

Mahatma Gandhi University
of
Medical Sciences & Technology, Jaipur

Syllabus

MScMedical Sterilization and Hospital Logistics

(2 Years Degree Course, Full Time, Regular)

Notice

1. Amendments made by the University in Rules / Regulations of the Courses shall automatically apply.
2. The University reserves the right to make changes in the syllabus/books/ guidelines, feestructure or any other information at any time without prior notice. The decision of the University shall be binding on all.
3. The Jurisdiction of all court cases shall be Jaipur Bench of Hon'ble Rajasthan High Court only.

MSc Medical Sterilization and Hospital Logistics (Code)

(2 Years Degree Course)

Rules & Regulations

1. TITLE OF THE COURSE

The title of the course shall be “MSc Medical Sterilization and Hospital Logistics”.

2. DURATION OF COURSE/TRAINING

The course shall be of two years duration from the date of commencement of academic session.

3. MEDIUM OF INSTRUCTION

English shall be the medium of instruction.

4. ELIGIBILITY FOR ADMISSION:

Candidate should have passed “B.Sc.Medical Sterilization and Hospital Logistics”.

5. CRITERIA FOR ADMISSION

Selection shall be done by an Admission Board of the University strictly on merit. It will consist of two-step process –Written Entrance Examination followed by Counseling/Personal Interview (PI).

6. RESERVATION POLICY

Reservation shall be applicable as per policy of the State Government.

7. ENROLMENT

Every candidate who is admitted to MSc Course in Mahatma Gandhi College Hospital Administration (MGCOHA) shall be required to get himself/herself enrolled with the Mahatma Gandhi University of Medical Sciences & Technology (MGUMST) after paying the prescribed eligibility and enrolment fees.

A candidate shall deposit enrolment fees along with tuition fees at the time of his/her admission to the course. Such a candidate who fails to submit, through the college Principal, duly filled enrolment form along with original documents including migration certificate required for enrolment within two months of his/her admission or up to November 30 of the year of admission whichever is later, he/she will have to pay late fee prescribed by the University

8. MIGRATION RULES

No student, once admitted to the course and enrolled by the University, will be permitted to migrate to any other Course/ University.

No student will be admitted to the Course on migration from any other Course/ University.

9. ATTENDANCE

Minimum 75% attendance in each year, both for theory and practical classes separately. Student with deficient attendance will not be permitted to appear in University examination.

10. TRAINING:

- (a) The period of training for MSc shall be of two years from the date of admission.
- (b) Part – I and Part – II of the course shall be of one-year duration each.
- (c) The candidate will undertake the post graduate training as a full time post graduate in the department concerned.
- (d) The students will be required to complete the prescribed period of study and fulfill the requirement of attendance before they are allowed to appear in the University examination.

11. EXAMINATION AND ASSESSMENT

- (a) The examination of Part I shall consist of three theory papers, internal assessment and practical & viva-voce examination.
- (b) The examination of Part II shall consist of three theory papers, internal assessment and practical & viva-voce examination.
- (c) A candidate shall be permitted a maximum of 4 years from the year of admission to complete the course and pass the examination failing which, the candidate will have to leave the course.
- (d) Only those candidates will be allowed to appear at Part II examination, who have passed Part –I examination completely.

12. CONDUCTION OF THE UNIVERSITY EXAMINATION

University examination shall be conducted twice in a year; that is Main and Supplementary Examination. Supplementary examination shall be conducted after 2-4 months of the main examination.

13. SCHEME OF EXAMINATION

The examination to the first/second year shall be open to a student who has remained on the rolls of the course concerned for full academic year preceding the examination and having attended not less than 75% of the full course of lectures and 75% practical separately held for the purpose in each year.

