



Department of Cardiology & Cardio Thoracic Vascular Surgery

S.No	Name of the Fellowship	Eligibility	Duration	Fee(₹)
01	Fellowship in Fetal Cardiology	DM/DNB Cardiology, Pediatric Cardiology, Neonatology	1 yr	1,00,000
02	Fellowship in Interventional Cardiology	DM/DNB Cardiology, M.Ch./DNB CVTS	1 yr	1,00,000
03	Fellowship in Cardiac Imaging	MD/DNB Radio-Diagnosis, DM/DNB Cardiology	1 yr	1,00,000
04	Fellowship in Cardiac Electro Physiology	DM/DNB Cardiology	1 yr	1,00,000
05	Fellowship in Pediatric Cardiovascular Surgery	M.Ch/DNB in CTVS	1 yr	1,00,000
06	Fellowship in Vascular & Endovascular Surgery	MS/DNB Gen surg, M.Ch./DNB CTVS	1 yr	1,00,000
07	Fellowship in Minimal Invasive Cardiac Surgery	MS/DNB Gen surg, M.Ch./DNB CTVS	1 yr	1,00,000
08	Fellowship in Micro Vascular Reconstructive Surgery	MS/DNB Gen surg, M.Ch./DNB CTVS, Plast Surg	1 yr	1,00,000



Fellowship in Fetal Cardiology

Course Overview

The Fellowship in Fetal Cardiology is a one-year specialized program designed to train healthcare professionals in the diagnosis, management, and intervention of congenital heart diseases in fetuses. The course integrates advanced imaging techniques, prenatal diagnostics, and fetal cardiac interventions, providing hands-on experience in fetal echocardiography and multidisciplinary fetal care.

Prerequisites

Criteria	Details
Eligibility	MBBS with DM/DNB in Cardiology, Pediatric Cardiology or Neonatology
Duration	1 Year
Mode of Study	Clinical, Theoretical, Hands-on Training
Assessment	Theory, Practical Exams, Clinical Logbook, Research Project

Course Objectives

- Master the principles and applications of fetal echocardiography.
- Gain expertise in the diagnosis and management of congenital heart diseases in utero.
- Learn advanced imaging techniques including Doppler and 3D/4D echocardiography.
- Develop proficiency in fetal cardiac interventions and prenatal counseling.
- Understand ethical, legal, and multidisciplinary approaches in fetal cardiology.
- Conduct research to advance the field of fetal cardiac care.

Semester-wise Curriculum

Semester 1: Fundamentals of Fetal Cardiology

Module	Topics Covered
Basics of Fetal Cardiac Development	Embryology, physiology, and hemodynamics
Fetal Echocardiography Techniques	2D, Doppler, and 3D/4D imaging
Common Congenital Heart Defects	Diagnosis of CHDs in utero
Fetal Cardiac Arrhythmias	Identification and management
Clinical Rotations – Fetal Imaging	Hands-on training in fetal echocardiography



Semester 2: Advanced Fetal Cardiology & Interventions

Module	Topics Covered
Fetal Cardiac Interventions	In-utero procedures and postnatal planning
Doppler & Functional Assessment	Flow dynamics, cardiac function evaluation
Ethical & Multidisciplinary Care	Genetic counseling, maternal-fetal medicine
Research Project & Case Studies	Literature review, clinical case presentations

Program Outcomes

Sr. No.	Program Outcome	Description
1	Expertise in Fetal Echocardiography	Master 2D, 3D/4D, and Doppler imaging techniques
2	Diagnosis of Congenital Heart Diseases	Identify and assess CHDs in utero
3	Fetal Cardiac Intervention Skills	Perform intrauterine cardiac procedures
4	Multidisciplinary Fetal Cardiac Care	Collaborate with obstetrics, neonatology, and genetics
5	Ethical & Legal Competency	Adhere to guidelines for fetal interventions
6	Research & Innovation in Fetal Cardiology	Contribute to advancements in the field

Course Outcomes

Sr. No.	Course Outcome	Description
1	Mastery in Fetal Imaging Techniques	Proficiency in advanced fetal echocardiography
2	Expertise in Fetal Cardiac Diagnosis	Knowledge of CHD pathophysiology & evaluation
3	Risk Assessment & Prognostic Evaluation	Evaluate fetal cardiovascular health
4	Research & Case Study Analysis	Conduct research in fetal cardiology
5	Multidisciplinary Team Integration	Work collaboratively for fetal care solutions
6	Ethical & Legal Understanding	Ensure adherence to compliance and safety



Credits & Assessment Methods

Component	Credits
Theory & Lectures	10
Clinical Rotations & Case Studies	10
Hands-on Training & Procedures	10
Research & Dissertation	10
Total Credits	40

Assessment Pattern

Assessment Type	Weightage
Theory Examination (MCQs, Long & Short Answer)	30%
Clinical & Practical Exam (Case-Based Discussion, OSCE)	30%
Clinical Logbook & Case Reports	20%
Research Presentation & Dissertation	20%

Passing Criteria: Minimum 50% in each component to qualify.

Exam Pattern

Theory Examination

- Section A (MCQs – 30 Marks)
- Section B (Short Answer Questions – 30 Marks)
- Section C (Long Answer Questions – 40 Marks)

Practical Examination

Component	Details	Marks
Clinical Case Presentation	Diagnosis & Management of Fetal Cardiac Conditions	40
Advanced Imaging Techniques	2D, Doppler, and 3D/4D Echocardiography	50
Fetal Cardiac Intervention	Prenatal Counseling & Interventional Planning	30
OSCE	Clinical Scenarios, Skill Demonstration	40
Adaptive Fetal Cardiology	Simulation & Patient-Specific Planning	40



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Viva Voce (Oral Examination) (Total: 100 Marks)

Component	Details	Marks
Case Presentations	Discussion on Fetal Cardiac Cases	50
Recent Advances in Fetal Cardiology	Journal Article Discussion	20
Ethical & Legal Considerations	Medical Ethics in Fetal Cardiology	30

Research/Dissertation Submission (Total: 100 Marks)

Component	Marks
Originality & Scientific Merit	30
Methodology & Data Analysis	30
Presentation & Discussion	20
Conclusion & Clinical Relevance	20

Final Weightage & Passing Criteria

Exam Component	Total Marks	Minimum Passing Marks
Theory (Paper 1 & 2)	200	50% (100/200)
Practical Exam	200	50% (100/200)
Viva Voce	100	50% (50/100)
Dissertation	100	50% (50/100)
Total (Overall)	600	50% Aggregate Required

Additional Notes

- To pass the fellowship, a minimum of 50% marks in each section (Theory, Practical, Viva, and Dissertation) is required.
- Distinction: Candidates scoring 75% and above will be awarded "Distinction."
- Failure in Practical or Viva: If a candidate fails in the practical or viva, they must reappear for the failed component in the next examination cycle.

