



كلية: التمريض العالي  
برنامج/ ماجستير الترويه القلبية

## قالب وثيقة مواصفات برنامج ماجستير Template for Program Specification

## وثيقة مواصفات برنامج ماجستير/ التروية القلبية

### مقدمة Introduction

. The Master of Cardiopulmonary Perfusion is designed to equip qualified nurses and healthcare professionals with advanced knowledge, skills, and competencies in operating cardiopulmonary bypass (CPB) machines and managing extracorporeal circulation during cardiac surgeries. The program integrates theoretical knowledge with practical and clinical training, preparing graduates to become certified perfusionists capable of contributing to surgical teams in cardiac care centers. The program supports national healthcare priorities by building capacity in critical life-support technologies.

## Program Identification and General Information

Item	Information
1.	<b>Program Title and Degree:</b> Master of Cardiopulmonary Perfusion
2.	<b>Responsible Faculty/College:</b> Faculty of High Nursing
3.	<b>Implementing Department:</b> Department of Medical Surgical Nursing
4.	<b>Participating Departments:</b> Nursing, Medical Physiology, Surgery
5.	<b>Language of Instruction:</b> English
6.	<b>Starting Academic Year:</b> 2025
7.	<b>Study Mode:</b> Full-time, On-campus
8.	<b>Program Type:</b> Coursework and Thesis
9.	<b>Delivery Location:</b> 21 September University and affiliated hospitals
10.	<b>Study System:</b> Semester-based, Credit Hour System
11.	<b>Program Duration:</b> 2 years (4 semesters), 42 Credit Hours
12.	<b>Professional Title:</b> Clinical Perfusionist
13.	<b>Exit Award:</b> Postgraduate Diploma in Cardiopulmonary Perfusion (for students who complete courses but not the thesis)
14.	<b>Entry Requirements:</b> Bachelor's degree in Nursing ,anesthesia or related health sciences
15.	<b>Minimum Grade Requirement:</b> Good standing (or equivalent)

16.	<b>Other Requirements:</b> Admission test, interview, English proficiency (TOEFL/IELTS), computer literacy (ICDL or equivalent)
17.	<b>Program Coordinator:</b> Dr.Abdulhameed Althaifani
18.	<b>Last Approval Date:</b>

رؤية الجامعة ورسالتها وأهدافها University Vision, Mission and Aims	
■ رؤية الجامعة University Vision	
A Contemporary University with a Sense of National Responsibility and Faith Identity	
■ رسالة الجامعة University Mission	
.Leadership of transformation/upturning headway in managing and providing the health care with all partners via having the distinction standard in education and applied and medical researches that meet the needs of Yemeni people and regional influence	
■ أهداف الجامعة Aims of the University	
تهدف الجامعة الى:	
<ul style="list-style-type: none"><li>• Ensuring the application of quality standards and having the distinction standards in medical and applied sciences, scientific research and community service.</li><li>• Adopting student-centered learning, the partnership with them for life, consolidating the principles of national responsibility and faith identity, looking after them and developing their capabilities after graduation and during work.</li><li>• Attracting and Employing scientists, cadres and talents to gain minds and put an end for the “brain drain” in a way that promotes and ensures the availability of thinkers, businessmen and good citizens.</li><li>• Developing the distinguished academic infrastructure continuously and establishing modern research and service centers with high efficiency that can give a real effect locally and regionally.</li><li>• Enhancing the university status as a preferred partner for local, regional and international partnership through implementing creative styles of education, exchanging researches and knowledge, and providing real and effective outcomes for developing professional practices to benefit from them locally and regionally.</li></ul>	

رؤية الكلية ورسالته وأهدافه Faculty Vision, Mission and Aims	
▪ رؤية الكلية Faculty Vision	
Contemporaneity in nursing education locally and regionally.	
أ. ▪ رسالة الكلية Faculty Mission	
Preparing highly qualified nursing cadres that meet the needs of the labor market through advanced educational and research programs that achieve sustainable development and enhance the values of leadership, teamwork and community partnership.	
▪ أهداف الكلية Aims of the Faculty	
<ul style="list-style-type: none"><li>• Preparing a qualified nursing cadre to meet the needs of public and private hospitals in accordance with comprehensive quality standards.</li><li>• Following the best nursing practices with using scientific methods in solving occupational and health problems.</li><li>• Providing continuing education opportunities to keep abreast of developments and contribute to the advancement of the nursing profession.</li><li>• To work on developing the concept of belonging to the homeland by encouraging students and their participation in relevant seminars and conferences.</li><li>• Encouraging scientific research that contributes to solving society's problems.</li><li>• Stimulating and enhancing students' creative thinking.</li></ul>	