The Examination in Part I shall consist of:

Paper	Marks
Theory	
Paper I – Introduction to Medical Sterilisation	100 Marks
Paper II - Infection Prevention & Control	100 Marks
Paper III -Principles of Management and Organisational Behaviour	100 Marks
Internal Assessment and Case Study	100 Marks
Practical & Viva Voce Examination	100 Marks
Total Marks	500 Marks

The Examination in Part II shall consist of:

Paper	Marks
Theory	
Paper IV -Medical Instruments and Devices	100 Marks
Paper V - Sterilization & Monitoring	100 Marks
Paper VI–Inventory Management	100 Marks
Internal Assessment and Case Study	100 Marks
Practical & Viva Voce Examination	100 Marks
Total Marks	500 Marks
Dissertation- To be carried out over two years period	Accepted/Rejected

1. Each theory paper shall be of 3 hours duration.
2. Each paper will be set by the External Examiner of the subject concerned and will be assessed by the internal examiner of the subject concerned.
3. In order to pass the University Examination, the candidate must secure a minimum of 50% marks in each theory paper including internal assessment and 50% marks in practical and viva-voce examination separately.
4. A candidate who fails in one or more theory paper must appear in that theory paper in supplementary examination to be conducted by university within 2–4 months.
5. Practical examination shall be conducted by one Internal and one External Examiner. External Examiner will be appointed by the University.
6. In case a student passes either in Theory or in Practical only, the student shall be considered to fail in the whole examination and he will have to appear in both the Theory and Practical in the subsequent examination.

14. APPOINTMENT OF EXAMINER AND PAPER SETTERS

- (a) All the examiners, paper setters, theory examination answer book evaluators, Internal and External Examiners for Practical examinations shall be appointed by the President of the University.
- (b) Qualification of the Paper setter / Examiner: Assistant Professor and above.
- (c) Paper setter can be an examiner

15. GRACE MARKS

No grace marks will be provided in MSc Examination.

16. REVALUATION / SCRUTINY

No Revaluation of answer books shall be permitted in MSc Examination. However, the candidate can apply for scrutiny of marks as per University Rules.

17. DISSERTATION

The student should be able to demonstrate his/her capability in research by planning and conducting systematic scientific research, data analysis, deriving conclusion and communicate scientific information for health planning.

SUBMISSION OF DISSERTATION PROTOCOL:

It should be submitted within three months after admission to the course. Protocol in essence should consist of:

- (a) Introduction and objectives of the research project
- (b) Brief review of literature
- (c) Suggested materials and methods
- (d) Bibliography

The protocol must be presented in the MGCOHA & approved by the research committee which will scrutinize the dissertation protocol in reference to its feasibility, statistical validity, ethical aspects etc.

SUBMISSION OF DISSERTATION

- (a) Dissertation will be submitted at the end of 1 ½ years.

The candidate shall submit the Dissertation as a printed copy to the Principal, MGCOHA within the stipulated time, else, permission to appear in the University examinations shall not be granted.

- (b) Dissertation in essence should consist of

1. Introduction, Aim & Objectives
2. Scope of Study
3. Material and methods
4. Review of literature
5. Results
6. Discussion
7. Bibliography

The dissertation will be evaluated by the internal and external examiners at the time of viva voce examination of the candidate during the second year. The candidate will be asked to make presentation before the external/internal examiners. The final dissertation duly Accepted by the External/Internal Examiners will be submitted to the Dean's Office along with the result. The Dean's office will send the dissertation to the library for record. If dissertation is Rejected, the candidate will not be permitted to appear for the University Examination of second year.

