



SHRI
DHARMASTHALA
MANJUNATHESHWARA
UNIVERSITY

Ordinance Governing
for M.Ch in Pediatric Surgery
Curriculum 2023-24

SHRI DHARMASTHALA MANJUNATHESHWARA UNIVERSITY

(A State Private University established under the Shri Dharmasthala Manjunatheshwara University
Act No 19 of 2018 of Government of Karnataka and Notification No. ED 261 URC 2018 dated 19th December 2018)

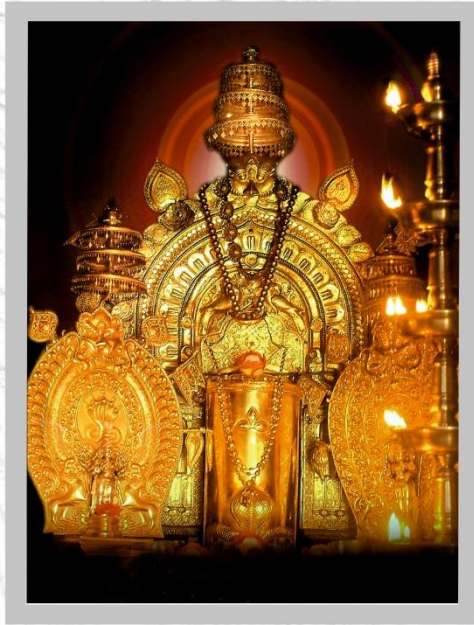
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|| Om Shri Manjunathaya Namaha ||



Shree Kshethra Dharmasthala

Edition Year : 2023-24

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THE LOGO

Poojya Dr D. Veerendra Heggade, Hon'ble Chancellor of the University, while searching for an appropriate Logo for the University, saw a photograph picked from Temple Architecture showing Wings of a Bird, sculpted in Indian style and wanted it to be incorporated in the logo for the University, as the Wings symbolize 'Spreading of Knowledge beyond Boundaries'. Further it was felt that the Central theme of the logo should be 'Rudra' (The Linga) with wings on each side. In this way, the logo of the University was conceptualized.

Hence:

1. The central part represents **Rudra** who Demolishes Darkness.
2. The Three **horizontal lines on The Linga** stand for Samyak Darshan (Right Belief), Samyak Gyan (Right Knowledge) and Samyak Charitra (Right Conduct).
3. The **Wings** symbolize spreading of Knowledge across the boundaries.
4. Base line "**Truth Liberates**" highlights the Purpose of Education: to liberate oneself unconditionally. It shows that it is not discipline, nor knowledge nor the efforts to freedom that liberate but Truth is what liberates you from all your conditioning and ignorance.

The overall significance of Shri Dharmasthala Manjunatheshwara University's Logo is:

Darkness of ignorance is destroyed by the flow of knowledge to bring Liberty to everyone, by realizing the truth. And, it should spread globally without the



SHRI
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VISION

Shri Dharmasthala Manjunatheshwara University will set the highest standards of teaching and learning by awakening the intelligence of the students and nurturing the creativity hidden in them by creating an environment where the ancient wisdom blends with modern science, to transform them into whole human beings to face the challenges.

MISSION

- ▶ To ensure that the journey of education is inspiring, pleasant and enjoyable.
- ▶ Attract the best of teachers and students.
- ▶ Achieve high principles of trust, love and spirituality in the students.
- ▶ Create a collaborative, diverse and exclusive community.
- ▶ Transform the student of today to be a leader of tomorrow and a better human being.
- ▶ Produce passionate teachers.
- ▶ Evolve innovative teaching techniques.
- ▶ Create a peaceful environment.
- ▶ Prepare the student to face the social challenges.
- ▶ Create a University of which the Nation is proud of.
- ▶ Be an effective partner in Nation Building.
- ▶ Create an Eco-friendly University.
- ▶ Create a University based on the principles of beauty, love and justice.

||Om Shanti! Om Shanti! Om Shanti||



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SDMU/ACD/F-4/Notfn.-339/681/2023

Date: 01.12.2023

NOTIFICATION

Ordinance Governing Curricula of Superspeciality programs

Ref: 1. Minutes of the 8th Meeting of Academic Council held on 10/11/2023

In exercise of the powers conferred under Statutes 1.4 (Powers and functions - Section ix & x) of Shri Dharmasthala Manjunatheshwara University, the Academic Council is pleased to approve & notify the ordinance governing the Curricula of the Superspeciality programs as below:

Sl. No.	Program	Intake
1	M.Ch. Plastic Surgery	03
2	M.Ch. Pediatric Surgery	02
3	DM Nephrology	03

The ordinance shall be effective for the students joining the course.

Dr. Chidendra M. Shettar *M.S. (Ortho.), FRCS (GLASG).*

REGISTRAR
REGISTRAR

Shri Dharmasthala Manjunatheshwara
University, Dharwad

To: The Principal, SDM College of Medical Sciences & Hospital

Copy for information to:

1. Hon'ble Chancellor, Shri Dharmasthala Manjunatheshwara University
2. Vice Chancellor, Shri Dharmasthala Manjunatheshwara University
3. Director Administration, Shri Dharmasthala Manjunatheshwara University
4. Pro Vice-Chancellor (Academics), Shri Dharmasthala Manjunatheshwara University
5. Controller of Examinations, Shri Dharmasthala Manjunatheshwara University
6. Chairperson, Board of Studies - Superspeciality
7. University Records file



DEPARTMENT OF PEDIATRIC SURGERY

Curriculum for M.Ch in Pediatric Surgery

I. GOAL:

The aims and objectives of M.Ch. training should be to train candidates with knowledge in surgical sciences and an aptitude to care for neonates and children with specific knowledge, skills and attitudes in the specialty of Pediatric Surgery. The training should help him/her to function as a safe Pediatric surgeon, an independent clinical consultant, a medical teacher and conduct research studies.

