Course Specification: Cardiac Disorders (CPPM 705)

I. General Information

Field	Details
1. Course Title	**Cardiac Disorders**
2. Course Code	**CPPM 705**
3. Credit Hours	**3**
4. Contact Hours	**4.5 (3 Theoretical + 1.5 Practical/Seminar)**
5. Level / Semester	Master's / First Semester
6. Prerequisite	Advanced Cardiovascular Physiology and Anatomy (CPPM 701)
7. Program(s) Offered	Master of Cardiopulmonary Perfusion
8. Language of Instruction	English
9. Prepared by	—
10. Date of Approval	October 2025

II. Course Description

This course provides an advanced study of the etiology, pathophysiology, clinical manifestations, diagnostic approaches, and management of major cardiac disorders commonly encountered in cardiac surgery and perfusion practice.

It emphasizes the integration of pathophysiological knowledge with perfusion management strategies during cardiopulmonary bypass (CPB). Topics include ischemic heart disease, valvular heart diseases, cardiomyopathies, congenital heart defects, arrhythmias, heart failure, and inflammatory cardiac conditions.

Students will explore the impact of these disorders on hemodynamics, myocardial oxygen demand, and perfusion strategies, enabling evidence-based clinical decision-making in the operating room and intensive care unit.

III. Course Intended Learning Outcomes (CILOs)

Domain	Intended Learning Outcome	Referenced PILO
A. Knowledge and Understanding	a1. Describe the pathophysiology and clinical features of major cardiac disorders relevant to perfusion management.	M/A (A1)
	a2. Explain the diagnostic methods (ECG, echocardiography, cardiac catheterization) used to evaluate cardiac function.	M/A (A2)
	a3. Discuss the effects of cardiac pathologies on perfusion parameters and surgical outcomes.	M/A (A3)
B. Intellectual Skills	b1. Analyze clinical case data to determine perfusion implications of specific cardiac diseases.	M/A (B1)
	b2. Correlate diagnostic findings with physiological changes to plan optimal perfusion strategies.	M/A (B2)
C. Professional and Practical Skills	c1. Interpret real patient diagnostic data (e.g., ECG, echo reports) and recognize critical abnormalities.	P (C1)
	c2. Apply knowledge of disease-specific perfusion requirements in simulated or case-based scenarios.	P (C2)
D. Transferable Skills	d1. Communicate effectively with multidisciplinary cardiac teams using appropriate clinical terminology.	M (D1)
	d2. Engage in self-directed learning and critically evaluate recent research on cardiac diseases and perfusion.	M (D3)

IV. Course Contents

Main Topic	Subtopics	Weeks	Hours	Aligned CILOs
1. Introduction to Cardiac Pathophysiology	Overview of cardiac disease classification, hemodynamic principles, and diagnostic approaches	1–2	4	a1, a2
2. Ischemic Heart Disease	Coronary artery disease, myocardial ischemia/infarction, revascularization procedures	3–4	4	a1, b1
3. Valvular Heart Diseases	Aortic, mitral, tricuspid, and pulmonary valve disorders; surgical implications	5–6	4	a1, a3
4. Cardiomyopathies and Heart Failure	Types, mechanisms, compensatory responses, perfusion considerations	7–8	4	a1, b2
5. Congenital Heart Diseases	Common defects (ASD, VSD, TOF, TGA); pediatric vs. adult considerations	9–10	4	a2, c2
6. Cardiac Arrhythmias	Mechanisms, clinical implications, perioperative management	11–12	4	a2, c1
7. Inflammatory and Infective Disorders	Endocarditis, myocarditis, pericarditis, rheumatic heart disease	13	2	a1, b1
8. Integration and Case Discussions	Case presentations and clinical correlation seminars	14	2	d1, d2

V. Teaching and Learning Methods

- Interactive lectures and multimedia presentations
- Case-based learning and seminars

- Problem-solving workshops using clinical data
- Simulation-based training and ECG interpretation sessions
- Guided journal reviews

VI. Assessment Methods

- Midterm Examination (30%)
- Case/Research Presentation (20%)
- Final Examination (40%)
- Participation and Continuous Assessment (10%)

VII. Teaching and Learning Resources

Category	Resources
Core Textbooks	1. *Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine* (Latest Edition). Elsevier. 2. *Pathophysiology of Heart Disease* by Lilly L. S. (Latest Edition). Wolters Kluwer.
Supplementary Texts	1. *Clinical Perfusion for Cardiac Surgery: A Step-by-Step Guide to the Fundamentals* by James DiNardo (2025). Springer. 2. *Cardiac Surgery in the Adult* by Cohn L. (Latest Edition). McGraw Hill.
Journals & Databases	*Journal of ExtraCorporeal Technology (JECT)*, *Circulation*, *Perfusion*, *PubMed*, *Scopus*.