


GOVERNMENT OF THE PUNJAB
TECHNICAL EDUCATION & VOCATIONAL
TRAINING AUTHORITY



CURRICULUM FOR
Sterilization Operator
(3-Months Course)

Evaluated December, 2015

CURRICULUM SECTION
ACADEMICS DEPARTMENT
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APPROVED
Date 09-12-15
Sign: 

TRAINING OBJECTIVES

Sterilization of products in industry level is very crucial. Not many good training centers are available especially who provide practice training at high level. This course aims to train personnel on sterilization operation for commercial and industrial level. Pass out of this course will be placed in majorly in pharmaceutical industry and in medical related industry such as dentist, hospitals and even in hotels.

Further, this training program will provide opportunity to the persons who are desirous to equip themselves with such knowledge and skill which will help them for employment in many of the industry such as mention above.

This curriculum is developed by considering the requirement of the local market to reduce the shortage of semi-skilled workers in the area.

CURRICULUM SALIENT:

Entry Level	Matric
Total duration of course	3 Months
Total Training Hours	400 hours
Weekly Hours	40 Hours per week
Training Methodology	Practical 80%
	Theory 20%
Medium of instruction	Urdu / English

APPROVED

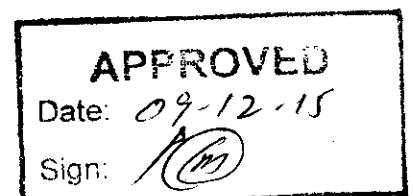
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SKILL COMPETENCY DETAILS

On successful completion of this course, the trainee will acquire the following skills:-

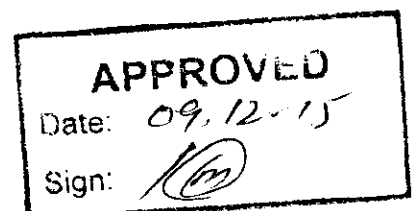
1. Apply Basic Concept of Pathogen (Bacteria, fungus, virus etc.)
2. Communicate the concept of sterilization
3. Perform the different processes of sterilization.
4. Apply the Methods of sterilization & its importance in industry/ Hospital (OT, Wards & ICU)
5. Show different types of equipment used in sterilization.
6. Communicate to control the environment & focusing on personal hygiene & occupational Health.
7. Apply the Knowledge and methods of infection control.
8. Apply Safety parameter for handling machines
9. Compute international standards
10. Operate the disposal of infected material & waste management.
11. Apply Vaccination of personals
12. Perform documentation/ Record keeping/ Monitoring



KNOWLEDGE PROFICIENCY DETAILS

On successful completion of this course the trainee will acquire the following knowledge.

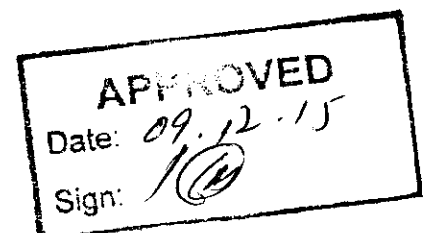
1. Define basic knowledge of Pathogen (Bacteria, fungus, virus etc.)
2. Explain basic Concept of Sterilization & disinfection
3. Understanding and importance of sterilization process in industry
4. Describe methods of Sterilization
5. Identify equipment used in process
6. Define equipment operations
7. Explain trouble shooting of equipment
8. Understand environment control for the sterilized products
9. Describe safety Parameters & occupational Health.
10. Explain waste Management(infected material & non-infected material)
11. Understand knowledge and methods of infection control.
12. Describe record keeping
13. Define International standards



CURRICULUM DELIVERY STRUCTURE

	Curriculum Delivery	Make Up Session	Revision	Final Test	Total
WEEK	1-10	11	12	13	13
	10	1	1	1	

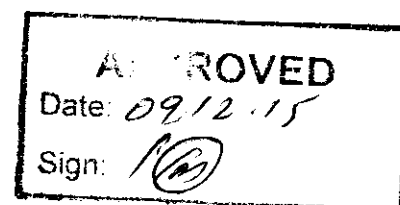
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Sterilization Operator (3-Months Course)**SCHEME OF STUDIES****Sterilization Operator
(3-Months Course)**