II. OBJECTIVES:

The aim of course is to produce Pediatric surgeons who are capable of setting a standard and demonstrate commensurate expertise in the field. The training should aim to facilitate the candidate's acquisition of a judicious mix of the three domains of learning that will be practiced ethically-

1. Cognitive (knowledge),
2. Psychomotor (practice) and
3. Affective (communication)

1. Cognitive domain (Knowledge)

- Understand the basic sciences (embryology, anatomy, physiology, biochemistry, pharmaco-therapeutics etc.) and principle of pediatric medical care as applicable to pediatric surgical practice.
- Be conversant with the embryology, etiology, pathophysiology, diagnosis and management of common neonatal and pediatric surgical problems - elective or emergency.
- Group approach: Recognize the role of multidisciplinary and interdisciplinary approach in the management of various pediatric surgical disorders so as to obtain relevant specialist consultation, where appropriate.

- Research Methodology: Basic knowledge of research methodology and biostatistics; familiarity and participation in clinical and experimental research studies; involvement in scientific presentation and publication.
- Recognize the importance of family, society and socio-cultural environment in the treatment of the sick child.

2. Psychomotor domain (Practical)

- Evaluate a patient thoroughly (history, clinical examination), order relevant investigations and interpret them to reach a diagnosis and plan of management.
- Plan and carry out simple investigations/ procedures (bedside, laboratory, radiology suite) independently.
- Provide Basic and Advanced Life Support services in emergencies e.g., NALS, PALS.
- Acquire familiarity with and provide critical care of surgical neonates and infants - airway support, ventilation, central vascular access etc.
- Prepare a patient for an elective/emergency surgery and provide specific postoperative care.
- Provide counseling to the patient and primary caretakers for the smooth dispensation of medical care.
- Acquire skills in routine ward procedures (e.g., bladder catheterization, wound dressings, peripheral vascular access, child restraint etc.).
- Acquire proficiency in prescribed minor and major operative procedures, and provide these, initially with assistance and later independently.
- Monitor the post-operative patient in the routine post-op ward / high dependency unit / and in the intensive care setting.
- Provide specific and relevant advice to the patient and family at discharge time for proper domiciliary care, hospital reporting in emergency and routine follow up.

2. Affective domain (Communication)

- Develop and practice effective communication skills.
- Professionally interact and obtain relevant specialist/ancillary services' consultation where appropriate.
- While teaching others in a clinical care unit, ensure team work and establish a pediatric surgical unit.
- Establish effective communication with the caregivers of the patient including counseling and terminal care.
- Medical Ethics and Human values: The student will inculcate ethical principles in all aspects of pediatric surgical practice/research (professional honesty and integrity, humility, moderation, informed consent, counseling, awareness of patients' rights and privileges, etc.).

SUBJECT SPECIFIC COMPETENCIES:

- Competencies to be acquired in basic sciences applicable to Pediatric Surgery:

a) Genetic basis of disease

b) Molecular biology applicable to congenital anomalies

c) Fetus as a patient

- Antenatal diagnostic tools
- Antenatal prognosticators
- Fetal interventions

d) Normal and anomalous embryogenesis of all systems:

- Gastrointestinal tract
- Hepatobiliary and pancreas
- Respiratory system including diaphragm and related Cardiovascular system
- Genito-urinary tract, including descent of testes, sexual differentiation.
- Lymphatic system
- Face and neck including lip, palate, branchial and thyroglossal apparatus
- Abdominal wall, umbilicus and inguinal canal
- Central nervous system and spine

e) Surgical anatomy of all above mentioned systems

f) Physiology and biochemistry

- Physiology of fetus and newborn including transition from former to latter
- Gastrointestinal physiology including deglutition, esophageal motility, antireflux mechanism, intestinal motility & defecation and neuroenteric regulation
- Altered biochemistry in intestinal obstruction
- Hepatic function including bilirubin metabolism.
- Physiology of micturition and neurogenic regulation of same
- Biochemical changes in obstructive uropathy and renal failure.
- Cardiovascular physiology including fetal & neonatal cardiac function
- Pulmonary physiology and basis of mechanical ventilation
- Fluid and electrolyte balance.
- Hemolytic disorders
- Nutritional requirements in health and disease including parenteral nutrition.
- Sexual differentiation including biochemical aspects in anomalous conditions.
- Physiological changes during pre-operative and post-operative period and changes during different types of anesthesia and laparoscopic surgery

g) Microbiological principles governing:

- Pathophysiology of sepsis in neonates, infants and children, and inflammatory response,
- Maintenance of asepsis, sterility in newborn nursery, ward and operation theatre,
- Sterilization of surgical instruments including endoscopes & ventilators,
- Common surgical infections, including osteomyelitis and septic arthritis,
- Surgical tuberculosis including atypical mycobacterial infection,
- AIDS/HIV in Pediatric Surgery,
- Parasitic surgical conditions,

- Elements of immunology including its importance in organ transplantation & immunosuppression,
- Immunization and vaccination.

