by the coordinator/principle to have attended the 75% of sessions separately in each course in the respective semester.

To be eligible for the evaluations through Term End Examinations, candidate shall be required to secure minimum attendance of 75%, failing which a candidate shall not be allowed to appear in the Examination. Condonation of attendance where required as per university rules.

- **Passing Standard:**

Minimum marks in Each Paper to pass is 40%.

- **Eligibility:** Candidates who have passed 10+2 examination in any stream conducted by any recognized School Certification Board or Equivalent Examination;

- **Admission Process:** Admission will be offered strictly on the basis of merit list.

Admissions under reservation category will be followed as per University rules.

- **Job profiles in accounting field is as follows:**

Hospital, public sector health Department etc.

Diploma in Hospital Management (D.H.M.)

Course Structure SEMESTER – I Subject Code	Paper No.	Course Name	Internal Marks	External Marks	Total Marks	Credits	Total Teaching Hours
DHM 01	01	Principles of Hospital Manageme nt	30	70	100	04	15 Wks x 4 hrs = 60
DHM 02	02	Managerial Accounting & Computer Basics	30	70	100	04	15 Wks x 4 hrs = 60
DHM 03	03	Hospital Planning and marketing	30	70	100	04	15 Wks x 4 hrs = 60

SEMESTER – II Subject Code	Paper No.	Course Name	Internal Marks	External Marks	Total Marks	Credits	Total Teaching Hours
DHM 04	04	Hospital Administrati on	30	70	100	04	15 Wks x 4 hrs = 60
DHM 05	05	Hospital & Human Resource Manageme nt	30	70	100	04	15 Wks x 4 hrs = 60
DHM 06	06	Laws Related to Hospital Services	30	70	100	04	15 Wks x 4 hrs = 60

DIPLOMA IN HOSPITAL MANAGEMENT(DHM)

SEMESTER.- I

Paper No-01: Principles and Practices of Management and Organizational Behavior

Subject Code: DHM 01

Course credit: 04

Teaching Hours: 60

Marks:70

Unit	Content
1	Basic concepts of Management: Definition - Evolution of Management Thought - Functions of Management - Planning - Nature and Purpose - Setting Objectives - Management by Objectives - Organizing - Nature and Purpose - Departmentation - Line and Staff Authority -Decentralization – Centralization - Authority Responsibility - Accountability and Power.
2	Directing - Communication – Process of Communication Hierarchy - Maslow's Need of Hierarchy and Herzberg two factor theory - Leading – Trait Theory, Blake and Montain's Managerial Grid, Hersey Blanchard's Situational Leadership. - Process of Controlling - PERT - CPM - Work Study - Quality Circles
3	Decision making - Nature & purpose - Principles Decision Making Definition - Step Of Decision Making - Group Decision Making - Advantage & Dis Advantage - Guideline of Effective Decision Making - Decision Tree -Buries Of Decision Making - Meaning of Personality - Development of Personality - Nature & dimensions of attitude - Organizational Commitment

4	Motives - Characteristics - Classification of Motives - Primary Motives – Secondary Motives - Morale - Definition & relationship with productivity - Morale Indicators: Theories of Work motivation - Maslow's Theory of Need Hierarchy - Herzberg's Theory of Job Loading
5	Group Dynamics & Teams - Theories of Group Formation - Formal Organization & Informal Groups & their interaction - Importance of teams - Formation of teams -Team Work

Suggested Readings and Reference Books:

References Book:-:

1. Essentials of Management – By Harold Koontz & Heinz Weihrich – 7th Ed. – Tata McGraw Hill.
2. Essentials of Management – By Joseph L. Massie – Prentice Hall India.
3. Management of Organisation Behaviour –By Paul Hersey & Blanchard – Prentice Hall India.
4. Organisational Behaviour – By John W. Newstrom – Tata McGraw Hill.
5. Organisational Behaviour – By Fred Luthans – McGraw Hill Intl.

