

CEPS Physician Exam Content Outline	
1. Core Section 1	20%
1.A. Cardiac Anatomy and Physiology	
1.B. Pharmacology of – Antiarrhythmic Drugs and Anticoagulation	
1.B.1. Applications in specific arrhythmias	
1.B.2. Pharmacokinetics, Pharmacodynamics, Pharmacogenetics	
1.B.3. Drug interactions	
1.C. Surface Electrocardiography	
1.C.1. Normal Electrocardiogram, Recognition	
1.C.2. ECG Recognition of Arrhythmia Type and Mechanism	
1.C.3. ECG localization of ectopic morphologies, pathway locations, and ventricular tachycardia	
1.C.4. Recognition of Device Paced ECG	
1.D. Clinical Patient Assessment and Clinical Electrophysiology	
1.D.1. Clinical history, examination, diagnostic workup, non-invasive tests	
1.D.1.a. No structural heart disease	
1.D.1.b. Acquired structural heart disease	
1.D.1.c. Congenital heart disease	
1.D.1.d. Inherited arrhythmia syndromes, channelopathies	
1.D.2. Clinical evaluation of arrhythmia	
1.D.2.a. Response to drugs	
1.D.2.b. Response to autonomic maneuvers, diagnostic maneuvers	
1.D.2.c. Emergency management of arrhythmia, symptoms	
2. Core Section 2	40%
2.A. Fundamentals of Electrophysiology	
2.A.1. Normal conduction system properties/intervals	
2.A.2. Cellular electrophysiology; Action Potential, ion channels, gap junctions	
2.A.3. Abnormalities of the conduction system	
2.A.4. Mechanisms of arrhythmia	
2.B. Electrophysiology Procedures	
2.B.1. Catheterization techniques, transseptal catheterization; intracardiac echocardiography, transesophageal echocardiography, epicardial access	

2.B.2. Techniques for device implantation and extraction	
2.B.3. Surgical management of arrhythmias	
2.B.4. Procedural risks, complications; recognition and management of complications	
2.B.5. Radiation safety	
2.C. Invasive Electrophysiology	
2.C.1. Indications, Contraindications for EP study	
2.C.2. Baseline assessment, Calculations, Interval Measurements	
2.C.3. Methods of electrogram recording and evaluation	
2.C.4. Stimulation protocols	
2.C.5. Evaluation of arrhythmias	
2.C.5.a. Differentiation of arrhythmias	
2.C.5.b. Response to pacing maneuvers	
2.C.5.c. Response to antiarrhythmic drugs	
2.C.5.d. Evaluation of arrhythmias post ablation	
2.D. Catheter Mapping and Ablation	
2.D.1. Methods/strategies	
2.D.2. Biophysics of ablation	
2.D.3. 2D and 3D Mapping/ablation of arrhythmias	
2.D.3.a. SVT	
2.D.3.b. VT	
3. Core Section 3	11%
3.A. Implantable Devices (Pacemaker, ICD, CRT, Loop recorder)	
3.A.1. Fundamentals of electronics, pacemaker modes and timing cycles	
3.A.2. Indications and Contraindications for implantation of devices, implant testing and troubleshooting	
3.A.3. Pacemaker therapy, programming, antitachycardia pacing, algorithms	
3.A.4. ICD therapy, programming, detection algorithms, discrimination algorithms	
3.A.5. CRT therapy, programming, optimization	
3.A.6. Implantable loop recorder / cardiac monitor diagnostic assessment, programming	
3.A.7. Recognition and management of device problems: EMI, sensing, capture, inappropriate therapy	
3.A.8. Device follow-up	

3.B. Imaging in EP	
3.B.1. Fluoroscopic or Radiographic Interpretation: Implanted devices	
3.B.2. Fluoroscopic or Radiographic Interpretation: Clinical Symptoms/Diagnosis	
3.B.3. Fluoroscopic or Radiographic Interpretation: Catheter positions and Angiograms	
3.B.4. CT, PET CT, MRI, Echo	
3.C. Sedation and Anesthesia in the EP Lab	
3.D. Research and Clinical Trials	
3.D.1. Research Ethics	
3.D.2. Clinical trial methodology/statistical analysis	
3.D.3. Major clinical study results	

CEPS Physician - Adult Sections	
4. Adult Section 1	9%
4A.A. Pharmacology in Adult Population	
4A.A.1. Antiarrhythmics, antihypertensives, diuretics, ACE inhibitors, statins, heart failure medications	
4A.A.2. Anticoagulation management in adult population	
4A.B. Clinical Assessment and Clinical Electrophysiology in Adult Population	
4A.B.1. Arrhythmias in co-morbid conditions	
4A.B.1.a. Coronary artery disease, renal disease, liver disease, diabetes, stroke, pulmonary disease, valvular heart disease, inflammatory heart disease, heart failure, post cardiac surgery or valve implantations	
4A.B.1.b. Adult congenital heart disease, cardiomyopathies	
4A.B.2. Arrhythmias in pregnancy, athletes, post heart transplant	
4A.B.3. Cellular Electrophysiology, Autonomics, Genomics of Sudden Cardiac Death in Adult Population	
4A.B.4. Syncope evaluation and management	
5. Adult Section 2	13%
5A.A. Invasive Electrophysiology in Adult Population	
5A.A.1. Procedural indications and contraindications	
5A.A.2. Atrial arrhythmias / Atrial fibrillation / Atrial flutter	

