

Syllabus and Curriculum
of
Diploma in Minimal Access Surgery
Technician (DMAST) course

Uttar Pradesh State Medical Faculty, Lucknow.

Index

- Objectives of the course.....
- Outline of curriculum of ‘**Diploma in Surgery Minimal Access Technician**’ course.....
- Eligibility criteria & duration of the course.....
- Scheme of examination.....
- Schedule of the course.....
- Details of first year course curriculum.....
- Details of Second year course curriculum.....

OBJECTIVES OF THE COURSE

To prepare a Diploma in Minimal Access Surgery Technician (DMAST) who –

- Can prepare OT before surgery including process of sterilization.
- Can assist common surgeries to respective surgeons as first assistant.
- Can understand functioning & maintenance of equipments used in Minimal Access Surgery.
- Can use C-Arm and other imaging effectively.
- Can take care of Endoscopic / Minimal Access Surgery instruments.
- Can take care of patient in postoperative room.
- Can maintain all records of operation theatre both manual & electronic.
- Can do CPR
- Can perform basic nursing procedures like IV/IM/SC injection, nebulisation, catheterization, oxygen therapy.
- Can provide Psychological support to the patient and counsel him & his/her relatives

Outline of Curriculum
of
Diploma in Minimal Access Surgery
Technician (DMAST) course

FIRST YEAR

THEORY (Classes: 9 AM to 12 Noon)

First paper : Syllabus covers -

1. Anatomy, Physiology, Microbiology & Pharmacology.

Second paper : Syllabus covers -

1. Surgical Anatomy, Basics of OT techniques, Equipments & Instruments in Minimal Access Surgery.

FIRST YEAR

Practical (Classes:1 PM to 4 PM)

Practical classes will be after lunch; from 1 PM to 4 PM

Students must be present in the hospital / OT for practicals.

During first year, they should be there only as “observers” in practical classes.

(Observer ship for pre-operative preparation, Intra-operative assistance, Postoperative care & CSSD techniques)

Following subjects must be taught; though there will not be any exam from these –

1. Basic Computer skills
2. Basic English
3. Soft Skills like – Interpersonal relationship skills and moral education

Outline of Curriculum
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SECOND YEAR

THEORY (classes:9 AM to 12 Noon)

First paper : Syllabus covers -

1. Relevant medical and surgical diseases.

Second paper : Syllabus covers -

1. Basic Life Support & CPR. Practical OT Techniques & CSSD techniques including all endoscopic and minimal access surgery procedures.

SECOND YEAR

Practical (Class: 9 AM to 1 PM)

Practical; exams syllabus should cover-

- Hands on training of Hand wash/scrubbing & sterilization practices
- Hands on training of preoperative preparation
- Assisting various minimal access surgeries
- Hands on training of Postoperative care.
- Hands on training of biomedical waste management.
- Hands on training of BLS
- hands on training of basic anaesthesia techniques
- hands on training of use of drugs used in OT of minimal access surgery

ELIGIBILITY CRITERIA FOR ADMISSION & DURATION OF THE COURSE

COURSE DURATION:-

- It is 2 years, **full time** Diploma Course.

ELIGIBILITY:-

- Candidate must have passed 12th with
Physics, Chemistry, Biology
Or
Physics, Chemistry, Maths
with 35% marks in Intermediate exams.
(From UP board or any other recognised board).
- Candidate must have completed age of 17 years of age as on 31st December of admission year. There is no maximum age limit for the admission.

SCHEDULE OF EXAMINATION

FIRST YEAR

<u>Paper</u>	<u>Subjects</u>	<u>Mark</u>	<u>Internal Assessment Marks</u>	<u>Total Marks</u>	<u>Pass Marks</u>	<u>Duration of Exam.</u>
<u>First Paper Theory</u>	1- Anatomy, Physiology, Microbiology & Pharmacology	75	25	100	50	3 Hours
<u>Second Paper Theory</u>	1.Surgical Anatomy, Basics of OT techniques, Equipments& Instruments in Minimal Access Surgery	75	25	100	50	3 Hours
<u>Practical</u>	Oral & Practical	75	25	100	50	3 Hours