Recommended Books & E-Resources

Textbooks

Title	Author(s)
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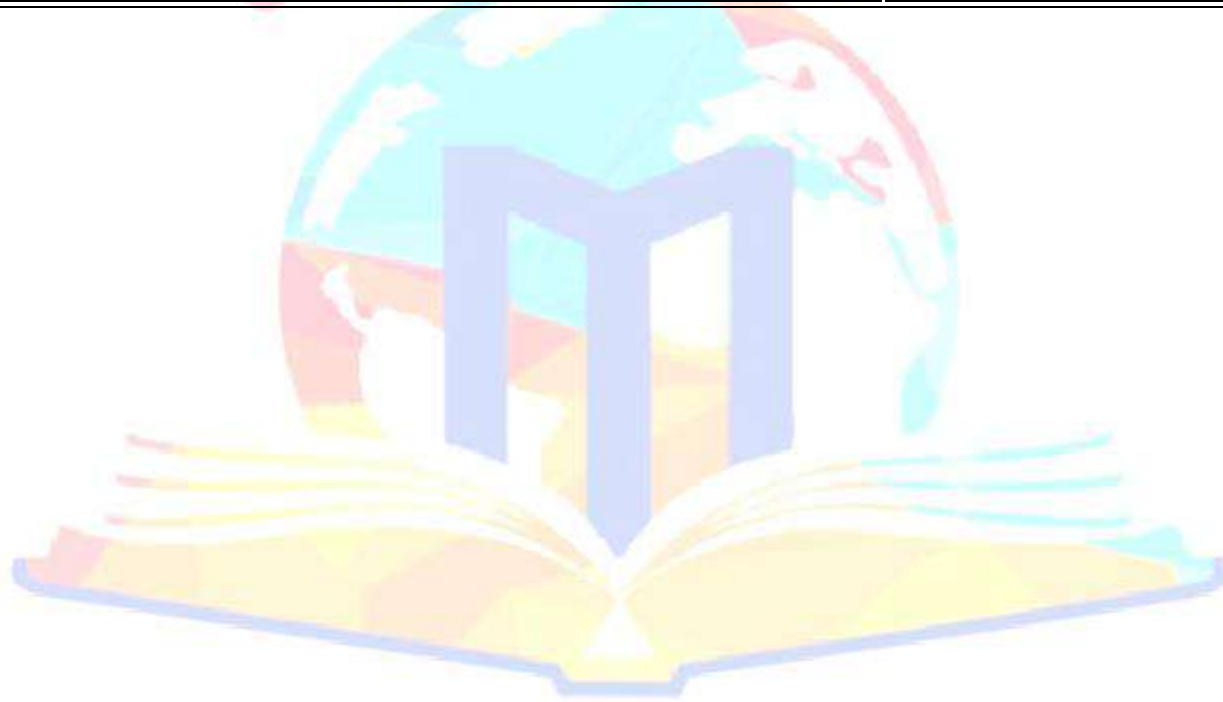


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Fetal Echocardiography	Julia A. Drose
Fetal Cardiology: Embryology, Diagnosis & Management	Lindsey Allan, Lisa Hornberger
Doppler Ultrasound in Obstetrics & Gynecology	Dev Maulik
Fetal Cardiology	Nick Archer, John Simpson

Journals & E-Resources

Resource	Website/Publisher
Journal of Pediatric Cardiology	Springer
Circulation: Cardiovascular Imaging	American Heart Association
International Society of Ultrasound in Obstetrics & Gynecology (ISUOG)	www.isuog.org
American College of Cardiology - Fetal Cardiology	www.acc.org





Fellowship in Interventional Cardiology

Course Overview

The Fellowship in Interventional Cardiology is a one-year specialized program designed to train healthcare professionals in advanced diagnostic and therapeutic catheter-based techniques for managing cardiovascular diseases. The program provides hands-on experience in percutaneous coronary interventions (PCI), structural heart disease interventions, and endovascular procedures, ensuring proficiency in cutting-edge interventional cardiology techniques.

Prerequisites

Criteria	Details
Eligibility	MBBS with DM/DNB in Cardiology or M.Ch./DNB in CTVS
Duration	1 Year
Mode of Study	Clinical, Theoretical, Hands-on Training
Assessment	Theory, Practical Exams, Clinical Logbook, Research Project

Course Objectives

- Gain expertise in interventional procedures, including angioplasty and stent placement.
- Develop proficiency in advanced imaging techniques such as IVUS and OCT.
- Understand the principles and applications of structural heart disease interventions.
- Learn to manage complications of interventional procedures effectively.
- Enhance skills in radiation safety, catheterization lab protocols, and patient care.
- Conduct research to advance innovative cardiovascular treatment methodologies.

Semester-wise Curriculum

Semester 1: Fundamentals & Core Techniques

Module	Topics Covered
Principles of Interventional Cardiology	Basics of catheterization, guidewires, and stents
Coronary Angiography & Hemodynamics	Techniques and interpretation
Percutaneous Coronary Interventions (PCI)	Angioplasty, stent deployment, and thrombectomy
Imaging Modalities in Interventions	IVUS, OCT, FFR, and contrast agents
Clinical Rotations – Cath Lab	Hands-on experience in diagnostic procedures



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Semester 2: Advanced Techniques & Specialized Applications

Module	Topics Covered
Structural Heart Disease Interventions	TAVR, MitraClip, and ASD/PFO closure
Endovascular & Peripheral Interventions	Carotid, renal, and lower limb angioplasty
Complications & Emergency Management	Managing procedural complications, embolism, restenosis
Radiation Safety & Cath Lab Protocols	Safety measures and contrast-induced nephropathy
Research Project & Case Studies	Literature review, clinical case presentations

Program Outcomes

Sr. No.	Program Outcome	Description
1	Expertise in Interventional Cardiology	Master angioplasty, stent placement, and PCI techniques
2	Proficiency in Advanced Imaging	Develop skills in IVUS, OCT, and FFR-guided interventions
3	Application of Structural Interventions	Perform TAVR, MitraClip, and ASD/PFO closure
4	Management of Procedural Complications	Handle restenosis, perforations, and emergency cases
5	Radiation Safety & Catheterization Techniques	Implement safety protocols and quality control measures
6	Research & Innovation in Interventions	Contribute to advancements in cardiovascular procedures

Course Outcomes

Sr. No.	Course Outcome	Description
1	Mastery in PCI Techniques	Proficiency in angioplasty and stent placement
2	Expertise in Imaging Modalities	Knowledge of IVUS, OCT, and FFR interpretation
3	Structural Heart Interventions	Ability to perform advanced catheter-based interventions
4	Complication Management	Skills in handling emergency cases in cath lab



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5	Research & Case Study Analysis	Conduct research in interventional cardiology
6	Ethical & Legal Understanding	Ensure adherence to compliance and safety

Credits & Assessment Methods

Component	Credits
Theory & Lectures	10
Clinical Rotations & Case Studies	10
Hands-on Training & Procedures	10
Research & Dissertation	10
Total Credits	40

Assessment Pattern

Assessment Type	Weightage
Theory Examination (MCQs, Long & Short Answer)	30%
Clinical & Practical Exam (Case-Based Discussion, OSCE)	30%
Clinical Logbook & Case Reports	20%
Research Presentation & Dissertation	20%

Passing Criteria: Minimum 50% in each component to qualify.