COURSE OUTLINE: Distribution of Teaching Hours

Paper	Paper Title	Hours
	First Year	
Paper-I	Introduction to Medical Sterilisation	300
Paper-II	Infection Prevention & Control	300
Paper-III	Principles of Management and Organisational Behaviour	300
Case Study-1	Case Study-1	300
	Second Year	
Paper-IV	Medical Instruments and Devices	300
Paper-V	Sterilization & Monitoring	300
Paper-VI	Inventory Management	300
Case Study-2	Case Study-2	300
	Total Hours :	2400

SYLLABUS

MSc Medical Sterilization and Hospital Logistics

(2 Years, full time regular Course)

Learning Objectives:

At the completion of this course, the student should be –

- (a) Clean, disinfect/sterilize and distribute sterilized instrumentation and equipment to an emergency department, intensive care unit, the labor and delivery unit, operating room and other areas of health care facilities in a recommended manner.
- (b) Contribute to a team of central sterile processing professionals who are all working together to maintain sterilization and storage.
- (c) To prepare CSSD professionals to practice appropriate Infection control protocols on Instrument Reprocessing.
- (d) Uniform standard of care would be achieved through the course.

Course Outcomes:

At the completion of this course, the student will be able to –

- (a) Comprehend basic microbiology & infection control practices related to central sterile service department.
- (b) Define the process of Cleaning, Disinfection, and packing instructions while handling medical & surgical devices.
- (c) Comprehend risks associated with handling & transportation of contaminated instruments & sterile instruments.
- (d) Employ and practice safe handling & disposal of biomedical waste generated in the healthcare organization.
- (e) Employ requirements of current guidelines & procedures while performing the duties & risks in case of non-compliance.
- (f) Demonstrate good communication, communicate accurately and appropriately in the role of CSSD In charge.
- (g) Explain and practice the delivery of sterile equipments to various departments as per needs.
- (h) Discuss the merits of infection control and practices to maintain it.

FIRST YEAR

PAPER I: INTRODUCTION TO MEDICAL STERILISATION

1. Definition: Sterilization, Disinfection & Asepsis
2. Hospital Acquired Infections: Significance of infection, Historical aspects
3. Sterilization techniques (basics): Handwashing, Scrubbing
4. Rays: α rays, β rays, c rays, importance of c rays
5. Heating, Chemical Sterilization, Iodine Spirit
6. CSSD design considerations & Zoning, Calculation of capacity requirement of sterilizer
7. Role & responsibilities of sterile processing technician
8. Moral, ethical consideration, Expectations and functions
9. Work safety & standards
10. Effective communication & Team work
11. Basic Medical terminology
12. Basic Anatomy and Physiology (Introduction to all systems)
13. Basic Microbiology/infection control
 - (a) Define basic terminology
 - (b) Explain the significance of sterility to patient care
 - (c) Pathogens
 - (d) Nonpathogenic
 - (e) Indigenous Micro flora
 - (f) Opportunistic pathogens
 - (g) Infectious Diseases
 - (h) Saprophytes
 - (i) Bacteriology
 - (j) Protozoology
 - (k) Parasitology
 - (l) Virology
 - (m) Fungi
 - (n) Prions

PAPER II – INFECTION PREVENTION & CONTROL

1. Chain of infection
2. Principles of asepsis
3. Hand Hygiene
4. Use of PPE
5. Occupational health (Sharp Injury, Blood and body fluid exposure) , pre and post exposure prophylaxis
6. Environmental controls: Work flow, Traffic controls, Work area cleanliness, Physical design, environmental controls.