➤ Trauma

A. General principles of trauma

Upon completion of this, the trainee should be able to describe & discuss:

- Epidemiology of Pediatric trauma
- Different types of trauma, presentation
- Acute care of trauma patients including immediate assessment, triaging, evaluation tools to be used, scoring systems and prognostications

B. Systemic trauma

Upon completion of this, the trainee should be able to describe & discuss the different types of trauma pertaining to, their management, indications for surgery, outcomes of:

- Head injury
- Thoracic injuries including airway, chest wall and mediastinum
- Abdominal injuries including blunt and penetrating, solid and hollow viscera, retroperitoneum
- Genitourinary trauma including kidney, ureter, bladder, urethra and genital organs
- Musculoskeletal and spine trauma
- Burns
- Child abuse
- Soft tissue and envenomation

➤ **Pediatric Oncology**

A. General principles

Upon completion of this, the trainee should be able to describe & discuss:

- Genetic basis of tumours
- Tumour markers
- Principles and application of chemotherapy including toxicities of routinely used chemotherapeutic drugs
- Principles and application of radiotherapy including toxicities of routinely used radiotherapy
- Immuno-therapy
- Gene therapy and newer modalities of treatment
 - Various evaluation modalities in Oncolog
 - Long term follow -up of the cancer survivors
 - Palliative care for end stage disease

B. Systemic oncology

Upon completion of this, the trainee should be able to describe & discuss in detail the presentations, staging, prognostication, various treatment systems applicable to specific tumours:

- Wilms' tumour
- Neuroblastoma
- Liver tumours
- Rhabdomyosarcomas and other soft tissue tumours
- Germcell - tumours
- Rare tumours related to retroperitoneum, parotid, plura etc.,
- Endocrine tumours: Ex. Pancreas, parathyroid glands, adrenal glands etc.,
- Vascular malignancies

Upon completion of this, the trainee should be able to describe & discuss an outline of the presentation and management of the following tumours:

- Common lymphomas and leukemias
- Common bone tumours
- Central nervous system tumours

➤ **Evaluation methods in Pediatric Surgery**

A. Radiology

Upon completion of this, the trainee should be able to describe & discuss the principles of, applications, pitfalls, modifications in specific situations, how to carryout various investigations and interpret:

1. X rays
2. Ultrasonography including Doppler
3. CT scan
4. Voiding Cystourethrography
5. Contrast upper and lower GI series
6. Intravenous pyelography
7. MRI
8. PET - CT scan

❖ **Radiological procedures**

Upon completion of the course, the post graduate student should be able to perform the following:

- Apply knowledge of imaging modality (USG, CT, MR) to investigate surgical diseases of childhood,
- Interpret the radiological images to correctly identify normal structures, abnormalities and pathology,

- Familiarity with conduct and interpretation of intra-operative imaging – radiography and ultrasonography,
- The postgraduate student should be able to perform certain investigative and therapeutic procedures in the radiology suite with due precautions –
 - Esophageal swallow
 - Upper GI contrast study
 - Contrast enema
 - Therapeutic contrast enemas in meconium ileus
 - Reduction of select idiopathic intussusception with radiological (air/contrast enema) or ultrasonography (hydrostatic)
 - Voiding cystourethrogram
 - Retrograde urethrogram
 - Antegrade studies through drainage tubes
 - Percutaneous drainage, biopsy
 - Reduction of intussusception under radiological guidance
 - Percutaneous nephrostomy tube placement
 - Central venous line placement under ultrasonogram guidance

B. Nuclear Medicine

Upon completion of this, the trainee should be able to describe & discuss the principles of, applications, pitfalls, modifications in specific situations, how to carryout various investigations and interpret:

1. Renal Dynamic Diuretic Radionuclide scintigraphy with various isotopes like EC, MAG3, DTPA
2. Static Cortical renogram - DMSA
3. Direct Radionuclide Cystography (DRCG)
4. Hepatobiliary scintigraphy
5. MIBG scan

6. Lymphatic scintigraphy
7. Thyroid scintigraphy
8. Gastro-esophageal reflux scintigraphy (GER scan)
9. RBC blood pool scan
10. Technetium Meckel's scan
11. PET scan
12. Liver-Spleen scan
13. Bone scan

C. Urodynamics

Upon completion of this, the trainee should be able to describe & discuss the principles of, applications, pitfalls, modifications in specific situations, how to carryout various investigations and interpret:

1. Uroflowmetry
2. Cystometrogram
3. Video urodynamics

C. Others

Upon completion of this, the trainee should be able to describe & discuss the principles of, applications, pitfalls, modifications in specific situations, how to carryout various investigations and interpret:

1. 24-hour pH monitoring
2. Esophageal and anorectal manometry
3. Intracranial pressure monitoring
4. Basics of pathological biopsies, examination including frozen section immunohistochemistry

➤ **Transplantation**

Upon completion of this, the trainee should be able to describe & discuss:

1. Principles of transplantation including immunology and selection of recipients
2. Organ procurement and preservation
3. Outcomes including complications of transplantation
4. Immuno-suppression and its toxicities
5. Indications, preparation of recipient, techniques and post transplantation management and outcomes of the following:
 - a) Kidney transplantation and liver transplantation in detail
 - b) An outline of pancreatic transplantation, intestinal transplantation, bone marrow transplantation, heart & heart-lung transplantation

➤ **Regional and Special Pediatric Surgery**

At the end of the training, the student should be able to describe, discuss, analyse and present pathogenesis, clinical presentations, differential diagnosis, diagnostic approach, roles of specific diagnostic tools, interpretation of the test results, management options (both non-operative and surgical), indications for surgery, preparation for surgery, peri- and post-operative management, surgical steps, complications and their management, outcomes (short and long - term) of the various congenital and acquired pathologies in each system as below (elaborated in detailed in the syllabus sections):

A: Head and Neck:

B: Thorax:

C: Abdomen:

D: Genitourinary Tract

E. Special Pediatric Surgery

➤ **Recent Advances**

Upon completion of this, the trainee should be able to describe & discuss the advanced technology, its applications in diagnosis and treatment, complication and research options related to the fields outlined above. In addition, he must be conversant with:

- Minimal Access surgery of all areas including laparoscopy, thoracoscopy, ventriculoscopy, STEALTH and endoscopic surgeries, gastrointestinal endoscopy including ERCP (endoscopic retrograde cholangiopancreatography), Bronchoscopy and Endourology.
- Robotics in Pediatric Surgery
- Use of newer energy sources in surgery including LASER, harmonic scalpel etc.
- Use of various types of staplers: Intestinal, Vascular, Endo GI etc.