SCHEDULE OF EXAMINATION

SECOND YEAR

<u>Paper</u>	<u>Subjects</u>	<u>Mark</u>	<u>Internal Assessment Marks</u>	<u>Total Marks</u>	<u>Pass Marks</u>	<u>Duration of Exam.</u>
<u>First Paper Theory</u>	1.Relevant medical and surgical diseases	75	25	100	50	3 Hours
<u>Second Paper Theory</u>	1.Basic Life Support & CPR. Practical OT Techniques & CSSD techniques including all endoscopic and minimal access surgery procedures	75	25	100	50	3 Hours
<u>Practical</u>	Oral & Practical	75	25	100	50	3 Hours

SCHEDULE OF COURSE

(List of holidays, Total hours, Subject wise allotment of hours)

- **List of Holidays:-**

Sundays	- 52 days
Summer vacation	- 10 days
Winter vacation	- 10 days
Gazetted holidays	- 23 days
Preparatory holidays	- 10 days
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Total Holidays	- 105 days
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- **Total Hours :-**

Theory classes per day	- 3 Hours
Practical classes per day	- 3 Hours
Total hours per day	- 6 Hours
Total days & hours in One year (after deduction of holidays)	- 260 days or - 1560 Hours

SCHEDULE OF COURSE

Subject wise allotment of hours

FIRST YEAR

Theory (780 Hours) Practical (780 Hours)

<u>First Paper Theory</u>	1. Anatomy, Physiology, Microbiology & Pharmacology	250 Hrs
<u>Second Paper Theory</u>	2. Surgical Anatomy, Basics of OT techniques, Equipments & Instruments in Minimal Access Surgery	250 Hrs
<u>Third Paper Practical</u>	As described in curriculum	780 Hrs
<u>Theory: Other Subjects</u> (These subjects must be taught; though there will not be any exam from these)	1. Basic Computer skills.	30 Hrs
	2. Basic English.	30 Hrs
	3. Soft skills like - Interpersonal relationship skills & moral education	10 Hrs

SCHEDULE OF COURSE

Subject wise allotment of hours

SECOND YEAR

Theory (780 Hours) Practical (780 Hours)

<u>First Paper Theory</u>	1.Relevant medical and surgical diseases	380Hrs
<u>Second Paper Theory</u>	2.Basic Life Support & CPR. Practical OT Techniques & CSSD techniques including all endoscopic and minimal access surgery procedures	300 Hrs
<u>Third Paper Practical</u>	As described in curriculum.	780 Hrs

Details of Curriculum for First Year
Diploma in Minimal Access Surgery
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PAPER 1st Theory	Topics	Hours.
Anatomy, Physiology, Microbiology & Pharmacology	1. General Orientation about parts of human body. Various terms used in Anatomy. Total numbers of bones, their names and location. Basic idea about organization of body, from cell to organ systems.	06 Hrs
	2. Osteology: Names, location, identification and basic details of all bones. (Details of skull bones is not required)	20 Hrs
	3. Joints: types, basic structure and examples	06 Hrs
	4. Skin & appendages	02 Hrs
	5. GIT: Location, gross structure, various parts and their function. Details of process of food ingestion, digestion, absorption and defaecation. (Microscopic structure is not required)	30 Hrs
	6. Respiratory tract: location, gross structure, various parts and their function. Details of breathing mechanism, different respiratory volumes. (microscopic structure in not required)	20 Hrs
	7. Urinary Tract: Gross structure, various parts and their function. (microscopic structure in not required) Process of urine formation and voiding – kidney, Ureter, Bladder, Prostate and urethra	25 Hrs
	8. Male reproductive system: Only gross structure & Functions of different parts. (microscopic structure in not required)	10 Hrs
	9. Female reproductive system: only gross structure and functions of different parts. (microscopic structure in not required), Menstrual cycle	10 Hrs
	10. Endocrine system: Hormones secreted by Pituitary thyroid, Parathyroid, Pancreas, Adrenal cortex, Adrenal medulla, Gonads and function of different hormones. (Details of structure of these glands not required)	20 Hrs