Exam Pattern

Theory Examination

- Section A (MCQs – 30 Marks)
- Section B (Short Answer Questions – 30 Marks)
- Section C (Long Answer Questions – 40 Marks)

Practical Examination

Component	Details	Marks
Clinical Case Presentation	Diagnosis & Management of Interventional Cases	40
Advanced PCI Techniques	Angioplasty, Stenting, IVUS/OCT	50
Structural Heart Interventions	TAVR, MitraClip, PFO Closure	30
OSCE	Clinical Scenarios, Skill Demonstration	40
Emergency Management	Procedural Complication Handling	40



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Viva Voce (Oral Examination) (Total: 100 Marks)

Component	Details	Marks
Case Presentations	Discussion on Interventional Cases	50
Recent Advances in Interventions	Journal Article Discussion	20
Ethical & Legal Considerations	Medical Ethics in Interventional Cardiology	30

Research/Dissertation Submission (Total: 100 Marks)

Component	Marks
Originality & Scientific Merit	30
Methodology & Data Analysis	30
Presentation & Discussion	20
Conclusion & Clinical Relevance	20

Recommended Books & E-Resources

Textbooks

Title	Author(s)
Interventional Cardiology: Principles & Practice	Eric J. Topol, Paul S. Teirstein
Textbook of Interventional Cardiology	Eric J. Topol
Grossman &Baim's Cardiac Catheterization	William Grossman, Donald Baim
The Practice of Interventional Cardiology	Ever D. Grech

Journals & E-Resources

Resource	Website/Publisher
Journal of the American College of Cardiology (JACC)	American College of Cardiology
Circulation: Cardiovascular Interventions	American Heart Association
European Heart Journal - Cardiovascular Interventions	European Society of Cardiology
Society for Cardiovascular Angiography & Interventions (SCAI)	www.scai.org



Fellowship in Cardiac Imaging

Course Overview

The Fellowship in Cardiac Imaging is a one-year specialized program aimed at training healthcare professionals in advanced cardiovascular imaging techniques. The course covers echocardiography, cardiac MRI, cardiac CT, and nuclear cardiology, with a strong emphasis on clinical applications, image interpretation, and hands-on training.

Prerequisites

Criteria	Details
Eligibility	MBBS with MD/DNB in Radio-Diagnosis, DM/DNB Cardiology
Duration	1 Year
Mode of Study	Clinical, Theoretical, Hands-on Training
Assessment	Theory, Practical Exams, Clinical Logbook, Research Project

Course Objectives

- Develop expertise in advanced echocardiographic techniques, including TEE and 3D echocardiography.
- Gain proficiency in cardiac MRI and CT for structural and functional assessment.
- Master the principles and clinical applications of nuclear cardiology.
- Learn image-guided decision-making in complex cardiovascular diseases.
- Understand radiation safety, contrast agents, and image optimization techniques.
- Conduct research in cardiac imaging and contribute to advancements in the field.

Semester-wise Curriculum

Semester 1: Fundamentals of Cardiac Imaging

Module	Topics Covered
Basics of Cardiovascular Imaging	Physics, instrumentation, and imaging modalities
Echocardiography	TTE, TEE, Doppler techniques
Cardiac CT	Coronary artery assessment, calcium scoring
Nuclear Cardiology	PET, SPECT, myocardial perfusion imaging



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Clinical Rotations – Imaging Labs Hands-on training in echocardiography, CT, MRI

Semester 2: Advanced Cardiac Imaging Applications

Module	Topics Covered
Advanced Echocardiography	Strain imaging, 3D echo, contrast echo
Cardiac MRI	Viability imaging, myocardial perfusion
Hybrid Imaging & AI Applications	AI-driven diagnostics, multimodal imaging
Radiation Safety & Contrast Agents	Dose optimization, contrast media applications
Research Project & Case Studies	Literature review, clinical case presentations

Program Outcomes

Sr. No.	Program Outcome	Description
1	Expertise in Cardiac Imaging	Master echocardiography, cardiac MRI, and CT
2	Advanced Image Interpretation	Accurately analyze and report cardiovascular scans
3	Application of Nuclear Cardiology	Integrate PET and SPECT for functional assessment
4	Radiation Safety & Optimization	Implement best practices in imaging safety
5	Research & Innovation in Imaging	Contribute to advancements in cardiovascular imaging

Course Outcomes

Sr. No.	Course Outcome	Description
1	Mastery in Cardiac CT & MRI	Proficiency in advanced imaging techniques
2	Expertise in 3D Echocardiography	Knowledge of advanced echo applications
3	Radiation Safety & Contrast Use	Understanding of radiation protection measures
4	Research & Case Study Analysis	Conduct research to improve cardiac imaging
5	Personalized Medicine Integration	Apply imaging for individualized patient care

Credits & Assessment Methods

Component	Credits
Theory & Lectures	10
Clinical Rotations & Case Studies	10
Hands-on Training & Procedures	10
Research & Dissertation	10



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Total Credits	40
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Assessment Pattern

Assessment Type	Weightage
Theory Examination (MCQs, Long & Short Answer)	30%
Clinical & Practical Exam (Case-Based Discussion, OSCE)	30%
Clinical Logbook & Case Reports	20%
Research Presentation & Dissertation	20%

Passing Criteria: Minimum 50% in each component to qualify.

Exam Pattern

Theory Examination

- Section A (MCQs – 30 Marks)
- Section B (Short Answer Questions – 30 Marks)
- Section C (Long Answer Questions – 40 Marks)

Practical Examination

Component	Details	Marks
Clinical Case Presentation	Diagnosis & Management of Cardiovascular Cases	40
Advanced Imaging Techniques	Cardiac MRI, CT, and PET Interpretation	50
Echocardiography Techniques	TTE, TEE, 3D Echo	30
OSCE	Clinical Scenarios, Skill Demonstration	40
Radiation Safety & Optimization	Simulation & Dose Reduction Strategies	40

Viva Voce (Oral Examination) (Total: 100 Marks)

Component	Details	Marks
Case Presentations	Discussion on Cardiac Imaging Cases	50
Recent Advances in Imaging	Journal Article Discussion	20
Ethical & Legal Considerations	Medical Ethics in Imaging	30

Research/Dissertation Submission (Total: 100 Marks)



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Component	Marks
Originality & Scientific Merit	30
Methodology & Data Analysis	30
Presentation & Discussion	20
Conclusion & Clinical Relevance	20

Final Weightage & Passing Criteria

Exam Component	Total Marks	Minimum Passing Marks
Theory (Paper 1 & 2)	200	50% (100/200)
Practical Exam	200	50% (100/200)
Viva Voce	100	50% (50/100)
Dissertation	100	50% (50/100)
Total (Overall)	600	50% Aggregate Required

Additional Notes

- To pass the fellowship, a minimum of 50% marks in each section (Theory, Practical, Viva, and Dissertation) is required.
- Distinction: Candidates scoring 75% and above will be awarded "Distinction."
- Failure in Practical or Viva: If a candidate fails in the practical or viva, they must reappear for the failed component in the next examination cycle.