➤ **Physiological studies:**

The post graduate student should be able to perform a uroflowmetry and cytometry with standard precautions and interpret the results real time.

➤ **Operative procedures:**

This includes elective, semi-emergency and emergency procedures.

- Minor surgery
- Major surgery
- Endoscopic procedures
- Minimally invasive surgery

The actual numbers performed may vary according to the patient load of the training unit and related departments.

At the end of his training period, the candidate must be able to PERFORM THE FOLLOWING PROCEDURES INDEPENDENTLY

General:

- Peripheral and central venous access, chemoport and Hickman catheter placement
- Arterial line placement
- Wound debridement and suturing
- Incision and drainage of abscess
- Excision of superficial lesions of skin / subcutaneous planes
- Limb amputation
- Percutaneous/open tumor, viscera (e.g., liver) and lymph node biopsy
- Skin grafting
- Fasciotomy
- Contracture release
- Muscle biopsy
- Nerve biopsy
- Umbilical vein cannulation
- Peritoneal dialysis catheter insertion
- Restraint of the sick child

Head and Neck:

- Salivary duct / orifice dilatation
- Ranula - marsupialization
- Release of ankyloglossia
- Sistrunk's procedure
- Excision of branchial remnants

- Excision of superficial head and neck masses
- Sternomastoid muscle release
- Diagnostic laryngoscopy
- Esophagostomy
- Cricothyroidotomy
- Injection sclerotherapy of accessible vascular lesions
- Tracheostomy

Thorax:

- Mastectomy / Surgical management of breast lump
- Bronchoscopy - diagnostic, lavage • Esophagoscopy - diagnostic
- Diagnostic thoracoscopy & lung biopsy
- ICTD insertion
- Repair of eventration diaphragm
- Decortication
- Primary repair of TEF
- Diversion for TEF – esophagostomy, gastrostomy
- Bronchoscopy - foreign body extraction
- Esophagoscopy - foreign body extraction, dilatation

Abdomen:

- Exploratory laparotomy for acute abdomen
- Laparoscopy - diagnostic, therapeutic minor
- Gastrostomy,
- Fundoplication
- Pyloromyotomy
- Ladd's procedure

- Repair of cong. diaphragmatic hernia - Bochdalek, Morgagni
- Per op cholangiogram
- Cholecystectomy, cholecystostomy
- Cystogastrostomy, cystojejunostomy
- Surgery for Vitello-intestinal duct remnants
- Feeding tube jejunostomy
- Ileostomy, colostomy
- Surgery for meconium ileus
- Mesenteric cyst excision
- Appendectomy
- Appendicular abscess – drainage
- Bowel resection, anastomosis
- Secondary suturing (burst abdomen)
- Surgery for inguinal hernias and hydrocele, Umbilical hernia, Femoral hernia
- Rectal biopsy
- Anoplasty for low anorectal malformation
- Splenectomy
- Abdominal wall defects reconstruction, silo application

Genitourinary:

- Cystoscopy - Diagnostic, stent removal
- Nephrostomy
- Suprapubic cystostomy
- Vesicostomy
- Urolithiasis- pyelolithotomy, cystolithotomy
- Meatotomy/meatoplasty

- Distal hypospadias repair
- Urethral fistula repair
- Urethral calibration / dilatation
- Circumcision, preputioplasty and dorsal slit, reduction of paraphimosis
- Orchidopexy- open
- Fowler Stephen Stage 1 (open, laparoscopic) orchidopexy
- Exploration for torsion testes, orchidectomy

Neurosurgery:

- Ventriculoperitoneal stunts.
- External ventricular drainage
- Repair of spina bifida

At the end of his training period, the post graduate student must be able to PERFORM THE FOLLOWING PROCEDURES UNDER SENIOR SUPERVISION:

General:

- Vascular anastomosis
- HD catheter insertion

Trauma:

- Laparotomy for trauma
- Thoracotomy for trauma

Head and Neck:

- Repair of cleft lip
- Repair of cleft palate
- Salivary gland excision
- Excision of lymphatic malformations/ neck masses

- Thyroidectomy
- Repair of H-type TEF

Thorax:

- Repair of Pectus Excavatum
- Repair of Pectum Carinatum
- Thoracoscopic procedures, VATS for empyema
- Mediastinal mass excisions
- Pulmonary resection
- Esophageal replacement.