Sr. No.	Main Topics	Theory Hrs.	Practical Hrs.	Total Hrs.
1.	Basic Concepts	10	-	10
2.	Process of Sterilization	8	36	44
3.	Methods of Sterilization	10	36	46
4.	Types of Equipment	6	30	36
5.	Machine Operations	6	46	52
6.	Parameter Setting	6	18	24
7.	Controlled Environment & Occupational Health	6	18	24
8.	Trouble Shooting	--	32	32
9.	Safety Parameters (Machine, Product & Personnel), waste management, , infection control	12	48	60
10	Vaccination/ First Aid	6	40	46
11	International Standards Compliance	6	--	6
12	Documentation/ Record keeping	4	16	20
Total		80	320	400

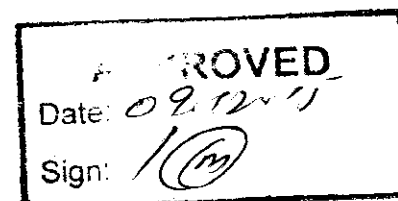
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DETAIL OF COURSE CONTENTS**Sterilization Operator
(3-Months Course)**

Sr. No.	Detail of Topic	Theory Hrs.	Practical Hrs.
1.	Basic Concept of Sterilization 1.1 Cleaning 1.2 Inspection 1.3 Packaging 1.4 Storage	10	-
2.	Process of Sterilization 1.1 Flashing 2.2 Ultrasonic Cleaning 2.3 Decontamination Process 2.4 Chemical Solutions	8	36
3.	Methods of Sterilization 3.1 Steam 3.2 Ethylene Oxide 3.3 Dry Heat 3.4 Microwaves 3.5 Formaldehyde Gas 3.6 Hydrogen Peroxide Plasma 3.7 Radiation Sterilization 3.8 Sterile Filtration	10	36
4.	Type of Equipment 4.1 Auto Clave 4.2 Hot Air Ovens 4.3 Simple Ovens 4.4 Steam Sterilizer 4.5 Pressure Cooker (Portable) 4.6 Filters 4.7 X-Ray 4.8 Tyndallizer 4.9 Needle Destroyer 4.10 Disinfectants, Types of Pathogens and infection control	6	30

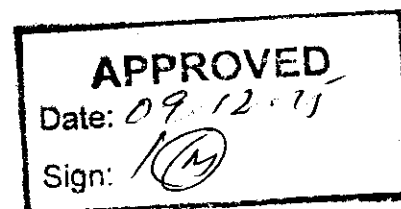
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Sterilization Operator (3-Months Course)

	4.11 Manual Apparatus 4.12 PLC or Automatic 4.13 Transportation of equipment		
5.	Machine Operations 5.1 Manual Checking of Machine/ Equipment 5.2 PLC Programming Checking 5.3 Sensors Test 5.4 Starting Of Machine 5.5 Process Running 5.6 Closing and verification of product	6	46
6.	Parameter Setting 6.1 Water Level 6.2 Steam 6.3 Heating Temperature 6.4 Cooling Temperature 6.5 Pressure 6.6 Door Opening & Closing	6	18
7.	Control Environment & Occupational Health 7.1 Humidity 7.2 Dust 7.3 Particle Count 7.4 Housekeeping 7.5 Personnel Hygiene 7.6 Uniform & Protective Gears	6	18
8.	Trouble shooting 8.1 Early or Delay 8.1 Malfunctioning in equipment	-	32
9.	Safety Parameters 9.1 Machine 9.2 Personnel 9.3 Product Testing 9.4 Quality Assurance 9.5 Waste Types 9.6 Segregation	12	48

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Sterilization Operator (3-Months Course)

	9.7 Transportation 9.8 Incineration		
10.	Vaccination/ First Aid 10.1 EPI-Schedule 10.2 Types and importance	6	40
11.	International Standards 11.1 Awareness 11.2 Compliance	6	--
12.	Documentation/ Record Keeping/ Monitoring 12.1 Name of Sterilization 12.2 Date of Sterilization 12.3 Expiry of Sterilization 12.4 Log Book Maintenance	4	16
		TOTAL	80
			320

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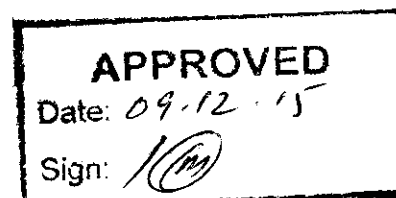
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List of Practical

- 1 Sterilization with Steam**
 - a- Introduction to Autoclave machine /apparatus
 - b- Demonstration of Sterilization process with steam .
 - c- Precautions during Autoclave operation
- 2 Sterilization with dry heat**