PAPER III – PRINCIPLES OF MANAGEMENT AND ORGANISATIONAL BEHAVIOUR

1. Introduction to Management, Social Responsibilities of Managers, Fundamentals of Planning, Organising, Staffing, Leading and Controlling
2. Introduction to Management: Terminology, Definitions; History and evolution of management thoughts; Management: science, theory and practice; Principles of management and their applicability in hospital field.
3. Social responsibility of managers; Ethics in hospital management, The Management Process
4. Fundamentals of planning; Types of plans, Steps in planning, Planning process; Objective setting, Strategic planning, Strategic planning process; Premising and forecasting; Modern tools for analyzing situations e.g. TOWS matrix, etc.; Rationality in decision-making, Search and evaluation of alternative; Creativity and innovation.
5. Organizing: Nature of organizing and entrepreneuring, Organizational structure; Departmentation, matrix organisation, Authority, responsibility, delegation, and decentralization; Hospital as an organization
6. Controlling: Basic control process, Critical control points and standards, Stages of control, Relationship of planning and controlling.
7. Co-ordination: Need for coordination, Types of coordination, Approaches to coordination, Features of coordination.
8. OB-Overview-Meaning of OB, importance of OB, field of OB, Contributing Disciplines.
9. OB Models, S-O-B-C model, contingency O-B model, challenges and opportunities for OB
10. Individual Behaviour: Biographical characteristics Learning, Value, Attitudes
11. Personality: Meaning of Personality, Determinants of Personality, Theories of Personality, Management and Development of Personality
12. The Process of Perception: Process and Principles, Factors influencing Perception, Perceptual Selectivity, Making Judgments, Social Perception.
13. Interpersonal Behaviour: Nature of Interpersonal Behaviour, Transactional Analysis, Johari Window, Benefits and uses of TA.
14. Group Dynamics & Behaviour: Concepts of Group, Types of Group, Stages of Group Development, Group Structure, Intergroup Relationship.
15. Motivation: Approaches to Motivation. Theories of Motivation- Maslow's Hierarchy of Need theory, Alderfer's ERG theory, Herzberg's two factor Motivation theory, Mclelland's Achievement Motivation Theory.
16. Leadership: Meaning, Styles, Theories on Leadership, Managerial Grid, Fiedler Model.

SECOND YEAR

PAPER IV: MEDICAL INSTRUMENTS AND DEVICES

1. Objectives of packing
2. Criteria to select appropriate packaging material
3. Types of packing materials – Indication, advantages & disadvantages
4. Packing / Wrapping procedure
5. Verification & Validation of sealers.
6. Point of use preparation
7. Transport of soiled items
8. Collection of soiled items.
9. Tools for cleaning
10. Over view on cleaning agents. (**Water, Detergents, Enzymes & Lubricants**)
11. Manual Cleaning
12. Mechanical cleaning (Ultrasonic cleaners, Automated mechanical washers, Automated cart washers)
13. Cleaning of delicate, micro instruments, Instrument containers, Power equipment's
14. Quality Controls in Cleaning.
15. List of disinfectants used with its indication, advantages, disadvantages and specifications of usage.
16. Inspection & Identification of Surgical Instruments integrity.
17. Instrument lubrication

PAPER V: STERILIZATION & MONITORING

1. **High Temperature Sterilizers**
 - (a) Indications, Advantages, Disadvantages
 - (b) Types of Steam Sterilizers
 - (c) Structure & Function of Steam sterilizers
 - (d) Criteria for effective steam sterilization
 - (e) Loading, Unloading packs
 - (f) Wet loads
 - (g) Quality Control (Indications, Chemical Indicators, Physical monitoring, Biological monitoring, PCD, Bowie – Dick Tests)
 - (h) Sterilizer validation & Verification
2. **Low Temperature Sterilizers**

EO:

- (a) Indications, Advantages, Disadvantages
- (b) Loading, Unloading packs
- (c) Staff safety
- (d) Quality Control (Indications, Chemical Indicators, Physical monitoring, Biological monitoring)

Gas Plasma (Hydrogen peroxide)

- (a) Indications, Advantages, Disadvantages
- (b) Loading, Unloading packs
- (c) Quality Control (Indications, Chemical Indicators, Physical monitoring, Biological monitoring)

Other Sterilizers:

- (a) Flash Sterilizers
- (b) Ozone

PAPER VI: INVENTORY MANAGEMENT

1. Sterile storage area – Physical conditions, environmental controls
2. Shelf life and expiry
3. Transportation and distribution of sterile items.
4. Procurement: Tendering, Storage, Distribution
5. Inventory Management
6. Tracking Systems
7. Documentation
8. Quality Indicators for CSSD
9. Establishing recall process
10. CSSD staff requirements & training
11. CSSD Audit Checklist.
12. Quality Assurance in CSSD Department