Abdomen:

- Complex Abdominal wall defects management
- Surgery for varicocele
- Orchidopexy- lap assisted
- Duodeno-duodenostomy
- Neonatal small bowel atresia – resection, anastomosis
- Laparoscopy - therapeutic, major
- Pull through for Hirschsprung disease
- Excision of duplication cyst
- Operations for necrotizing enterocolitis
- Anorectal myectomy
- Surgery for high anorectal malformation: PSARP, ASARP, AP Pull through etc.
- Colonic resections
- Kasai's portoenterostomy
- Operations for choledochal cyst
- Liver abscess drainage
- Operation for liver hydatid

- Hepatic resection
- Operation for portal hypertension
- Operation for pancreatic pseudocysts
- Pancreatic resection
- Pancreatico-enteric anastomosis
- Adrenalectomy

Genitourinary:

- Nephrectomy Nephroureterectomy
- Partial nephrectomy
- Cystoscopy, fulguration of PUV
- Pyeloplasty
- Ureterocele incision
- Ureterostomy
- Ureteric reimplantation
- Urolithiasis - nephrolithotomy, ureterolithotomy
- Exstrophy repair (turn in)
- Bladder augmentation
- Mitrofanoff procedure
- Bladder neck repair
- Ureterosigmoidostomy
- Epispadias repair
- Colonic conduit
- Urethroplasty for Hypospadias
- Operation for intersex disorder
- Correction of penoscrotal transposition

Oncosurgery:

- Pediatric solid tumour surgery for Wilms' tumour, Neuroblastoma, Hepatoblastoma, Sacrococcygeal teratoma, Germ cell tumours, Thoracic tumours, Head & Neck tumours, Genitourinary tumours, Soft tissue tumours, Common bone tumours, Lymphomas.

Neurosurgery:

- Repair of encephalocele
- Repair of occult spinal dysraphism
- Extra ventricular drainage for infected ventricular system
- Endoscopic third ventriculostomy

In addition to the above procedures, the student must be familiar with, prepared a patient for and should have witnessed procedures like:

- UGI endoscopy
 - Diagnostic endoscopy and biopsy
 - Variceal sclerotherapy / banding
 - Gastrostomy tube placement
 - Endoscopic guided dilatation of oesophagus
- Colonoscopy- diagnostic/ polypectomy/biopsy ,
- Extracorporeal shock wave lithotripsy, Percutaneous nephrolithotomy.

III. TEACHING HOURS AND COURSE CONTENT:

Teaching programs will need to be held on all working days (at least one hour per day)

Activities
Journal Club
Didactic lectures
Seminars/ Webinars
Hospital (Grand Rounds/Clinical meeting/Audit meet)
Clinical Case Presentation/ presentation to multidisciplinary tumour boards
Disease management group discussion

SYLLABUS

Course contents:

A. Cognitive domain

The following is a broad outline of the syllabus:

1. Basic sciences as applied to Pediatric Surgery

- Medical genetics and gene therapy.
- Antenatal diagnosis and fetal intervention
- Developmental and transitional physiology of the respiratory, cardiovascular and renal systems
- Neonatal physiology and assessment of the surgical neonate.
- Neonatal sepsis
- Nutrition – enteral, parenteral
- Vascular access
- Principles of imaging (radiodiagnosis, nuclear) in Pediatric practice
- Pharmacology and use of common drugs, antibiotics and policy

- Pediatric analgesia and anaesthesia, critical care, mechanical ventilation
- General principles of Endoscopy and Minimal Access Surgery – fetoscopy, genitourinary endoscopy, tracheo-bronchoscopy, laparoscopy, thoracoscopy, robotic surgery
- Biomedical ethics and legal issues in Pediatric surgical practice.
- The organization of a Pediatric Surgical unit
- HIV/AIDS in children
- National health policy-programs pertinent to Pediatric practice
- Telemedicine and telesurgery - principles, practice and limitations

2.Trauma

- Birth trauma
- Pediatric trauma – general principles.
- Thoracic, abdominal, genitourinary, central nervous system trauma
- Soft tissue and envenomation injuries
- Musculoskeletal and vascular trauma
- Burns
- Child abuse.
- Management of basic pediatric wounds

3.Pediatric Oncology

- General principles of oncology, radiotherapy and chemotherapy
- Wilms' tumor
- Neuroblastoma
- Liver tumours
- Rhabdomyosarcoma
- Germ cell tumours

- Other tumor of childhood (outline)-Leukemias, Lymphomas, Bone tumours, CNS
- Retinoblastoma

4. Transplantation

- General principles
- Kidney and liver transplantation
- Outline of other solid organ and bone marrow transplantation

5. Head and Neck Disorders

- Craniofacial anomalies
- Cleft lip and palate
- Disorders of the upper airway and oral cavity.
- Pierre Robin syndrome
- Epulis
- Tongue tie
- Salivary glands
- Disorders of lymph nodes.
- Thyroid and parathyroid gland
- Cysts and sinuses of the neck
- Torticollis
- Management of functional swallowing disorder
- Laryngeal/ tracheomalacia
- Laryngo tracheal clefts
- Choanal atresia

6.Thoracic Disorders

- Congenital chest wall deformities.
- Disorders of the breast.
- Diaphragmatic hernia and eventration
- Mediastinal mass lesions.
- Endoscopy of the upper aerodigestive tract.
- Congenital tracheal and Bronchopulmonary/ foregut malformations
- Infective pleuro-pulmonary condition.
- Congenital oesophageal anomalies
- Tracheoesophageal fistula
- Management of empyema thoracic
- Management of neurogenic cyst
- Video assisted thoracoscopic surgery
- Congenital tracheo bronchial stenosis
- Oesophageal motility disorders, achalasia cardia, gastro-esophageal reflux
- Oesophageal rupture, injury, stricture, perforation.
- Oesophageal replacement.