Details of Curriculum for First Year
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PAPER 1st Theory	Topics	Hours.
Anatomy, Physiology, Microbiology & Pharmacology	11. Gross structure of brain and spinal cord. Function of different parts of brain and spinal cord. (details not required)	30 Hrs
	12. Blood: composition & functions. Details about plasma, RBCs, WBCs, Platelets, clotting system.	20 Hrs
	13. Gross structure and functions of sensory organs – Eye, Ear, Nose, Tongue. (Details not required)	20 Hrs
	14. Basic gross structure of heart, vessels opening into heart and leaving the heart. Arterial and venous tree of body.	20 Hrs
	15. Immune system: components and various mechanism of defence.	20 Hrs
	16. Hepatobiliary system	10 Hrs
	17. Axilla & Breast	5 Hrs
	18. Colon, Rectum and anal canal	20 Hrs
	19. Veins of lower leg	6 Hrs
	20. Basics of Shock	07 Hrs
	21. basics of Disorders of blood coagulation system	08 Hrs
	22. Basics of disorders of Immune system of body	05 Hrs
	23. Modes of disease transmission and prevention of infection	10 Hrs
	24. Sterilization and methods of sterilization used in hospitals	10 Hrs

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PAPER 1st Theory	Topics	Hours.
Anatomy, Physiology, Microbiology & Pharmacology	25. Basic idea about types of bacteria, virus, Fungi	20 Hrs
	26. Routes of drug administration	02 Hrs
	27. Adverse effects and side effected of drugs	02 Hrs
	28. Basic idea of Analgesics : Opioid and NSAIDs	02 Hrs
	29. Basic idea of drugs use in cough and expectoration	01 Hr
	30. Basic idea of Drugs used in B Asthma and COPD	02 Hrs
	31. Basic idea of Drugs used in GIT	03 Hrs
	32. Basic idea of Anti-Microbial	20 Hrs
	33. Basic idea of Antihstaminics and corticosteroids	01 Hrs
	34. Drugs used in anaemia	02 Hrs
	35. Anaesthetic agents (LA & GA)	25 Hrs
	36. Muscle relaxants	05 Hrs

Details of Curriculum for First Year
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PAPER 2nd Theory	Topics	Hours.
1.Surgical Anatomy, Basics of OT techniques, Equipments & Instruments in Minimal Access Surgery	1. Detailed structure of Anterior abdominal wall including clinical anatomy of Hernia	05 Hrs
	2. Detailed structure of posterior abdominal wall	03 Hrs
	3. Detailed structure of thoracic wall	02 Hrs
	4. Concept of meninges and SCALP	02 Hrs
	5. Surface anatomy and important bony land marks	10 Hrs
	6. Concept of Mediastinum & thorax cavity	03 Hrs
	7. Skin as sensory organ	02 Hrs
	8. Location of major muscles of body	09 Hrs
	9. Hand wash & surgical scrubbing	03 Hrs
	10 Pre-operative preparation of patient including surgery site	04 Hrs
	11 Postoperative care including dressing	05 Hrs
	12 Basic idea of various methods of sterilization and basic functioning of CSSD especially for endoscopic and minimal access surgery instruments	15 Hrs
	13 Various positions used in different surgeries	15 Hrs
	14 Types of anaesthesia, Boyle's machine and anaesthesia work station.	10 Hrs

Details of Curriculum for First Year
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PAPER 2nd Theory	Topics	Hours.
1.Surgical Anatomy, Basics of OT techniques, Equipments & Instruments in Minimal Access Surgery	15 Gases used in anaesthesia	08 Hrs
	16 Triage of patients	02 Hrs
	17 Diagram and details of hand instruments used in common minimal access surgeries and endoscopic surgeries	45 Hrs
	18 Pre anaesthetic check up	03 Hrs
	19 infection control in OT	05 Hrs
	20 basic idea of different IV fluids	05 Hrs
	21 Needles, sutures and knots	15 Hrs
	22. Hand hygiene and method of Hand washing	10 Hrs
	23.Prevention of cross infection	10 Hrs
	24. Code blue	04 Hrs
	25. details of basic life support (BLS) & cardio-pulmonary resuscitation (CPR)	30 Hrs
	26. Basics of equipments and instruments of minimal access surgery like, OT Light, Endoscopic light source, CO ₂ insufflators, various energy sources used for surgery, electrosurgical unit, hand instruments of laparoscopy, thoracoscopy, urology, venous surgery and anorectal surgery, endoscopic instruments	130 Hrs