Paper No-02:Managerial Accounting &Computer basics

Subject Code: DHM 02

Course credit: 04

Teaching Hours: 60

Marks: 70

Unit	Content
1	Introduction - Origin of Accounting & its importance Taxation, Audit, etc. . Double Entry System of Accounts - Transactions – Debit & Credit

	- Classification of Accounts .Journal - Types of Journals/Subsidiary Books - Passing of Journal Entries, writing of narrations.
2	Ledger - Posting in Ledger - Balancing of Ledger Accounts, Preparation of Trial Balance, Depreciation, Preparation of Final Accounts, Working Capital Management - Needs of Working Capital Changes in Financial Statements, Budgetary Control, Elements of Cost of a Product/Service
3	Computer basics: Definition of a Computer, Computer generations, Types of computers, Memory, CPU, I-O devices, Secondary storages, Magnetic Tape, Disk, CD-ROM. Other recent developments-Scanners, Digitizer, Plotters, Printers Representation of Data: Information Software Concepts: Introduction to Programming, Flowcharts and Algorithms. Types of Softwares System software's, Application software's, Firmware software's Operating System-Introduction: Definition of an Operating System, Functions of an OS, Types of an OS, concept of I-O port. File management-FAT, file handling functions. Software and hardware interrupts. File Management: Types of computer MS-DOS, UNIX, MS-WINDOWS, Difference between two OS (Single & multi-user os) Operating system applications. . Office Automation Software (MS-Office 2000/MS-Office 2003: Word processing Software MS-Word.) Spreadsheet Software MS-Excel, Database Management Software MS-Access, Presentation Software MS-Powerpoint and other applications.. Introduction to Virus and Vaccines, Various types of Viruses & Vaccines
4	Basic Concept of Networking and Data Communications: Introduction to Networking & types of Networking. Basic communication concepts, Topologies, Protocols, Ethernet, TCP/IP etc. Introduction to Internet Technology: Explanation of Internet and its applications like Emailing, Chatting Browsing Data Uploading/Downloading etc.

Suggested Readings and Reference Books:

1. Useful Reading for Hospital Management – By Col. Khare& Others.

2. Basic Accounts & Finance for Non-Accounts – By Prof. D.K.Chatterjee- Himalaya Publishing House
3. Handbook on Accounting for Hospital Management– By Prof. D. K.Chatterjee - Himalaya Publishing House
4. Operating System Concept: by Peterson Biberachaty.
5. Operating System: by Millan Milenkoric.
6. Fundamentals of Computers: by Rajaraman.
7. Know your PC: by Peter Norton.
8. Computer Networks: by Andrew S. Tenenbaum.
9. Computer Network and Distributed Processing: by James martin.

Paper No-03:Hospital Planning and Marketing

Subject Code: DHM 03

Course credit: 04

Teaching Hours: 60

Marks: 70

Unit	Content
1	Types of Hospital Organization& Statutory Requirements for Planning, Steps in Hospital Planning: Need Assessment - Appointment of Planning Teams/Consultants - Appointment of Architect - Size of the Hospital - Design of the Hospital - Selection of the Contractor - Preparation of Architect's Brief. - Selection of the Size, Preparation of the Master plan. - Preparation of Schedule of

	Accommodation. - Layout, Grouping, Zoning & Phasing of Activities.
2	Circulation & Movements of Patients, Staff, Visitors of certain departments such as ICU, OT, Pediatric, Maternity ward. Planning for Water supply, Electricity, Drainage & Sewage disposal, Planning for Equipments & Purchase, Planning for various categories of Staff, Administrative action for Appointment, Training
3	Marketing Concepts, Need, principles, Significance, Customer Satisfaction, Market research, Marketing planning, Marketing Strategies, Profiles, Control and growth in marketing, Market Analysis, Segmentation
4	Targets, Product Mix, Pricing Mix. Marketing of hospital and Healthcare services: The Market mix, market plans, pricing decisions, etc Role of marketing in health care organizations, Strategic Marketing management- Concepts, planning & implementation methods
5	Concepts of Donor marketing - attracting funds, Planning and its promotion in a competitive market Corporate Health Services & Corporate health tie-ups