Recommended Books

1. Hospital Sterilization by PremAnandNagaraja
2. Hospital Administration by CM Francis & Mario C De Souza
3. Hospital Infection Control Guidelines by Sanjeev Singh, Shakti Kumar Gupta and Sunil Kant
4. Supply Chain Management: A Logistic Approach by Coyle, John J.
5. Supply Chain Management – Strategy, Planning, And Operation by Chopra, Sunil
6. Lean Supply Chain and Logistics Management by Myerson, Paul
7. Hospital Infection Control Guidelines: Principles and Practice by Gupta and Singh
8. Global Supply Chain Management by Agamdeep Nagpaal
9. Operations and Supply Chain Management by F. Robert Jacobs and Richard Chase
10. Supply Chain Logistics Management by Donald J Bowersox
11. Supply Chain Management by Janat Shah
12. Logistics Management by SK Nandi and SL Ganapathi
13. Business Logistics/ Supply Chain Management by Ronald H Ballou and Samir K Srivastava
14. A Practical Guide to Decontamination in Healthcare by Gerald E. McDonnell, Denise Sheard
15. Central Sterile Supply: Principles and Practice by Nuffield Provincial Hospitals Trust
16. Handbook for CSSD Technicians: Understanding the Basics by Joan M. Losper
17. Materials Management: An Integrated Approach. Gopalkrishnan, P
18. Management Lessons from Mayo Clinic
19. The Cleveland Clinic Way by Toby Cosgrove
20. Managing Healthcare Organizations by Zonathan S Rakish, Donovan
21. Health Care Management by Wolfer and Penna
22. Sterile Processing by Karen Davis
23. Fast facts for operating room nurse by Teressachrisctelli
24. Certifying Central Sterile Technologist Review by Lonnie Bargo
25. Central Services Technical Manual by IAHC SMM

Model Question Paper

MSc (Medical Sterilisation and Hospital Logistics)

MScFirst year Examination Month, Year

Paper-I

INTRODUCTION TO MEDICAL STERILISATION

Time: Three Hours

Maximum Marks: 100

Students shall be allowed to take only one supplementary copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book
Draw diagrams wherever necessary

Attempt all questions

- Q.1 What is the significance of efficient sterilization in patient care? 25
- Q.2 Explain in brief the importance of medical terminology in healthcare? 25
- Q.3 Write in brief about: 12½x2=25
- a) Difference between Sterilization and Disinfection
 - b) What is medical sterilization?
- Q. 4 Write short notes on any five: 5x5=25
- a) Prions
 - b) Chemotherapy
 - c) What are 5 good communication skills?
 - d) Universal precaution
 - e) What are the three steps of the decontamination process?
 - f) Explain role of CSSD in hospital infection
 - g) Functions of the respiratory system and what are the associated organs involved?

Model Question Paper
MSc (Medical Sterilisation and Hospital Logistics)

MScFirst year Examination Month, Year

Paper-II
INFECTION PREVENTION AND CONTROL

Time: Three Hours

Maximum Marks: 100

Students shall be allowed to take only one supplementary copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book
Draw diagrams wherever necessary

Attempt all questions

- Q.1 What are the occupational hazards in hospital? 25
- Q.2 What is the chain of infection? Draw a neat Diagram. 25
- Q.3 Write in brief about: 12½x2=25
- a) Why is it important to wear PPE in healthcare?
 - b) What are the 5 moments of hand hygiene?
- Q.4 Write short notes on any five: 5x5=25
- a) What are the two types of asepsis?
 - b) What are the 7 steps of hand washing?
 - c) Personal protective equipment (PPE)
 - d) What is post exposure prophylaxis?
 - e) What are 3 common examples of nosocomial infections?
 - f) Role of Infection control committee in hospitals.
 - g) What is the procedure for cleaning up a blood spill in hospitals?