Curriculum
for
Practical :- First Year
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Practical	Topics
	1. Hand wash and scrubbing
	2. Basics of various methods of sterilization
	3. Care and identification of all equipments, minimal access instruments and hand instruments related to OT including all endoscopes
	4. Pre-operative care and preparation
	5. Postoperative care of patient
	6. BLS
	7. using medical gases
	8. Working as second assistant
	9. Details about sutures, needles, knots
	10. IV fluids use
	11. Recording vitals
	12. IV, IM injection, urinary catheterization
	13. Glove, Gown, personal protection equipments
14. Methods of standard precaution	

Details of Curriculum for Second Year
Diploma in Minimal Access Surgery
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PAPER 1st Theory	Topics	Hours.
Relevant medical and surgical diseases	1. History taking, General examination of the patient, filling case-sheet, common clinical words	15 Hrs
	2. Hypertension:- Def, causes, Pathology, Clinical features, Investigation and management	05 Hrs
	3. Hypotension:- Def, causes, pathology, Clinical features, investigation and management	02 Hrs
	4. Diabetes mellitus:- Def, Causes, Pathology, Clinical features, investigation and management	08 Hrs
	5. Diseases of blood:- Anaemia, Basics of coagulation bleeding disorder and Haemophilia	20 Hrs
	6. Respiratory Tract:- Pneumonia, Tuberculosis, B. Asthma, COPD, Bronchiectasis, Collapse of Lung, Pneumonitis, pleural effusion, pneumothorax, empyema thoracic, cancer lung	30 Hrs
	7. Diseases of GIT & Liver & GB:- Reflux oesophagitis, peptic ulcers, gastritis, Intestinal obstruction, Hepatitis, cirrhosis of liver, cholecystitis, appendicitis, hernia, Piles, Fissure, Fistula, pancreatitis, Pancreatic cancer	50 Hrs
	8. Diseases of Nervous system:- Stroke, Meningo-encephalitis, Glassgow coma scale, epilepsy, Head Injury	20 Hrs
	9. Diseases of Urinary tract:- Urolithiasis, Benign prostatic hyperplasia, Hydrocoele, cancer prostate, urethral stricture, Hypo and epi-spadias	30 Hrs
	10. <u>Endocrine system</u> :- Diabetes mellitus, hypo and hyper thyroidism	10 Hrs
	11. Miscellaneous:- Hypo and hyper Natraemia, Hypo and Hyper Kalaemia, Hypo and Hyper Calcaemia	10 Hrs
	12. infectious diseases:- TB, typhoid, malaria, Dengue fever, Leprosy, AIDS, Amoebiasis	20 Hrs
	13. Head injury and intracranial bleed, intracranial tumours	30 Hrs
	14. Gynaecological diseases	20 Hrs
	15. Basics about joint diseases and sports injury management	50 Hrs

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PAPER 1st Theory	Topics	Hours.
Relevant medical and surgical diseases	16. PIVD, Potts spine	10 Hrs
	17. Oral cavity tumors	10 Hrs
	18. ENT: CSOM, ASOM, Laryngeal Tumor, Nasal polyp, DNS.	20 Hrs
	19. Paediatric surgery:- Diaphragmatic Hernia, Meningo-myelocoele and spina bifida, cystic hygroma, basic of congenital heart d's, Hirschsprung d's, Ano-rectal malformation.	40 Hrs
	20. Temperature monitoring & fever.	01 Hr
	21. Pulse monitoring.	01 Hr
	22. BP monitoring.	01 Hr
	23. Respiration monitoring.	01 Hr
	24. Types of injection routes.	01 Hr
	25. IM injection.	01 Hr
	26. IV injection.	01 Hr
	27. SC injection.	01 Hr
	28. Oxygen therapy.	01 Hr
	29. Nebulization.	01 Hr
	30. IV infusion (Also with infusion pump) .	02 Hrs
	31. Care of unconscious patient .	01 Hr
	32. Urinary catheterization.	01 Hr
	33. Nasogastric intubation.	01 Hr
34. Other common ward procedures like enema, cut open, cricothyroidectomy, needle thoracocentesis, pericardiocentesis, catheter care, oral care, care of back, management of hypothermia in OT.	05 Hrs	