Recommended Books & E-Resources

Textbooks

Title	Author(s)
Cardiac Imaging: The Requisites	Stephen W. Miller, Joseph K. Perloff
Cardiovascular MRI: A Teaching Atlas	Peter G. Danias
Clinical Cardiac CT	Matthew J. Budoff, Jerold S. Shinbane
Nuclear Cardiology: Practical Applications	Ami E. Iskandrian, Ernest V. Garcia

Journals & E-Resources

Resource	Website/Publisher
Journal of Cardiovascular Magnetic Resonance	Springer
European Heart Journal - Cardiovascular Imaging	Oxford Academic
American Society of Nuclear Cardiology	www.asnc.org
American College of Cardiology - Imaging	www.acc.org



Fellowship in Cardiac Electrophysiology

Course Overview

The Fellowship in Cardiac Electrophysiology is a one-year specialized program designed to provide in-depth training in the diagnosis and management of cardiac arrhythmias. The course covers advanced techniques in electrophysiology studies (EPS), catheter ablation, device implantation, and arrhythmia management, ensuring expertise in both theoretical and practical aspects of cardiac electrophysiology.

Prerequisites

Criteria	Details
Eligibility	DM/DNB Cardiology
Duration	1 Year
Mode of Study	Clinical, Theoretical, Hands-on Training
Assessment	Theory, Practical Exams, Clinical Logbook, Research Project

Course Objectives

- Develop expertise in electrophysiology studies and catheter ablation techniques.
- Gain proficiency in implantable cardiac devices such as pacemakers and ICDs.
- Understand the mechanisms, diagnosis, and treatment of various cardiac arrhythmias.
- Learn advanced mapping techniques and ablation therapies for arrhythmia management.
- Enhance skills in non-invasive and invasive electrophysiological testing.
- Conduct research to advance innovations in cardiac electrophysiology.

Semester-wise Curriculum

Semester 1: Fundamentals of Cardiac Electrophysiology

Module	Topics Covered
Basic Electrophysiology	Cardiac conduction system, ion channels, ECG
Electrophysiology Studies (EPS)	Indications, protocols, and interpretations
Arrhythmia Mechanisms	Supraventricular and ventricular arrhythmias
Pacemakers & ICDs	Indications, implantation, troubleshooting
Clinical Rotations – EP Lab	Hands-on training in electrophysiology procedures



Semester 2: Advanced Electrophysiology Techniques

Module	Topics Covered
Catheter Ablation Techniques	RF ablation, cryoablation, hybrid approaches
Advanced Mapping Systems	3D electroanatomic mapping, contact mapping
Complex Arrhythmia Management	AF, VT, WPW syndrome, inherited arrhythmias
Ethical & Legal Aspects	Consent, complications, medico-legal issues
Research Project & Case Studies	Literature review, clinical case presentations

Program Outcomes

Sr. No.	Program Outcome	Description
1	Expertise in Electrophysiology Studies	Master invasive and non-invasive EP testing
2	Proficiency in Arrhythmia Management	Diagnose and treat various cardiac arrhythmias
3	Device Implantation Skills	Perform pacemaker, ICD, CRT procedures
4	Advanced Mapping Techniques	Use 3D mapping for arrhythmia localization
5	Ethical & Legal Competency	Adhere to EP practice guidelines
6	Research & Innovation in Electrophysiology	Contribute to advancements in the field

Course Outcomes

Sr. No.	Course Outcome	Description
1	Mastery in EPS & Arrhythmia Management	Competence in diagnosing arrhythmias
2	Expertise in Device Therapy	Proficiency in pacemaker and ICD implantation
3	Radiation Safety & Mapping Skills	Use of fluoroscopy and advanced mapping systems
4	Research & Case Study Analysis	Conduct research to improve EP techniques
5	Personalized Arrhythmia Treatment	Develop individualized treatment strategies



6	Ethical & Legal Understanding	Ensure adherence to compliance and safety
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Credits & Assessment Methods

Component	Credits
Theory & Lectures	10
Clinical Rotations & Case Studies	10
Hands-on Training & Procedures	10
Research & Dissertation	10
Total Credits	40

Assessment Pattern

Assessment Type	Weightage
Theory Examination (MCQs, Long & Short Answer)	30%
Clinical & Practical Exam (Case-Based Discussion, OSCE)	30%
Clinical Logbook & Case Reports	20%
Research Presentation & Dissertation	20%

Passing Criteria: Minimum 50% in each component to qualify

Exam Pattern

Theory Examination

- Section A (MCQs – 30 Marks)
- Section B (Short Answer Questions – 30 Marks)
- Section C (Long Answer Questions – 40 Marks)

Practical Examination

Component	Details	Marks
Clinical Case Presentation	Diagnosis & Management of Arrhythmias	40
Electrophysiology Procedures	EPS, ablation techniques	50
Device Implantation Techniques	Pacemaker, ICD, CRT-D	30
OSCE	Clinical Scenarios, Skill Demonstration	40



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Advanced Mapping Systems	3D Mapping, Navigation, Real-time analysis	40
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Viva Voce (Oral Examination) (Total: 100 Marks)

Component	Details	Marks
Case Presentations	Discussion on Electrophysiology Cases	50
Recent Advances in EP	Journal Article Discussion	20
Ethical & Legal Considerations	Medical Ethics in Electrophysiology	30

Research/Dissertation Submission (Total: 100 Marks)

Component	Marks
Originality & Scientific Merit	30
Methodology & Data Analysis	30
Presentation & Discussion	20
Conclusion & Clinical Relevance	20

Final Weightage & Passing Criteria

Exam Component	Total Marks	Minimum Passing Marks
Theory (Paper 1 & 2)	200	50% (100/200)
Practical Exam	200	50% (100/200)
Viva Voce	100	50% (50/100)
Dissertation	100	50% (50/100)
Total (Overall)	600	50% Aggregate Required

Additional Notes

- To pass the fellowship, a minimum of 50% marks in each section (Theory, Practical, Viva, and Dissertation) is required.
- Distinction: Candidates scoring 75% and above will be awarded "Distinction."
- Failure in Practical or Viva: If a candidate fails in the practical or viva, they must reappear for the failed component in the next examination cycle.