7.Abdominal Disorders

- Umbilical disorders and abdominal wall defects.
- Inguinal hernias and hydroceles
- Testicular maldescent, torsion
- Hypertrophic pyloric stenosis.
- Duodenal atresia, annular pancreas.
- Jejunioileal atresia and stenosis

- Meconium ileus
- Meckel's diverticulum
- Intussusception
- Disorder of midgut rotation
- Short bowel syndrome
- Gastrointestinal endoscopy and laparoscopy
- Gastrointestinal bleeding
- Gastrointestinal duplications.
- Mesenteric and omental cysts
- Ascites
- Polypoid disease of the GIT
- Necrotising enterocolitis.
- Intestinal stomas
- Primary peritonitis.
- Inflammatory bowel disease in children.
- Colonic atresia and functional obstruction.
- Appendicitis
- Hirschsprung disease, neuromuscular disorders of intestines
- Anorectal malformations.
- Congenital short colon /pouch colon
- Childhood obesity
- Childhood constipation
- Colonic and rectal tumours
- Neonatal/Infantile obstructive cholangiopathy
- Neonatal disease
- Congenital biliary dilatation.

- Infective and inflammatory hepatobiliary disorders
- Vascular region
- Lymphatic malformation
- Benign liver tumours
- Portal hypertension
- Disorders of the pancreas
- Splenectomy and post-splenectomy sepsis.
- Adrenal gland
- Obesity surgery in pediatrics

8. Genitourinary and related disorders

- Renal agenesis, dysplasia, cystic disease, ectopia
- Pelvic ureteral junction obstruction
- Vesicoureteric reflux
- Infective and inflammatory renal disorder.
- Pediatric urolithiasis
- Congenital ureteric anomalies.
- Prune belly syndrome
- Urinary diversion and undiversion, bladder augmentation
- Disorders of bladder function.
- Structural bladder disorders
- Management of Neurogenic bladder
- Urodynamic studies
- Exstrophy – epispadias complex
- Hypospadias.
- Anomalies of the external genitalia

- Disorders of Sex Differentiation
- Abnormalities of the female genital tract.
- Traumatic urethral stricture

9. Miscellaneous Pediatric Surgical Disorders

- Spina bifida
- Hydrocephalus- VP shunt, endoscopic third ventriculostomy
- Congenital heart disease
- Congenital orthopaedic deformities
- Amputation, bone and joint infections
- Conjoined twins
- Hemangiomas & vascular malformations.

1 TEACHING AND LEARNING METHODS

General principles - Acquisition of practical competencies being the cornerstone of post graduate medical education, PG training should be skills oriented. Learning in PG program should be essentially self-directed and primarily emanating from clinical and academic work. The formal sessions are merely meant to supplement this core effort. The post graduate student should be given the responsibility of managing and caring for patients in a gradual manner under supervision.

Formal teaching sessions: Include regular bedside case presentations and demonstrations, didactic lectures, seminars/Webinars, journal clubs, clinical meetings, and combined conferences with allied departments, Audit meet, clinical case presentation etc. as schedule given below:

Didactic Lectures by faculty: Lectures covering recent advances in all aspects of pediatric surgical conditions would be taken by faculty. All post graduate students will be required to attend these lectures.

Short term courses on the following basic and clinical aspects includes:

- Research methodology and bio-statistics
- Laboratory medicine techniques/courses relevant to Pediatric Surgery
- Use of computers/ data science management in medicine,
- Bioethics, ethical issues involved in pediatric surgery
- Hospital waste management,
- Health economics.

1. The M.Ch. Pediatric Surgery training program will include two main arms:

1.1. Formal training and learning

1.2. Experiential learning

1.1. **Formal training and learning** will include the topics listed in the syllabus: The **modalities for formal training** will be as follows:

1. **Seminars/Webinars:** To be held once a week and presented by the trainee under supervision of teaching faculty.
2. **Journal Review:** To be held once a week under supervision of teaching faculty. It should include discussion on recent articles, which relate to various topics in Pediatric Surgery and allied disciplines.
3. **Clinical Case presentation:** Representative clinical cases shall be presented and discussed in detail in presence of faculty during rounds/ grand rounds/pre-operative.
4. **Operative procedures:** This session, would be conducted once a month or as and when there is rare major cases or as part of treatment planning. Aim is to discuss common operative procedures with practical procedure and some the rare surgical procedures.

5. **Treatment Planning:** The trainee must discuss the planning of a given patient who is being worked up for surgery. The idea of this academic exercise is to familiarize the trainee with the objectives of planning in a given patient through group discussion/ multidisciplinary tumour boards based on evidence-based medicine.
6. **Pediatric Radiology/Nuclear Medicine** combined would be held once a week in which the radiological and nuclear medicine investigations of various cases are discussed in consultation with the faculty of Radiology and Nuclear Medicine on alternate weeks of the month.
7. **Clinical grand rounds:** A clinical grand round, involving presentation of unusual, difficult cases, review and follow-up of all the cases in the ward that point of time to be done by a post graduate student, once a week, in the presence of all the clinical staffs belonging to the department of Pediatric surgery. The exercise is to develop the clinical acumen of the trainee.
8. **Clinico-pathological conference:** Special emphasis is made on the surgical pathology; histology review and autopsy discussions will be held once a month along with the department of pathology.
9. **Lecture/discussion:** Lectures on newer topics by faculty, in place of seminar, will be arranged as per need.
10. **Tumour board meetings:** Aims at exposing the trainees to multi-modality treatments in pediatric solid organ tumours.
11. **Antenatal disease management group for management of congenital abnormalities:** aim is to expose trainee antenatal consultation and involved multi-specialty group to deal with the congenital abnormalities.
12. **Teaching and training responsibilities (Pedagogy skills):** A final year M.Ch. trainee will be entrusted with the responsibilities of teaching post graduate students of General Surgery and allied disciplines.