5A.A.3. Ventricular arrhythmias (associated with ischemic heart disease, cardiomyopathies, genomic syndromes, adult congenital heart disease)	
6. Adult Section 3	7%
6A.A. Applications of Implantable Devices (Pacemaker, ICD, CRT, Loop recorder, Left atrial appendage occlusion devices) in Adult Population	
6A.A.1. Indications and uses of implantable devices to manage or to diagnose arrhythmias (including leadless vs transvenous pacing, subcut vs transvenous ICD's, conduction system pacing)	
6A.A.2. Recognition and management of device implant complications; Lead extraction in adults and adult congenital heart disease patients	
6A.A.3. Geriatrics, end of life management, device deactivation, ethics	
6A.B. Translation from Clinical Research to Adult Patient Management	
6A.B.1. Clinical trials in implantable devices	
6A.B.2. Clinical trials in Electrophysiology	

CEPS Physician - Pediatric Sections	
4. Pediatrics Section 1	8%
4P.A. Developmental Electrophysiology	
4P.A.1 . Embryology of the conduction system (in normal heart, in congenital heart disease)	
4P.A.2. Development of electrophysiology	
4P.A.2.a. Depolarizing currents	
4P.A.2.b. Autonomic nervous system effects on the cardiac conduction system	
4P.A.2.c. Electrophysiological properties and substrates of arrhythmias	
4P.A.3. Pharmacokinetic and pharmacodynamic of antiarrhythmic drugs	
4P.A.3.a. From fetus to adolescent	
4P.A.3.b. Breast milk feeding	
4P.A.3.c. In adults with congenital heart disease	
4P.A.4. Biophysics in children	
4P.A.4.a. Radiofrequency energy delivery in growing hearts	

4P.A.4.b. Cardioversion and defibrillation energy through physical maturation	
4P.A.4.c. Cryophysics in children	
4P.B. Electrophysiology of Congenital Heart Disease	
4P.B.1. Congenital substrates of arrhythmias (e.g. Anatomy of conduction system in L-TGA, AV canal, TOF/VSD; Association of WPW with specific CHD; Concept of twin AV nodes in heterotaxy)	
4P.B.2. Etiology of AV block and congenital heart disease (genetic factors)	
4P.B.3. Acquired substrates of arrhythmia	
4P.B.3.a. Hemodynamic effect of congenital heart disease on arrhythmia	
4P.B.3.b. Surgical factors	
4P.B.3.c. Comorbid condition (e.g., endocrine hypertension, obesity)	
5. Pediatrics Section 2	15%
5P.A. Clinical Management of Pediatric Electrophysiology	
5P.A.1. Fetal arrhythmias	
5P.A.2. Newborn arrhythmias	
5P.A.3. Ventricular arrhythmias in the structurally normal heart	
5P.A.4. Inherited arrhythmia syndromes, channelopathies	
5P.A.4.a. Proband assessment	
5P.A.4.b. Family screening	
5P.A.4.c. Lifestyle implications	
5P.A.5. Arrhythmias in CHD and post-CHD surgery	
5P.A.6. Sudden death risk assessment in children	
5P.A.7. Arrhythmias associated with non-cardiac conditions affecting children (e.g., chagas disease, rheumatic heart disease)	
5P.B. Invasive Electrophysiologic Testing in Children	
5P.B.1. Sedation and anesthesia	
5P.B.2. Procedural indications and contraindications	
5P.B.3. Procedural considerations regarding vascular and cardiac access of catheters	
5P.B.4. EP testing, mapping and ablation strategies	
5P.B.4.a In the structurally normal heart	
5P.B.4.b. In the congenital heart disease (e.g., Twin nodal SVT, Accessory pathways associated with CHD)	

5P.B.4.c. Post-surgical CHD (e.g., Scar-related IART, Scar-related FAT, Scar-related VT)	
5P.B.5. Surgical ablation in congenital heart disease	
6. Pediatrics Section 3	6%
6P.A. Implantable Devices in Children and Adults with Congenital Heart Disease	
6P.A.1. Indications and contraindications for implantation	
6P.A.2. Strategies for hardware placement	
6P.A.2.a. In children with limited access	
6P.A.2.b. In congenital heart defects	
6P.A.3. Recognition and management of device and lead complications for epicardial and endocardial systems	
6P.A.4. Lead extraction/lead burden issues in pediatrics	
6P.A.5. Lifestyle issues and psychological effects of device implantation and device malfunction in children	
6P.A.6. Ancillary testing to optimize device programming	
6P.A.7. Device monitoring	