Recommended Books & E-Resources

Textbooks

Title	Author(s)
Cardiac Electrophysiology: From Cell to Bedside	Douglas P. Zipes, Jose Jalife

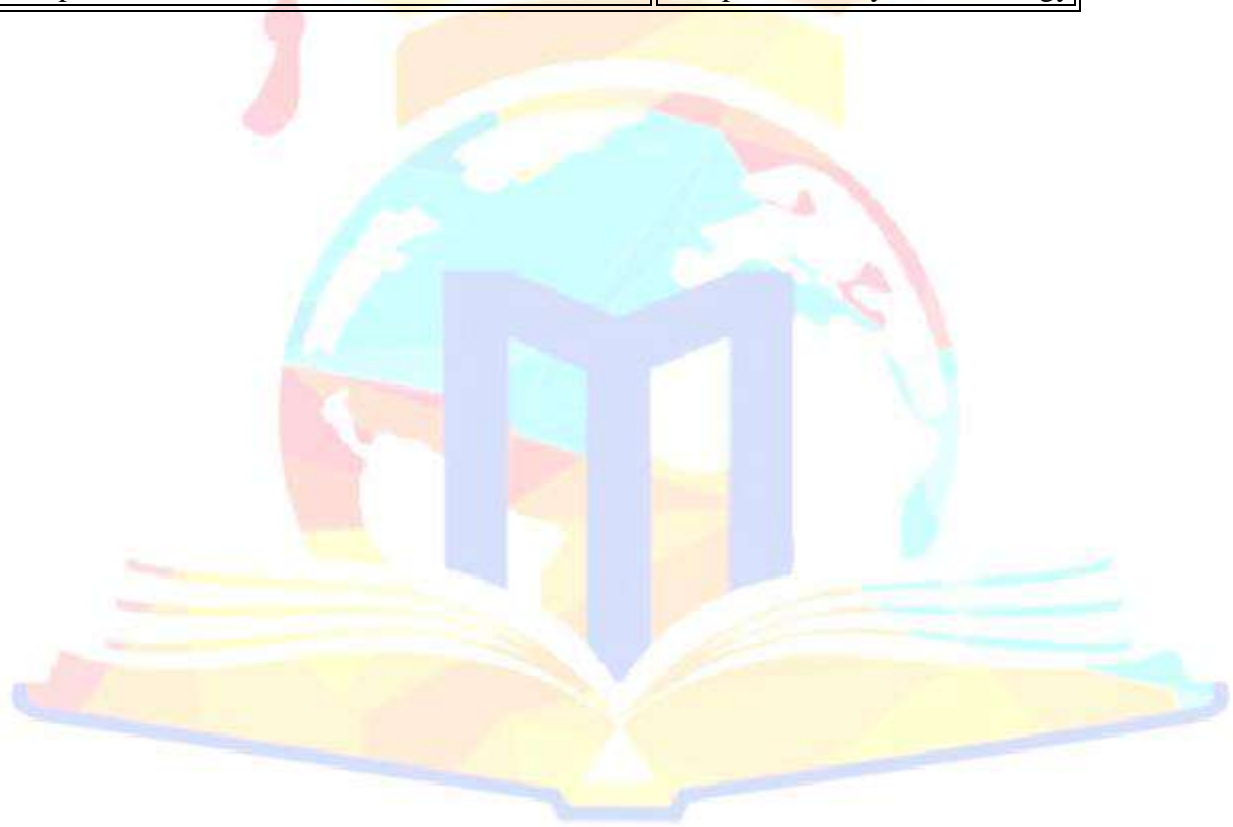


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Clinical Cardiac Electrophysiology	Mark E. Josephson
Catheter Ablation of Cardiac Arrhythmias	Shoei K. Stephen Huang, John M. Miller
Electrocardiography of Arrhythmias	Mithilesh K. Das, Douglas P. Zipes

Journals & E-Resources

Resource	Website/Publisher
Journal of Cardiovascular Electrophysiology	Wiley Online Library
Circulation: Arrhythmia & Electrophysiology	American Heart Association
Heart Rhythm Journal	Heart Rhythm Society
European Heart Journal – EP	European Society of Cardiology





Fellowship in Pediatric Cardiovascular Surgery

Course Overview

The Fellowship in Pediatric Cardiovascular Surgery is a one-year advanced training program designed for healthcare professionals specializing in congenital and pediatric heart surgery. The course provides comprehensive knowledge and hands-on experience in surgical procedures, perioperative management, and innovations in pediatric cardiac surgery.

Prerequisites

Criteria	Details
Eligibility	M.Ch/DNB in CTVS
Duration	1 Year
Mode of Study	Clinical, Theoretical, Hands-on Training
Assessment	Theory, Practical Exams, Clinical Logbook, Research Project

Course Objectives

- Master advanced surgical techniques in pediatric cardiovascular surgery.
- Develop expertise in managing congenital heart diseases surgically.
- Gain proficiency in perioperative and postoperative management of pediatric cardiac patients.
- Learn to integrate cutting-edge surgical technologies in pediatric cardiovascular care.
- Understand ethical considerations and patient safety in pediatric cardiac surgery.
- Conduct research to advance knowledge in pediatric cardiovascular surgery.

Semester-wise Curriculum

Semester 1: Fundamentals of Pediatric Cardiovascular Surgery

Module	Topics Covered
Anatomy & Physiology of Congenital Heart Defects	Structural abnormalities, embryology of the heart
Pediatric Cardiovascular Diagnostics	Echocardiography, MRI, CT, and catheterization
Basic Surgical Techniques	Pediatric cardiovascular suturing, grafting



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Perioperative Management	Anesthesia, fluid management, hemodynamics
Clinical Rotations – Pediatric Cardiac ICU	Hands-on patient care and surgical exposure

Semester 2: Advanced Surgical Techniques & Specialized Procedures

Module	Topics Covered
Complex Congenital Heart Surgeries	Tetralogy of Fallot, hypoplastic left heart syndrome
Neonatal & Infant Heart Surgery	Surgical challenges in neonates and infants
ECMO & Mechanical Circulatory Support	Extracorporeal Membrane Oxygenation (ECMO)
Pediatric Heart Transplantation	Indications, procedures, and postoperative care
Research Project & Case Studies	Literature review, surgical case presentations

Program Outcomes

Sr. No.	Program Outcome	Description
1	Expertise in Pediatric Heart Surgery	Master complex congenital heart surgical techniques
2	Perioperative & Postoperative Care	Develop comprehensive patient management skills
3	Proficiency in Pediatric Heart Transplantation	Learn transplant techniques and postoperative care
4	Innovation in Surgical Procedures	Apply emerging technologies in pediatric heart surgery
5	Research & Academic Contributions	Engage in research and contribute to medical advancements

Course Outcomes

Sr. No.	Course Outcome	Description
1	Mastery in Pediatric Cardiac Surgery	Develop expertise in surgical procedures
2	Expertise in Cardiovascular Diagnostics	Understand and apply diagnostic imaging tools
3	Skill in ECMO & Mechanical Support	Hands-on experience with circulatory support
4	Research & Clinical Case Studies	Conduct research and analyze surgical



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		outcomes
5	Ethical & Patient-Centered Care	Implement best practices in pediatric surgery

Credits & Assessment Methods

Component	Credits
Theory & Lectures	10
Clinical Rotations & Case Studies	10
Hands-on Training & Procedures	10
Research & Dissertation	10
Total Credits	40