13. **Training in research methodology:** The purpose of the exercise is to impart proficiency in research methodology to the trainee. This would be a mandatory component of training. All M.Ch. trainees must complete research projects as per requirement of concerned Universities, under the supervision of a principal supervisor and appropriate number of co-supervisors which would enable the trainee to attain proficiency in collecting clinical / experimental data and analyze them in a scientific way using appropriate statistical methods.
14. **Attendance and presentation at academic meets:** The student must attend accredited scientific meetings (CME, symposia, and conferences) once or twice a year. He/She should present at least one poster or read one paper at a national/state conference in Pediatric Surgery or sub-speciality (Pediatric Urology, Pediatric Surgical Oncology, Pediatric Endoscopic group, pediatric surgery academic and research group) during the second and third year of the training period.
15. **Research Publication (Research skills):** A student has to present one paper which is published/accepted for publication/sent for publication during the period of his postgraduate studies so as to make him eligible to appear at the postgraduate degree examination. The research has to be done under the direct supervision of the supervisor or his associate(s). Through this exercise, the trainee would learn how to collect and analyze data, make observations in a scientific manner, and use appropriate statistical methodology. The trainee would learn the art of putting the outcome of observations and results in an appropriate format of a scientific paper that is relevant to a particular journal.
16. **Use of Skills lab stations:** The trainees are encouraged to use skills labs that would facilitate training and acquisition of both common (e.g. endotracheal intubation, ICT drainage, Central line insertion) skills in real life situations and uncommon skills (laparoscopic suturing, cricothyroidotomy etc.) that the student may not encounter often.
17. **Mortality and morbidity (Audit) meetings:** Departmental and interdepartmental / institutional

1.2. Experiential learning

Trainee will be posted in the following allied specialities. The total duration of these postings shall not exceed three months. There is no specified compulsory posting in Emergency Medicine/Casualty; however, the student will attend the emergency cases pertaining to/referred to their department at the Emergency/ Casualty in the course of the routine clinical duties.

1. **Pediatric Intensive Care Unit: Duration- 2-4 weeks.** This is intended to familiarize the student to the principles of pediatric medical intensive care and its applications to pediatric surgical care.
2. **Neonatology Intensive Care Unit: Duration- 2-4 weeks.** During this posting, the candidate will receive training on care of the sick neonates, particularly premature and small for date.

3. Optional External Posting:

- I. **Craniofacial unit SDM College of Dental sciences 2 weeks**
- II. **Urology and Renal transplant Unit 2 weeks**
- III. **Pediatric Surgical Oncology Unit:** Any of the reputed high-volume unit in the country (i.e.- Tata Memorial Hospital, PGIMER- Chandigarh, Maulana Azad Medical college, New Delhi)- 4 weeks

4. Administrative experience: The final year post graduate student should be entrusted with administrative responsibilities including preparation of academic programme, patient management, functioning of the ward and outpatient department. These may include:

- Admission of patients,
- Preparing the operation theatre lists,
- Improving the functioning in the ward through the supervisor,
- Preparing list of topics for teaching of junior trainees posted in the department,
- Organizing the posting of trainees in various work stations of the department as per the demand of the situation.

5. Log Book: The trainees must maintain a log book / e-log book of the work carried out by them and the training program undergone during the period of training including details of the surgical operations assisted or done independently. The log book should be checked and assessed periodically by the faculty members imparting the training.

During the training programme, patient safety is of paramount importance; therefore, skills are to be learnt initially on the models, later to be performed under supervision followed by performing independently. For this purpose, provision of skills laboratories in medical colleges is mandatory.

6. As trainee would have completed thesis in General Surgery Post Graduation course, thesis is not mandatory but have to fulfill research publication requirements.

IV. SCHEME OF EXAMINATION:

ASSESSMENT

A. FORMATIVE ASSESSMENT during the training includes:

- | | |
|-----------------------------------|--------------------------------------|
| • Personal attributes | Ongoing after each clinical posting |
| • Clinical skills and performance | -do- |
| • Academic activities | -do- |
| • Theory assessment | End of 1-, 2- and at 2years 9 months |
| • Practical assessment | -do- |

Clinical skills and performance, academic performance and personal attributes shall be graded on a scale of 1 to 5 (5 being the highest). The academic presentations shall be graded at the time of presentation by the faculty in-charge. Evaluation on clinical skills and personal attributes etc. shall be done by the unit/department in-charge at the end of every semester. The student to be assessed periodically as per categories listed in post graduate student appraisal form (Annexure I).

B. SUMMATIVE ASSESSMENT at the end of the training will be as follows: The **M.Ch. examination** shall be in two parts:

1. Theory: There shall be four theory papers as follows:

Paper I: Basic Sciences in Pediatric Surgery, Trauma, Transplantation

Paper II: Regional Pediatric Surgery (Head and Neck, Thorax), Pediatric Oncosurgery

Paper III: Regional Pediatric Surgery (Abdomen, Genitourinary)

Paper IV: Recent advances in Pediatric surgery

The theory examination shall be held in advance before the clinical and practical examination, so that the answer books can be assessed and evaluated before the commencement of the clinical/practical/oral examination. The post graduate students for M. Ch in Pediatric surgery will be examined also in surgical procedures.

2. Practical: The practical examination should consist of the following and will be spread over two days, if the number of candidates appearing is more than one:

- a. Four cases from various sections of Pediatric surgery/subspecialities: History taking, physical examination, interpretation of clinical findings, differential diagnosis, investigations, prognosis and management. (One long and two short cases)
- b. Ward rounds comprising of discussion of practical problems in the management of pediatric patients undergoing surgery.
- c. Viva-voce examination
 - Instruments and operative procedures
 - Radiology and imaging
 - Surgical Pathology
 - Logbook evaluation

3. Theory and Practical examination will be conducted as per university guidelines.

Other recommendations: Systematic and periodic formative assessment will be done every 12 months and feedback should be given to trainee.