Suggested Readings and Reference Books:

1. Hospital Planning & Administration – WHO Monograph Series 54 – By R. Llewelyn, Davis & H.M.C. Macaulay – Indian Edition – Jaypee Brothers, New Delhi.
2. Hospital & Nursing Homes : Planning, Organisation, & Management – By Syed Amin Tabish – Jaypee Brothers, New Delhi
3. Principles of Hospital Administration & Planning – By B.M. Sakharkar – Jaypee Brothers
4. Hospital Administration – By C.M. Francis & MariocDesouza – Jaypee Brothers, New Delhi
5. Hospital Administration & Planning – By A.G. Chandorkar – Paras Medical Publisher.
06. Hospitals Planning, Design & Management – By Kunders & Gopinath.

6. Healthcare System & Management – By S.L. Goel – Deep & Deep Publisher

7. Management of Hospital – By S.L. Goel & R. Kumar – Deep & Deep Publisher

Paper No-04: Hospital Administration

Subject Code: DHM 04

Course credit: 04

Teaching Hours: 60

Marks: 70

Unit	Content
1	Routine Admission/Discharge Procedures/Discharge Summary, Hospital Utilisation Statistics - Average Length of Stay (ALS) - Bed Occupancy Rate - Turn Over Interval Daily Reports / Returns. - Hospital Census - Matron's Report - Medical Officer's Report - Casualty Report, Medico-Legal Cases - Report from ICU / ICCU – Security Report - Maintenance Department Report - OT List
2	Patient's Complaints. Medical Certificates, Hospital Committees - Role, Composition, Frequency of Meetings, Minutes of the Meetings, Follow up Actions, Patient Satisfaction Survey. • Interviews, Questionnaires, Observations, Group Discussions, Patient Opinion Polls, Report Writing.
3	Duty Roster of various categories of Staff, Availability of Materials - Critical Items, Stock Level, Procurement Methods. Administration of Patient Related Schemes - Medical Insurance (Cashless Benefit), CGHS, ECHS, CSMA, TPA, ESI.
4	Front Office: Duties & Responsibilities, Duties & Responsibilities of the Hospital Administrator/CEO. - In Profit Making Hospitals - In Non- Profit

	Making Hospitals Disaster Management/Disaster Plan, Hospital Security - Staff, Patients, New born babies, Female staff/Patients, Stores, Application of Hospital Information System (HIS) & Management Information System (MIS), Negotiation Skills - Purchase of Stores / Equipment, Union Matters, Collective Bargaining, Hospital Waste Management, Methods of Infection Control
5	Fire Fighting, Dealing with Crisis Situation, - Mob violence, Bomb threat, Terrorist strike, Mass casualties, Political agitation, Prisoners Standard Operating Procedures (SOPs).

Suggested Readings and Reference Books:

1. Sana's Guidelines for Hospital Infection Control – By Mohd. S. Khan – Jaypee Brothers, New Delhi.
2. Hospital Waste Management & it's Monitoring – By Madhuri Sharma – Jaypee Brothers, New Delhi.
3. Medical Stores Management – By Shakti Gupta & Sunil Kant - Jaypee Brothers, New Delhi
4. Medical Records, Organisation & Management – By G.P. Mogli –Jaypee Brothers, New Delhi
5. Emergency Medical Services & Disaster Management – By D.K. Dave & Shakti Gupta – Jaypee Brothers, New Delhi
6. Hospital Waste Management – By A.G. Chandorkar – Paras Medical Publisher.
7. Hospital Infection Control – By S.A. Tabish – Academa, New Delhi.