رسالة القسم العلمي وأهدافه Department Mission and Aims	
▪ رسالة القسم Department Mission	
To provide contemporary and evidence-based nursing education in medical-surgical nursing that is aligned with national and regional healthcare needs, aiming to prepare professional nurses capable of delivering high-quality care, conducting clinical research, and contributing to healthcare development	
▪ أهداف القسم Department Aims	
يهدف القسم الى: 1- To equip students with comprehensive knowledge and advanced clinical skills in the field of medical-surgical nursing.	

- 2- To promote critical thinking, clinical decision-making, and problem-solving abilities in complex healthcare settings.
- 3- To foster ethical and professional nursing practices that respect patient rights and safety.
- 4- To engage students in community-based care and national healthcare initiatives.
- 5- To support scientific research that addresses medical-surgical challenges and improves patient outcomes.
- 6- To provide a learning environment that stimulates innovation, teamwork, and leadership among nursing students

### رسالة البرنامج وأهدافه Program Mission and Aims

#### رسالة البرنامج Program Mission

To produce highly skilled cardiopulmonary perfusionists equipped with advanced scientific knowledge, clinical competencies, and research capabilities to improve cardiac surgical outcomes and contribute to healthcare excellence.

#### أهداف البرنامج Program Aims

تصاغ أهداف البرنامج بحيث تكون واضحة وموضوعية قابلة للقياس، وتظهر من خلال المقررات الدراسية، وأن تحقق:  
(الأهداف التعليمية، الأهداف البحثية، الأهداف المهنية، أهداف خدمة المجتمع)

يهدف البرنامج الى:

1. Provide advanced theoretical and practical knowledge in cardiopulmonary perfusion.
2. Train students in clinical decision-making and patient management during cardiac surgery.
3. Develop research skills for evidence-based practice and innovation.
4. Prepare graduates for leadership roles in perfusion services and healthcare teams.
5. Promote ethical and professional practice in patient care.

### مرجعيات البرنامج Program Benchmarks

إلى ماذا استند القسم العلمي في تطوير البرنامج مثلا:  
اللوائح والأنظمة الصادرة عن وزارة التعليم العالي.

معايير التخصص الوطنية (نارس).  
المعايير المرجعية لهيئات الاعتماد الإقليمية والعالمية.  
البرامج المماثلة في الجامعات الأخرى (مسمى الدرجة/ عدد الساعات المعتمدة/ عدد الساعات طبيعة البرنامج/ عدد وأسماء المقررات) ... الخ

### أسماء البرامج المرجعية المماثلة:

#### . Benchmark Universities

The following universities offer similar master's programs in cardiovascular perfusion and were used as benchmarks in developing this program specification:

Country	University Name	Program Name	Credit Hours	Degree Type
USA	Thomas Jefferson University	Master of Science in Cardiovascular Perfusion	43	MSc
Canada	The Michener Institute / University of Toronto	Master in Cardiovascular Perfusion	42	Master
UK	University of Bristol	MSc Perfusion Science	≈42	MSc
Australia	University of Melbourne	MSc in Extracorporeal Science	≈42	MSc
Thailand	Mahidol University	MSc in Cardiovascular and Thoracic Perfusion	42	MSc
Egypt	Cairo University	Diploma and MSc in Cardiovascular Perfusion	2 years	Academic Master
India	Sri Ramachandra Institute	M.Sc. Cardiac Perfusion Technology	45	MSc

ملحق (1) المعايير الأكاديمية للمحتوى لهيئة الاعتماد.

ملحق (2) مسح أسماء البرامج المماثلة للبرنامج الحالي.

ملحق (3) مسح مخرجات التعلم في البرامج المماثلة للبرنامج الحالي.