V. SELF-DIRECTED LEARNING

- a. History of medicine with special reference to ancient Indian texts
- b. Health economics - basic terms, health insurance
- c. Medical sociology, doctor-patient relationship, impact of the ailment on the family members of the afflicted, organizational behavior, conflict resolution
- d. Computers - record keeping, computer aided learning, virtual reality, robotics
- e. Hazards in hospital and protection:
- f. AIDS, hepatitis B, tuberculosis, radiation, psychological
- g. Environment protection - bio-medical waste management
- h. Surgical audit, evidence based surgical practice, quality assurance
- i. Concept of essential drugs and rational use of drugs
- j. Procurement of stores and material & personal management
- k. Research methodology - library consultation, formulating research, selection of topic, writing thesis protocol, preparation of consent form from patients
- l. Bio-medical statistics, clinical trials
- m. Medical ethics
- n. Consumer protection
- o. O.T. design, technologies, equipment
- p. Brain death
- q. Organ transplantation: Basic principles including cadaver donation, related Human Organ Transplant Acts, ethical and medico legal aspects
- r. Telemedicine, tele proctoring and e-learning

VI. RECOMMENDED TEXT BOOKS, REFERENCE BOOKS AND ATLAS

Recommended Reading:

Books (latest edition)

- 1) Coran AG, Adzick NS, Krummel TM, Laberge JM, Shamberger RC, Caldamone AA. Pediatric Surgery, 7Ed: Elsevier - Health Sciences Division; 2012.
- 2) Holcomb GW, Murphy JP, Peter SD. Holcomb and Ashcraft's Pediatric Surgery, 7Ed: Elsevier; 2019.
- 3) Hutson JM, Brien MO, Woodward AA, Beasley SW. Jones Clinical Pediatric Surgery: Diagnosis and Management, 6Ed: Wiley-Blackwell;2008.
- 4) Docimo SG, Canning D, Khoury A, Salle JLP. The Kelalis-King-Belman Textbook of Clinical Pediatric Urology, 6Ed: CRC Press; 2018.
- 5) Pizzo PA, Poplack DG, Adamson PC, Blaney SM, Helman L. Principles and Practice of Pediatric Oncology, 7Ed: Wolters Kluwer; 2016.
- 6) Davenport M, Spitz L, Coran A. Operative Pediatric Surgery, 7 Ed: CRC Press;2013
- 7) Holcomb GW, Rothenberg SS. Atlas of Pediatric Laparoscopy and Thoracoscopy, 2 Ed: Elsevier;2021.
- 8) Eichenwald EC, Hansen AR, Stark AR, Martin C. ClohertyandStark's Manual of Neonatal Care, 8Ed: Wolters Kluwer; 2017.
- 9) Kliegman RM, Stanton BMD, Geme JS, Schor NF. Nelson Textbook of Pediatrics: Elsevier Health Sciences, 21 Ed; 2019.
- 10) Farquharson M, Hollingshead J, Moran B. Farquharson's textbook of Operative General Surgery, 10 ed: CRC Press;2015.
- 11) Gray SW, Skandalakis JE. Embryology for surgeons: the embryological basis for the treatment of congenital defects, 2 ed: Lipincott Williams and Wilkins; 1994.
- 12) Glover T, Mitchell K. An Introduction to Biostatistics, 3 ed: Waveland Press;2015.
- 13) David L. Katz, Joann G. Elmore, Wild D, Sean C Lucan. Jekel's Epidemiology, Biostatistics, Preventive Medicine, and Public Health: Elsevier Health Sciences; 2013.
- 14) Coley BD. Caffey's Pediatric Diagnostic Imaging, 13 ed: Elsevier; 2018.
- 15) Husain AN, Dehner LP. Stocker and Dehner's Pediatric Pathology, 5 ed: LWW; 2021.
- 16) Holschneider AM, Hutson JM. Anorectal Malformations in Children: Embryology, Diagnostics, Surgical Treatment and Follow up: Springer, 2006.

- 17) Puri P. Newborn Surgery, 4 ed: CRC Press;2019.
- 18) Hadidi A, David MA. Hypospadias Surgery: An Illustrated Guide: Springer;2013.
- 19) Barry P, Morris K. Pediatric Intensive Care (Oxford Specialist Handbooks in Pediatrics), 1 ed: Oxford University Press; 2017.
- 20) Papandria DJ, Besner GE, Moss RL, Diefenbach KA. Operative Dictations in Pediatric Surgery, 1 ed: Springer; 2019.

Journals

3-5 international and two national journals (all indexed).

- **Essential**

- Journal of Indian Association of Pediatric Surgeons
- Journal of Pediatric Surgery
- Pediatric Surgery International
- European Journal of Pediatric Surgery
- Journal of Pediatric Urology
- Seminars in Pediatric Surgery
- British Journal of Urology
- International Indian Pediatrics
- Indian Journal of Pediatrics

- **❖ Optional**

- The Journal of Pediatrics
- Pediatrics
- Pediatrics Clinics of North America
- Any other relevant journal pertaining to pediatric surgery



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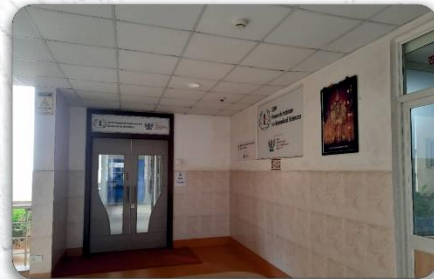
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Shri Dharmasthala Manjunatheshwara University



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