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PAPER 2nd Theory	Topics	Hours.
Basic Life Support & CPR. Practical OT Techniques & CSSD techniques including all endoscopic and minimal access surgery procedures	1. Laparoscopic/open cholecystectomy.	10 Hrs
	2. Laparoscopic / open appedicectomy.	05 Hrs
	3. Laparoscopic / open hernia surgery.	05 Hrs
	4. Laparoscopic / open solid organ surgery eg. spleen, liver and kidney.	10 Hrs
	5. Laparoscopic bariatric surgery.	05 Hrs
	6. Laparoscopic bowl Surgery.	05 Hrs
	7. Laparoscopic Gynae surgery.	10 Hrs
	8. Endoscopic Uro-surgery - TURP, DVIU, Litholapaxy, TURBT, Uretroscopic surgery, PCNL, RIRS.	25 Hrs
	9. Thoracoscopic surgery.	10 Hrs
	10. Endoscopic neurosurgery .	05 Hrs
	11. Arthroscopy and related surgery.	10 Hrs
	12. Minimal access surgery for haemorrhoids and fistula.	10 Hrs

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PAPER 2nd Theory	Topics	Hours.
Basic Life Support & CPR. Practical OT Techniques & CSSD techniques including all endoscopic and minimal access surgery procedures	13. Minimal access surgery for veins.	03 Hrs
	14. NSV.	02 Hrs
	15. Various endoscopic procedure – Bronchoscopy, OGD, ERCP.	10 Hrs
	16. Various incision and post placement.	05 Hrs
	17. Use of Electrosurgical unit.	05 Hrs
	18. Use of CO ₂ insufflator.	05 Hrs
	19. Use of endoscopic light.	05 Hrs
	20. Other application of minimal access surgery – thyroid, breast, axilla.	05 Hrs
	21. Various methods of sterilization of minimal access surgery and endoscopic instruments.	20 Hrs
	22. Aseptic practices.	20 Hrs
	23. Basics of Biomedical waste management.	20 Hrs
	24. Boyle's apparatus.	06 Hrs
	25. Anaesthesia work station.	20 Hrs

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PAPER 2nd Theory	Topics	Hours.
Basic Life Support & CPR. Practical OT Techniques & CSSD techniques including all endoscopic and minimal access surgery procedures	26. Electro surgery machine.	10 Hrs
	27. Surgical endoscopes and laparoscopes.	15 Hrs
	28. Monitors	05 Hrs
	29. C-Arm .	05 Hrs
	30. Abdominal well lift system.	05 Hrs
	31. Insufflators and insufflating gases .	05 Hrs
	32. Morcellators.	05 Hrs
	33. Suture material in laparoscopy .	05 Hrs
	34. Staplers in laparoscopy .	05 Hrs
	35. Energy sources in minimal access surgery.	10 Hrs
	36. Ultrasonic devices in MAS .	05 Hrs
	37. Endoscopic light source .	10 Hrs
	38. Fiber optic endoscopes.	10 Hrs
	39. Rigid endoscopes.	05 Hrs
	40. Ergonomics of MAS .	05 Hrs
	41. Endoscopic camera .	07 Hrs
42. Endoscopic monitor .	06 Hrs	
43. Multipara Monitor & ET CO ₂ monitor.	05 Hrs	

Curriculum
for
Practical :- Second Year
Diploma in Minimal Access Surgery
Technician (DMAST) course

	Topics
Practical	1. Hand on training as first assistant in common surgeries as listed in paper second .
	2. Hand on training of maintaining Asepsis in OT .
	3. Hand on training of biomedical waste management.
	4. Hand on training on taking various consents & keeping records.