ملحق (4) مسح الساعات المعتمدة للبرامج المماثلة للبرنامج الحالي.

ملحق (5) مسح المقررات الدراسية في البرامج المماثلة للبرنامج الحالي.

### ملخص مسح البرامج المرجعية المماثلة للبرنامج الحالي

#### مخرجات التعلم المقصودة للبرنامج (ILOs) Intended Learning Outcomes

أولاً: مجال المعرفة والفهم (A) Knowledge and Understanding

بعد الانتهاء من البرنامج بنجاح سوف يكون المتخرج قادراً على أن:

- A1. Explain the physiology and pathophysiology of the cardiovascular and respiratory systems.  
A2. Describe the principles and technologies of extracorporeal circulation.  
A3. Analyze clinical scenarios related to cardiopulmonary perfusion management.  
A4. Understand legal, ethical, and professional standards in perfusion practice.

### ثانيا: مجال المهارات الذهنية (B) Intellectual Skills

بعد الانتهاء من البرنامج بنجاح سوف يكون المتخرج قادرا على ان:

- B1. Critically evaluate clinical data to guide perfusion management.  
B2. Solve complex clinical problems in cardiopulmonary bypass procedures.  
B3. Design and conduct research in perfusion sciences.  
B4. Integrate evidence-based practice into clinical decision-making.

### ثالثا: مجال المهارات العملية والمهنية (C) Professional and Practical Skills

بعد الانتهاء من البرنامج بنجاح سوف يكون المتخرج قادرا على ان:

- C1. Operate and manage cardiopulmonary bypass equipment safely.  
C2. Monitor and adjust perfusion parameters during surgical procedures.  
C3. Manage emergency situations in the perfusion environment.  
C4. Apply infection control and patient safety protocols

### رابعا: مجال المهارات العامة (D) General Skills

بعد الانتهاء من البرنامج بنجاح سوف يكون المتخرج قادرا على ان:

- D1. Communicate effectively with healthcare teams and patients.  
D2. Work collaboratively in multidisciplinary teams.  
D3. Demonstrate leadership and time management skills.  
D4. Utilize information technology in clinical and research activities.

ملحق (6) موازنة اهداف البرنامج مع مخرجات التعلم.

ملحق (7) موازنة مخرجات التعلم المقصودة للبرنامج مع المعايير الوطنية.

ملحق (8) موازنة مخرجات التعلم للبرنامج مع المعايير المرجعية للمحتوى العلمي.

### هيكل البرنامج:

- الحد الأدنى لعدد الساعات المعتمدة أو الوحدات الدراسية لنيل درجة الماجستير في تخصص معين (30) ساعة معتمدة / وحدة دراسية، ويخصص إضافة لذلك (6) ساعات معتمدة للرسالة العلمية.
- يتكون هيكل البرنامج من المتطلبات التالية:

الوزن النسبي %	الساعات المعتمدة	عدد المقررات	المتطلبات
	-		مقررات استدرائية
71.4%	30 CH		مقررات إجبارية
14.3%	6 CH		مقررات عملية
14.3%	6 CH		الرسالة
<b>100%</b>	<b>42 CH</b>		<b>الإجمالي</b>

### أولا: المقررات الاستدرائية للبرنامج:

يجب على المتقدمين غير الحاصلين على خلفيات إدارية أكاديمية مناسبة أن يجتازوا دورات تمهيدية والتي قد تكون أي من أو جميع المقررات التالية (بحسب قرار لجنة القبول):

المتطلبات القبليّة Pre-Requisites	الساعات المعتمدة Credit Hours				اسم المقرر Course Title
	الاجمالي Total C.H	تمارين / Tut.	عملية Pr.	نظرية Th.	
					1
					2
					3
					4
					إجمالي الساعات المعتمدة