Assessment Pattern

Assessment Type	Weightage
Theory Examination (MCQs, Long & Short Answer)	30%
Clinical & Practical Exam (Case-Based Discussion, OSCE)	30%
Clinical Logbook & Case Reports	20%
Research Presentation & Dissertation	20%

Passing Criteria: Minimum 50% in each component to qualify

Exam Pattern

Theory Examination

- Section A (MCQs – 30 Marks)
- Section B (Short Answer Questions – 30 Marks)
- Section C (Long Answer Questions – 40 Marks)

Practical Examination

Component	Details	Marks
Clinical Case Presentation	Diagnosis & Management of Pediatric Cardiac Conditions	40



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Advanced Surgical Techniques	Neonatal and infant heart surgeries	50
Cardiovascular Imaging	Interpretation of echocardiography, MRI	30
OSCE	Clinical Scenarios, Skill Demonstration	40
ECMO & Mechanical Support	Simulation & Patient-Specific Application	40

Viva Voce (Oral Examination) (Total: 100 Marks)

Component	Details	Marks
Case Presentations	Discussion on Pediatric Cardiovascular Cases	50
Recent Advances in Pediatric Surgery	Journal Article Discussion	20
Ethical & Legal Considerations	Medical Ethics in Pediatric Surgery	30

Research/Dissertation Submission (Total: 100 Marks)

Component	Marks
Originality & Scientific Merit	30
Methodology & Data Analysis	30
Presentation & Discussion	20
Conclusion & Clinical Relevance	20

Final Weightage & Passing Criteria

Exam Component	Total Marks	Minimum Passing Marks
Theory (Paper 1 & 2)	200	50% (100/200)
Practical Exam	200	50% (100/200)
Viva Voce	100	50% (50/100)
Dissertation	100	50% (50/100)
Total (Overall)	600	50% Aggregate Required

Additional Notes

- To pass the fellowship, a minimum of 50% marks in each section (Theory, Practical, Viva, and Dissertation) is required.
- Distinction: Candidates scoring 75% and above will be awarded "Distinction."



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- Failure in Practical or Viva: If a candidate fails in the practical or viva, they must reappear for the failed component in the next examination cycle.

Recommended Books & E-Resources

Textbooks

Title	Author(s)
Pediatric Cardiac Surgery	Constantine Mavroudis, Carl L. Backer
Congenital Heart Surgery: A Comprehensive Guide	Richard Jonas
Pediatric Cardiology for Practitioners	Myung K. Park
ECMO in Pediatric & Neonatal Patients	Steffen E. Mehlhorn

Journals & E-Resources

Resource	Website/Publisher
Journal of Thoracic and Cardiovascular Surgery	Elsevier
Annals of Pediatric Cardiology	Wolters Kluwer
Society of Thoracic Surgeons (STS)	www.sts.org
National Library of Medicine (NLM)	www.ncbi.nlm.nih.gov



Fellowship in Vascular & Endovascular Surgery

Course Overview

The Fellowship in Vascular & Endovascular Surgery is a one-year advanced training program designed for healthcare professionals specializing in vascular and minimally invasive endovascular procedures. The course provides comprehensive knowledge and hands-on experience in vascular surgery, interventional techniques, and post-procedural management.

Prerequisites

Criteria	Details
Eligibility	MBBS with MS/DNB in General Surgery or MCh/DNB in CTVS
Duration	1 Year
Mode of Study	Clinical, Theoretical, Hands-on Training
Assessment	Theory, Practical Exams, Clinical Logbook, Research Project

Course Objectives

- Master advanced vascular and endovascular surgical techniques.
- Develop expertise in managing peripheral arterial and venous diseases.
- Gain proficiency in interventional procedures like angioplasty and stenting.
- Learn to integrate imaging technologies for precise surgical planning.
- Understand ethical considerations and patient safety in vascular surgery.
- Conduct research to advance knowledge in vascular and endovascular surgery.

Semester-wise Curriculum

Semester 1: Fundamentals of Vascular & Endovascular Surgery

Module	Topics Covered
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Anatomy & Physiology of Vascular System	Vascular structure, hemodynamics, and pathology
Vascular Imaging & Diagnostics	Doppler, CT angiography, MR angiography
Open Vascular Surgical Techniques	Bypass grafting, aneurysm repair
Perioperative Management	Anesthesia, anticoagulation, wound care
Clinical Rotations – Vascular Surgery Unit	Hands-on patient care and surgical exposure

Semester 2: Advanced Endovascular Techniques & Specialized Procedures

Module	Topics Covered
Endovascular Interventions	Angioplasty, stenting, thrombolysis
Hybrid Vascular Procedures	Combination of open and endovascular approaches
Aortic Aneurysm Repair	EVAR, TEVAR techniques
Limb Salvage & Critical Ischemia	Management of diabetic foot, revascularization
Research Project & Case Studies	Literature review, surgical case presentations

Program Outcomes

Sr. No.	Program Outcome	Description
1	Expertise in Vascular & Endovascular Surgery	Master open and minimally invasive vascular techniques
2	Perioperative & Postoperative Care	Develop comprehensive patient management skills
3	Proficiency in Interventional Radiology	Learn imaging-guided vascular procedures
4	Innovation in Surgical Procedures	Apply emerging technologies in vascular surgery
5	Research & Academic Contributions	Engage in research and contribute to medical advancements

Course Outcomes

Sr. No.	Course Outcome	Description
1	Mastery in Vascular Surgical Techniques	Develop expertise in surgical procedures
2	Expertise in Endovascular Interventions	Perform angioplasty, stenting, and catheter-based therapies
3	Skill in Vascular Imaging & Diagnostics	Interpret vascular imaging for surgical planning



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4	Research & Clinical Case Studies	Conduct research and analyze surgical outcomes
5	Ethical & Patient-Centered Care	Implement best practices in vascular surgery

Credits & Assessment Methods

Component	Credits
Theory & Lectures	10
Clinical Rotations & Case Studies	10
Hands-on Training & Procedures	10
Research & Dissertation	10
Total Credits	40

Assessment Pattern

Assessment Type	Weightage
Theory Examination (MCQs, Long & Short Answer)	30%
Clinical & Practical Exam (Case-Based Discussion, OSCE)	30%
Clinical Logbook & Case Reports	20%
Research Presentation & Dissertation	20%

Passing Criteria: Minimum 50% in each component to qualify

Exam Pattern

Theory Examination

- Section A (MCQs – 30 Marks)
- Section B (Short Answer Questions – 30 Marks)
- Section C (Long Answer Questions – 40 Marks)

Practical Examination

Component	Details	Marks
Clinical Case Presentation	Diagnosis & Management of Vascular Conditions	40
Advanced Surgical Techniques	Aneurysm repair, bypass grafting	50
Endovascular Interventions	Angioplasty, stent placement	30
OSCE	Clinical Scenarios, Skill Demonstration	40
Hybrid Vascular Procedures	Simulation & Patient-Specific Application	40

Viva Voce (Oral Examination) (Total: 100 Marks)



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Component	Details	Marks
Case Presentations	Discussion on Vascular & Endovascular Cases	50
Recent Advances in Vascular Surgery	Journal Article Discussion	20
Ethical & Legal Considerations	Medical Ethics in Vascular Surgery	30

Research/Dissertation Submission (Total: 100 Marks)

Component	Marks
Originality & Scientific Merit	30
Methodology & Data Analysis	30
Presentation & Discussion	20
Conclusion & Clinical Relevance	20

Final Weightage & Passing Criteria

Exam Component	Total Marks	Minimum Passing Marks
Theory (Paper 1 & 2)	200	50% (100/200)
Practical Exam	200	50% (100/200)
Viva Voce	100	50% (50/100)
Dissertation	100	50% (50/100)
Total (Overall)	600	50% Aggregate Required

Additional Notes

- To pass the fellowship, a minimum of 50% marks in each section (Theory, Practical, Viva, and Dissertation) is required.
- Distinction: Candidates scoring 75% and above will be awarded "Distinction."
- Failure in Practical or Viva: If a candidate fails in the practical or viva, they must reappear for the failed component in the next examination cycle.