Model Question Paper

MSc (Medical Sterilisation and Hospital Logistics)

MScFirst year Examination Month, Year

Paper-III

PRINCIPLES OF MANAGEMENT AND ORGANISATIONAL BEHAVIOUR

Time: Three Hours

Maximum Marks: 100Maximum Marks: 100

Students shall be allowed to take only one supplementary copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book
Draw diagrams wherever necessary

Attempt all questions

- Q.1 Describe the application of management principles in maintaining the overall operations of a hospital. 25
- Q.2 Define Leadership. Name the various leadership styles. What are the advantages of democratic leadership? 25
- Q.3 Write in brief about: 12½x2=25
- a) Functional objectives in planning
 - b) Evaluation of importance of decision
- Q.4 Write short notes on any five: 5x5=25
- a) Maslow's Hierarchy of Needtheory
 - b) Theories on Leadership
 - c) Johari Window
 - d) Organisational Structure
 - e) Ethics in Hospital Management
 - f) Determinants of Personality
 - g) Forecasting

Model Question Paper

MSc (Medical Sterilisation and Hospital Logistics)

MSc Second year Examination Month, Year

Paper-IV

MEDICAL INSTRUMENTS AND DEVICES

Time: Three Hours

Maximum Marks: 100

Maximum Marks: 100

Students shall be allowed to take only one supplementary copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book

Draw diagrams wherever necessary

Attempt all questions

- Q.1 What are the seven steps for instrument processing? 25
- Q.2 Explain various method of distribution of sterile items from CSSD. 25
- Q.3 Write in brief about: 12½x2=25
- a) What is the purpose of wrapping instruments for sterilization?
 - b) How do you handle soiled items in CSSD?
- Q.4 Write short notes on any five: 5x5=25
- a) Ultrasonic cleaners
 - b) Types of sterilization
 - c) Shelf life of sterilized instruments
 - d) Types of packaging
 - e) Hot air oven
 - f) Draw a diagram of work flow of CSSD
 - g) Sterility Indicator

Model Question Paper

MSc (Medical Sterilisation and Hospital Logistics)

MSc Second year Examination Month, Year

Paper-V
STERILIZATION AND MONITORING

Time: Three Hours
Maximum Marks: 100

Students shall be allowed to take only one supplementary copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book
Draw diagrams wherever necessary

Attempt all questions

- Q.1 Merits and Demerits of Outsourcing of CSSD Services of a Hospital 25
- Q.2 Roles, Functions and related Managerial Issues of Hospital CSSD Manager. 25
- Q.3 Write in brief about: 12½x2=25
- a) Maintenance of Sterility conditions in Operation Theatres (OT).
 - b) What is the primary objective of supply chain management?
- Q.4 Write short notes on any five: 5x5=25
- a) Legal and Ethical Aspects of Hospital Waste Management
 - b) Zoning in CSSD
 - c) ETO
 - d) Plasma gas sterilizers
 - e) Biological indicators
 - f) Packaging principles
 - g) Function of autoclave?

Model Question Paper

MSc (Medical Sterilisation and Hospital Logistics)

MSc Second year Examination Month, Year

Paper-VI
INVENTORY MANAGEMENT

Time: Three Hours

Maximum Marks: 100Maximum Marks: 100

Students shall be allowed to take only one supplementary copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book

Draw diagrams wherever necessary

Attempt all questions

- Q.1 Being a CSSD Manager how will you control the Quality of CSSD Services? 25
- Q.2 Write in detail about Planning and Organization of CSSD for a 500 bedded hospital. 25
- Q.3 Write in brief about: 12½x2=25
- a) What is a supply chain?
 - b) What are the drivers of supply chain performance?
- Q.4 Write short notes on any five: 5x5=25
- a) Make a check list for CSSD Audit.
 - b) Importance of Water Quality in Sterile Processing
 - c) Factors affecting inventory management
 - d) Economic order Quantity(EOQ)
 - e) Major challenges to overcome supply chain successfully
 - f) Fire Protective Measures in Hospital CSSD
 - g) Procurement cycle