Paper No-05:Human Resource Management

Subject Code: DHM 05

Course credit: 04

Teaching Hours: 60

Marks: 70

Unit	Content
1	Human Resource Management Functions of Human Resource Management – The Managerial Perspective - Objectives of Personnel Department - Human Resource Development (HRD), Position of the Personnel Department - Organization of the Personnel Department - Line – Staff Relationship - Manpower Planning & Development - Manpower Needs.
2	Job Analysis, Job Description & Specifications for Hospital Staff, Selection & Recruitment, Orientation, Manpower Developing & Training - Counseling
3	Career Planning, Promotion Policies - Separation - Employee Turnover – Wage Administration, Salary Administration, Employee Benefits & Social Security - Performance Appraisals: Techniques & Practices - Industrial Relations - Unions & their role - Settlement of disputes - Industrial Dispute Act - Collective bargaining.
4	Employee Communication, Dynamics of Behaviour at Individual Level – Group Dynamics, Issues Relating to Management of Professionals - Consultants, Specialists, Medical Officers, Nursing Staff, Other Paramedical Staff
5	Development of staff - In service Training, on job Training, Higher Courses, Specialised Training, Discipline - Punctuality - Dress code - Identification Behaviours of staff - Disciplinary action - Law of natural justice.

Suggested Readings and Reference Books: Reference Book

1. Personnel Management & Industrial Relations – By Rustom S. Davar – Vikas Publishing House

2. Human Resource Management – By Garry Dessler – Prentice Hall India
3. Human Resource & Personnel Management – By Aswathappa – Tata McGraw Hill
4. Human Resource Management – By Khan

Paper No-06: Laws related to Hospital Services

Subject Code: DHM 06

Course credit: 04

Teaching Hours: 60

Marks: 70

Unit	Content
1	Introduction & Legal Procedures - Court, Affidavit, Evidence, Complaint, Investigation, Oath, Offence, Warrant, Summons - Medico Legal Aspects of Emergency Services, Inquest - Police Inquest, Magistrate,s Inquest, Criminal Courts in India & their Powers, General Important Legal Knowledge Pertaining to IPC, CRPC, Civil PC, Evidence Act.
2	Introduction to Indian Constitution - Preamble, Fundamental Rights, Rights & Responsibilities of Medical Person, Hippocratic Oath, Declaration of Geneva, List of Offences & Professional Misconduct of Doctors, as per Medical Council of India, Organisational & Procedural Laws
3	Indian Contract Act - Nursing Home-Registration Act - Birth-Death Registration Act, Labour Laws Applicable to a Hospital - Indian Trade

	Union Act 1926/Industrial Dispute Act 1947 - The Bombay Shops & Establishment Act - The Workmen's Compensations Act.
4	The Industrial Employment (Standing Orders) Act 1946 - Payment of Wages Act. - Employee Provident Fund Act - Maternity Benefit Act 11. Medical Establishment, Professional Negligence, Errors & Commission, Insurance Policy - General Claims Procedure, Laws Related to Medical Procedures - Medical Termination of Pregnancy Act 1971(MTP Act) - Prenatal Diagnostic Techniques, Regulations & Prevention of Misuse Act 1994 (PNDT Act)
5	Transplantation of human organs Act 1994, Consumer Protection Act 1986, Medical Negligence & Compensation, Medical Ethics/Doctor Patient Relationship, Preventive Steps for Doctors/Hospitals to Avoid Litigation - Consent Form - Life Support - Dying Declaration - Death Certificate - High Risk - Post Mortem - Illustrative Cases of Medical Negligence in India - Surgery - OBST/GYNAEC - Medicine - Pediatrics - Other Disciplines/Anaesthesia, Legal Requirements of Licences/Certificates for a Hospital

Reference Book

1. Parikh's Text Book of Medical Jurisprudence & Toxicology – By Dr. C.K. Parikh – CBS Publications
2. Medical Negligence & Compensation – By Jagdish Singh – Bharat Law, Jaipur.
3. Medical Negligence & Legal Remedies – By Anoop K. Kaushal – Universal
4. Medical Termination of Pregnancy Act.

Preconception & Prenatal Diagnostic Techniques (Prohibition of sex selection) Act 1994