Recommended Books & E-Resources

Textbooks

Title	Author(s)
Rutherford's Vascular Surgery and Endovascular Therapy	Jack L. Cronenwett, K. Wayne Johnston
Vascular and Endovascular Surgery: A Comprehensive Review	Wesley S. Moore
Endovascular Surgery: Principles & Practice	Wesley S. Moore, Gregorio A.



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	Sicard
Color Atlas of Vascular Diseases	E. Sebastian Debus

Journals & E-Resources

Resource	Website/Publisher
Journal of Vascular Surgery	Elsevier
Annals of Vascular Surgery	Springer
Society for Vascular Surgery (SVS)	www.vascular.org
National Library of Medicine (NLM)	www.ncbi.nlm.nih.gov

Fellowship in Minimal Invasive Cardiac Surgery

Course Overview

The Fellowship in Minimal Invasive Cardiac Surgery is a one-year specialized training program aimed at equipping healthcare professionals with expertise in minimally invasive cardiac surgical techniques. The program provides hands-on training in robotic-assisted procedures, endoscopic heart surgery, and hybrid cardiac interventions.

Prerequisites

Criteria	Details
Eligibility	MBBS with MS/DNB in General Surgery or M.Ch./DNB CTVS
Duration	1 Year
Mode of Study	Clinical, Theoretical, Hands-on Training
Assessment	Theory, Practical Exams, Clinical Logbook, Research Project

Course Objectives

- Master minimally invasive cardiac surgical techniques.
- Develop expertise in robotic-assisted cardiac surgery.
- Gain proficiency in hybrid cardiac procedures and interventional cardiology.
- Understand patient selection, perioperative care, and post-surgical management.
- Learn ethical considerations and safety protocols in cardiac surgery.
- Conduct research and case studies in minimally invasive cardiac surgery.

Semester-wise Curriculum

Semester 1: Fundamentals of Minimal Invasive Cardiac Surgery



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Module	Topics Covered
Cardiac Anatomy & Physiology	Structural and functional aspects of the heart
Imaging in Cardiac Surgery	Echocardiography, CT, MRI, and angiography
Basics of Minimal Invasive Surgery	Port placement, endoscopic techniques
Perioperative Management	Anesthesia, anticoagulation, and patient monitoring
Clinical Rotations – Cardiac Surgery Unit	Hands-on surgical training and patient care

Semester 2: Advanced Minimal Invasive Techniques & Specialized Procedures

Module	Topics Covered
Robotic-Assisted Cardiac Surgery	Da Vinci system, robotic mitral valve repair
Hybrid Cardiac Interventions	Combination of catheter-based and surgical approaches
Endoscopic Coronary Artery Bypass Grafting (Endo-CABG)	Minimally invasive coronary bypass
Valve-Sparing Techniques	Aortic valve repair, TAVI procedures
Research Project & Case Studies	Literature review, case presentations, dissertation submission

Program Outcomes

Sr. No.	Program Outcome	Description
1	Expertise in Minimal Invasive Cardiac Surgery	Master endoscopic and robotic-assisted techniques
2	Proficiency in Hybrid Cardiac Interventions	Learn to integrate interventional and surgical approaches
3	Advanced Imaging & Diagnostics	Develop skills in imaging techniques for cardiac surgery
4	Perioperative & Postoperative Care	Optimize patient safety and outcomes
5	Research & Innovation in Cardiac Surgery	Engage in research and contribute to medical advancements

Course Outcomes



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Sr. No.	Course Outcome	Description
1	Mastery in Minimal Invasive Cardiac Techniques	Develop expertise in port-access and robotic surgery
2	Skill in Hybrid Cardiac Surgery	Perform catheter-assisted and endoscopic procedures
3	Competence in Cardiac Imaging & Navigation	Interpret imaging for surgical planning
4	Research & Clinical Case Studies	Conduct studies and analyze surgical outcomes
5	Ethical & Patient-Centered Care	Implement best practices in cardiac surgery

Credits & Assessment Methods

Component	Credits
Theory & Lectures	10
Clinical Rotations & Case Studies	10
Hands-on Training & Procedures	10
Research & Dissertation	10
Total Credits	40

Assessment Pattern

Assessment Type	Weightage
Theory Examination (MCQs, Long & Short Answer)	30%
Clinical & Practical Exam (Case-Based Discussion, OSCE)	30%
Clinical Logbook & Case Reports	20%
Research Presentation & Dissertation	20%
Passing Criteria: Minimum 50% in each component to qualify.	

Exam Pattern

Theory Examination

- Section A (MCQs – 30 Marks)
- Section B (Short Answer Questions – 30 Marks)
- Section C (Long Answer Questions – 40 Marks)

Practical Examination



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Component	Details	Marks
Clinical Case Presentation	Diagnosis & Management of Cardiac Conditions	40
Advanced Surgical Techniques	Endoscopic valve repair, robotic bypass	50
Hybrid Interventional Procedures	TAVI, catheter-assisted interventions	30
OSCE	Clinical Scenarios, Skill Demonstration	40
Robotic-Assisted Cardiac Surgery	Simulation & Hands-on Training	40

Viva Voce (Oral Examination) (Total: 100 Marks)

Component	Details	Marks
Case Presentations	Discussion on Minimal Invasive Cardiac Cases	50
Recent Advances in Cardiac Surgery	Journal Article Discussion	20
Ethical & Legal Considerations	Medical Ethics in Cardiac Surgery	30

Research/Dissertation Submission (Total: 100 Marks)

Component	Marks
Originality & Scientific Merit	30
Methodology & Data Analysis	30
Presentation & Discussion	20
Conclusion & Clinical Relevance	20

Final Weightage & Passing Criteria

Exam Component	Total Marks	Minimum Passing Marks
Theory (Paper 1 & 2)	200	50% (100/200)
Practical Exam	200	50% (100/200)
Viva Voce	100	50% (50/100)
Dissertation	100	50% (50/100)
Total (Overall)	600	50% Aggregate Required

Additional Notes

- To pass the fellowship, a minimum of 50% marks in each section (Theory, Practical, Viva, and Dissertation) is required.
- Distinction: Candidates scoring 75% and above will be awarded "Distinction."
- Failure in Practical or Viva: If a candidate fails in the practical or viva, they must reappear for the failed component in the next examination cycle.