### ثانياً: المقررات الإلزامية:

## Study Plan – Cardiopulmonary Perfusion

### Detailed Study Plan (42 Credit Hours)

Semester	Course Title	Credit Hours	Theory	Practical	Clinical / Research
Semester 1	Advanced Cardiovascular Physiology and anatomy	3	2	1	0
Semester 1	Fundamentals of Cardiac Perfusion	3	2	1	0
Semester 1	Cardiac Pharmacology	3	2	1	0
Semester 1	Research Methodology	3	2	0	1
Semester 2	Advanced Cardiac Perfusion Techniques	3	2	1	0
Semester 2	Monitoring and Critical Care for Perfusion Nursing	3	2	1	0
Semester 2	Perfusion Equipment and Maintenance	3	1	2	0
Semester 2	Ethics and Legal Aspects in Clinical Practice	3	2	1	0
Semester 3	Clinical Practicum in Cardiac Perfusion I	6	0	0	6
Semester 3	Thesis Proposal Seminar	3	1	1	1

Semester 4	Clinical Practicum in Cardiac Perfusion II	6	0	0	6
Semester 4	Master Thesis	6	0	0	6

### ثالثا: المقررات الاختيارية

لا توجد

### رابعا: رسالة الماجستير

على الطالب اعداد ومناقشة رسالة علمية بواقع ( 6 ) ساعات معتمدة

#### 4. Curriculum Map (Alignment of Courses with Learning Outcomes)

The following table maps the program's courses to its intended learning outcomes (ILOs).

Course Title	A 1	A 2	A 3	A 4	B 1	B 2	B 3	B 4	C 1	C 2	C 3	C 4	D 1	D 2	D 3	D 4
Advanced Cardiovascular Physiology and anatomy	X				X				X				X			
Perfusion Technology I				X				X				X				X
Applied Cardiovascular Pharmacology			X				X				X				X	
Clinical Seminar in Perfusion I		X				X				X				X		
Perfusion Technology II	X				X				X				X			
Monitoring & Critical Care for Perfusionists				X				X				X				X
Research Methods and Biostatistics			X				X				X				X	
Clinical Seminar in Perfusion II		X				X				X				X		
Advanced Perfusion Techniques	X				X				X				X			
Elective I (e.g., Pediatric Perfusion)				X				X				X				X

Elective II (e.g., Organ Transplant Perfusion)			X				X				X				X
Thesis Proposal Seminar		X				X				X				X	
Master Thesis	X				X				X				X		

## 5. Teaching and Assessment Strategies

### 5.1 Teaching Strategies

Teaching Strategy	Description
Lectures	Used to deliver core theoretical content with audiovisual aids.
Seminars	Allow interactive discussion and student presentations on advanced topics.
Practical Training	Hands-on practice with equipment in laboratories or simulation centers.
Clinical Rotation	Supervised clinical training in cardiac centers and OR settings.
Research Projects	Design and execution of research proposal in the field of perfusion.

### 5.2 Assessment Strategies

Assessment Method	Description
Written Exams	Used to evaluate theoretical knowledge through mid-term and final exams.
Practical Exams	Hands-on tests on equipment handling and procedural skills.
Presentations	Students present clinical or research topics in seminars for evaluation.
Case Reports	Analysis and written reporting of clinical case studies.
Thesis Defense	Evaluation of research skills through presentation and oral examination.

## الخطة الدراسية لبرنامج Study Plan Study Plan Overview | خامساً: الخطة الدراسية الفصل الأول | First Semester

Course Title	Credit Hours
Advanced Cardiovascular Physiology and anatomy	3
Perfusion Technology I	3
Applied Cardiovascular Pharmacology	3
Clinical Seminar in Perfusion I	3
<b>Total</b>	<b>12</b>

## الفصل الثاني | Second Semester

	Credit Hours
Perfusion Technology II	3

Monitoring & Critical Care for Perfusionists	3
Research Methods and Biostatistics	3
Clinical Seminar in Perfusion II	3
<b>Total</b>	<b>12</b>

### الفصل الثالث | Third Semester

	Credit Hours
Advanced Perfusion Techniques	3
Elective I (e.g., Pediatric Perfusion)	3
Elective II (e.g., Organ Transplant Perfusion)	3
Thesis Proposal Seminar	3
<b>Total</b>	<b>12</b>

### الفصل الرابع | Fourth Semester

Course Title	Credit Hours
Master Thesis in Perfusion Science	6
<b>Total</b>	

## Admission and Graduation Requirements

### 6.1 Admission Requirements

- Bachelor's degree in Nursing, Anesthesia, or a related health sciences field with a minimum grade of 'Good'.
- Passing an entrance exam and a personal interview.
- Proof of English proficiency (TOEFL or IELTS).
- Computer literacy certificate (ICDL or equivalent).