Simple and hot air ovens

 - a- Introduction to Oven machine / apparatus
 - b- Demonstration of sterilization process in ovens.
 - c- Practical Difference between simple and hot air ovens.
 - d- Precautions during operation of ovens.
- 3 Sterilization with Ethyleneoxide gas.**
 - a- Introduction to ETO Chamber machine /apparatus
 - b- Demonstration of sterilization process with ETOX gas.
 - c- Description of Precautions and safety measures required during ETO chamber.
- 4 Use of Chemical disinfectants.**
 - a- Physical review of different types of chemical disinfectants.
 - b- Preparation of chemical disinfectant solutions.
 - c- Demonstration of handling and storage of Chemical disinfectants.
- 5 Sterilization with Filtration technique.**
 - a- Physical introduction to different types of filters.
 - b- Demonstration of filtration process.
 - c- Precautions during sterilization process through filtration.



List of Labs

The following Concerned Production areas of Medipak or any other pharmaceutical company
(i.e)

- a- Autoclave area
- b- ETO chamber
- c- Chemical Laboratory.
- d- Filtration Plant.

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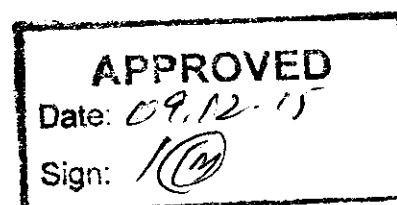


Sterilization Operator (3-Months Course)**LIST OF TOOLS AND EQUIPMENT****(FOR CLASS OF 20-STUDENTS)**

Name Of Institute	Sterilization Operator
Duration Of Course	3-Months

Sr. No.	Nomenclature of Equipment / Tools	Quantity
1.	Auto Clave	1
2.	Hot Air Ovens	1
3.	Simple Ovens	1
4.	Steam Sterilizer	1
5.	Filters	As per requirement
6.	Disinfectants	As per requirement
7.	CSSD	1
8.	Ultra violet	1

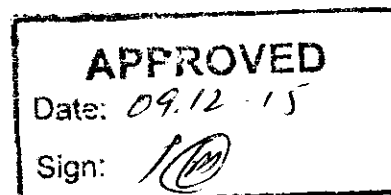
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LIST OF Consumables

Sl. No.	Nomenclature of Equipment/Tools	Quantity
1.	Disinfectant Chemicals (Dettol, Cetrimide, IPA etc)	As per requirement
2.	Filters (0.2 micron)	As per requirement
3.	Utilities (water for injection, steam, electricity etc.	As per requirement
4.	Coverall, Gloves, Masks	As per requirement

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MINIMUM QUALIFICATION OF INSTRUCTOR

Pharmacist with 05 years industry experience

Or

MSc Chemistry with 05 years industry experience

Or

Biomedical Engineer at least BSc.

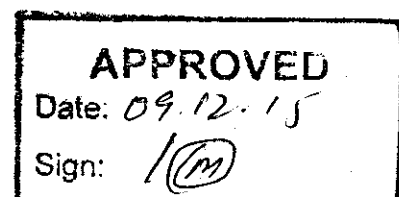
Or

MBBS Doctor with Pathology Experience

Or

MBBS Doctor with Anesthesia experience

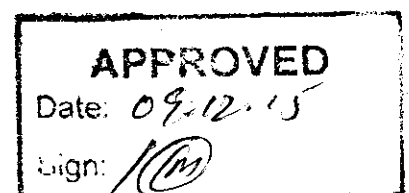
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EMPLOYABILITY OF GRADUATES

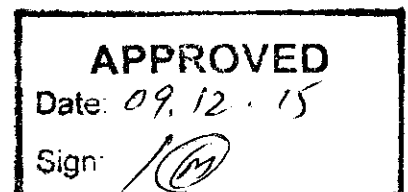
On successful completion of this course, trainees can find employment in following sectors:

1. Pharmaceutical Industries
2. Food & beverages Industry
3. Medical Equipment industry
4. Hospitals
5. Hospitality & Hotel Industry



REFERENCE BOOKS

- Pharma guide
- British pharmacopeia
- Us pharmacopeia
- ISO standards
- European Standards
- Standard Operating Procedures for Methods of Sterilization (in-house)
- Any other related material available on internet



Curriculum Evaluation Committee

1. **Dr. Sohail Safdar** **Convener**
Principal, Institute of Allied Health & Sciences, Allama
Iqbal Medical College, Lahore.

2. **Dr. Zahid Iqbal** **Member**
HOD Anesthesia Department, Allama Iqbal Medical
College, Lahore