Recommended Books & E-Resources

Textbooks

Title	Author(s)
Minimally Invasive Cardiac Surgery	Theo Kofidis
Robotic Cardiac Surgery	W. Randolph Chitwood Jr.
Endoscopic Cardiac Surgery	Hitoshi Hirose
Hybrid Cardiac Surgery	Hani Jneid, Patrick T. O’Gara

Journals & E-Resources

Resource	Website/Publisher
The Annals of Thoracic Surgery	Elsevier
Journal of Cardiovascular Surgery	Springer
Society of Thoracic Surgeons (STS)	www.sts.org
American College of Cardiology (ACC)	www.acc.org



Fellowship in Micro Vascular Reconstructive Surgery

Course Overview

The Fellowship in Micro Vascular Reconstructive Surgery is a one-year specialized training program designed to equip surgeons with advanced skills in microsurgical techniques for tissue transfer and reconstruction. The program emphasizes hands-on training in free flap surgery, nerve repair, and vascular anastomosis.

Prerequisites

Criteria	Details
Eligibility	MBBS with MS/DNB in General Surgery or MCh/DNB in Plastic Surgery, CTVS
Duration	1 Year
Mode of Study	Clinical, Theoretical, Hands-on Training
Assessment	Theory, Practical Exams, Clinical Logbook, Research Project

Course Objectives

- Master microvascular surgical techniques for tissue reconstruction.
- Develop expertise in free flap procedures for complex defects.
- Gain proficiency in nerve repair and revascularization techniques.
- Understand patient selection, perioperative care, and post-surgical management.
- Learn ethical considerations and safety protocols in reconstructive surgery.
- Conduct research and case studies in microsurgical reconstruction.

Semester-wise Curriculum

Semester 1: Fundamentals of Micro Vascular Surgery



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Module	Topics Covered
Microsurgical Anatomy & Physiology	Vascular and nerve anatomy, tissue viability
Imaging in Reconstructive Surgery	Angiography, Doppler ultrasound
Basic Microsurgical Techniques	Instrumentation, suturing, anastomosis
Perioperative Management	Anesthesia, anticoagulation, and patient monitoring
Clinical Rotations – Microsurgery Unit	Hands-on surgical training and patient care

Semester 2: Advanced Micro Vascular Techniques & Specialized Procedures

Module	Topics Covered
Free Tissue Transfer Techniques	ALT, DIEP, TRAM, fibula flaps
Nerve Repair & Functional Reconstruction	Brachial plexus repair, tendon transfers
Revascularization & Limb Salvage	Trauma-induced ischemia, diabetic foot care
Head & Neck Microsurgical Reconstruction	Soft tissue and bone flaps
Research Project & Case Studies	Literature review, case presentations, dissertation submission

Program Outcomes

Sr. No.	Program Outcome	Description
1	Expertise in Micro Vascular Surgery	Master microsurgical techniques for tissue transfer
2	Proficiency in Free Flap Reconstruction	Perform complex reconstructive procedures
3	Advanced Nerve Repair Techniques	Develop skills in nerve coaptation and grafting
4	Perioperative & Postoperative Care	Optimize patient safety and outcomes
5	Research & Innovation in Microsurgery	Engage in research and contribute to medical advancements

Course Outcomes



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Sr. No.	Course Outcome	Description
1	Mastery in Microsurgical Techniques	Develop expertise in vessel anastomosis and nerve repair
2	Skill in Free Tissue Transfers	Perform soft tissue and composite tissue transfers
3	Competence in Imaging & Surgical Planning	Interpret imaging for flap viability
4	Research & Clinical Case Studies	Conduct studies and analyze surgical outcomes
5	Ethical & Patient-Centered Care	Implement best practices in reconstructive surgery

Credits & Assessment Methods

Component	Credits
Theory & Lectures	10
Clinical Rotations & Case Studies	10
Hands-on Training & Procedures	10
Research & Dissertation	10
Total Credits	40

Assessment Pattern

Assessment Type	Weightage
Theory Examination (MCQs, Long & Short Answer)	30%
Clinical & Practical Exam (Case-Based Discussion, OSCE)	30%
Clinical Logbook & Case Reports	20%
Research Presentation & Dissertation	20%

Passing Criteria: Minimum 50% in each component to qualify.

Exam Pattern

Theory Examination

- Section A (MCQs – 30 Marks)
- Section B (Short Answer Questions – 30 Marks)
- Section C (Long Answer Questions – 40 Marks)



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Practical Examination

Component	Details	Marks
Clinical Case Presentation	Diagnosis & Management of Microsurgical Cases	40
Advanced Microsurgical Techniques	Vessel anastomosis, nerve coaptation	50
Free Flap & Composite Transfers	ALT, TRAM, fibula flaps	30
OSCE	Clinical Scenarios, Skill Demonstration	40
Limb Salvage & Revascularization	Trauma & ischemia management	40

Viva Voce (Oral Examination) (Total: 100 Marks)

Component	Details	Marks
Case Presentations	Discussion on Microsurgical Cases	50
Recent Advances in Microsurgery	Journal Article Discussion	20
Ethical & Legal Considerations	Medical Ethics in Reconstructive Surgery	30

Research/Dissertation Submission (Total: 100 Marks)

Component	Marks
Originality & Scientific Merit	30
Methodology & Data Analysis	30
Presentation & Discussion	20
Conclusion & Clinical Relevance	20

Final Weightage & Passing Criteria

Exam Component	Total Marks	Minimum Passing Marks
Theory (Paper 1 & 2)	200	50% (100/200)
Practical Exam	200	50% (100/200)
Viva Voce	100	50% (50/100)
Dissertation	100	50% (50/100)
Total (Overall)	600	50% Aggregate Required



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Additional Notes

- To pass the fellowship, a minimum of 50% marks in each section (Theory, Practical, Viva, and Dissertation) is required.
- Distinction: Candidates scoring 75% and above will be awarded "Distinction."
- Failure in Practical or Viva: If a candidate fails in the practical or viva, they must reappear for the failed component in the next examination cycle.

Recommended Books & E-Resources

Textbooks

Title	Author(s)
Grabb and Smith's Plastic Surgery	Charles H. Thorne
Microsurgery: Principles and Practice	Robert Acland
Reconstructive Microsurgery	Fu-Chan Wei, Samir Mardini
Flaps and Reconstructive Surgery	Fu-Chan Wei, Geoffrey G. Hallock

Journals & E-Resources

Resource	Website/Publisher
Journal of Reconstructive Microsurgery	Thieme Medical Publishers
Plastic and Reconstructive Surgery	Wolters Kluwer
American Society for Reconstructive Microsurgery	www.microsurg.org
European Journal of Plastic Surgery	Springer