### 6.2 Graduation Requirements

- Successful completion of all compulsory and elective courses (36 credit hours).
- Submission and defense of a Master's thesis (6 credit hours).
- Achieving a minimum cumulative GPA equivalent to 'Good'.

الكادر التدريسي:			
أستاذ مساعد	أستاذ مشارك	أستاذ	
4	2	1	الكادر المطلوب
4	2	1	الكادر المتوفر
			ملاحظة

## 9. Program Evaluation and Improvement

The following table outlines the key stakeholders involved in program evaluation, the assessment methods used, and the sample targeted for each method.

Targeted Group	Assessment Method	Sample
Current Students	Course evaluation surveys and feedback forms	All enrolled students each semester
Faculty Members	Interviews and curriculum evaluation questionnaires	All faculty teaching in the program

Graduates	Graduate follow-up survey (6 months post-graduation)	Random sample of alumni annually
Employers	Employer satisfaction surveys on graduate performance	Hospitals and cardiac centers hiring graduates
Clinical Supervisors	Observation-based clinical performance evaluations	Supervisors at clinical training sites
Academic Committee	Review of exam results and ILO achievement reports	Quarterly and annual review reports
Accreditation Bodies	External audits and accreditation reviews	Official reports from site visits and audits

## وصف مقررات البرنامج:

### ■ Semester 1

#### 1. Advanced Cardiovascular Physiology and anatomy (3 CH)

This course provides an in-depth exploration of cardiovascular structure and function, hemodynamic principles, cardiac output regulation, vascular resistance, and physiological responses during stress and surgery.

#### 2. Fundamentals of Cardiac Perfusion (3 CH)

Covers the foundational principles of extracorporeal circulation, components of the heart-lung machine, perfusion safety standards, and roles of perfusionists in cardiac surgery.

#### 3. Cardiac Pharmacology (3 CH)

Focuses on pharmacodynamics and pharmacokinetics of drugs used in cardiac surgery, including inotropes, vasodilators, anticoagulants, and cardioplegic agents.

#### 4. Research Methodology (3 CH)

Introduces scientific research principles, including study design, hypothesis formulation, data collection techniques, literature review, and ethical considerations in clinical research.

### ■ Semester 2

#### 5. Advanced Cardiac Perfusion Techniques (3 CH)

Examines complex perfusion protocols such as deep hypothermic circulatory arrest, off-pump strategies, and intra-aortic balloon pump (IABP) support.

#### 6. Monitoring and Critical Care for Perfusion Nursing (3 CH)

Covers ICU-based monitoring tools, ABG interpretation, blood pressure management, organ perfusion strategies, and patient stabilization techniques.

## 7. Perfusion Equipment and Maintenance (3 CH)

Provides hands-on training on setup, calibration, troubleshooting, and maintenance of perfusion machines, oxygenators, heat exchangers, and centrifugal pumps.

## 8. Ethics and Legal Aspects in Clinical Practice (3 CH)

Discusses ethical frameworks in high-risk care, patient consent, confidentiality, malpractice, and interprofessional responsibilities in critical cardiac interventions.

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### ■ Semester 3

## 9. Clinical Practicum in Cardiac Perfusion I (6 CH)

Supervised clinical experience in cardiac operating rooms. Students will assist in routine perfusion cases, learn circuit priming, patient connection, and intraoperative perfusion management.

## 10. Thesis Proposal Seminar (3 CH)

Guides students through development of a research question, literature review, methodology planning, and IRB application to prepare for the thesis phase.

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### ■ Semester 4

## 11. Clinical Practicum in Cardiac Perfusion II (6 CH)

Advanced clinical exposure where students manage complete perfusion procedures, handle emergencies, and demonstrate leadership in multidisciplinary surgical teams.

## 12. Master Thesis (6 CH)

Independent research project addressing a clinical or technical issue in cardiac perfusion. Involves data collection, analysis, and thesis defense under faculty supervision.