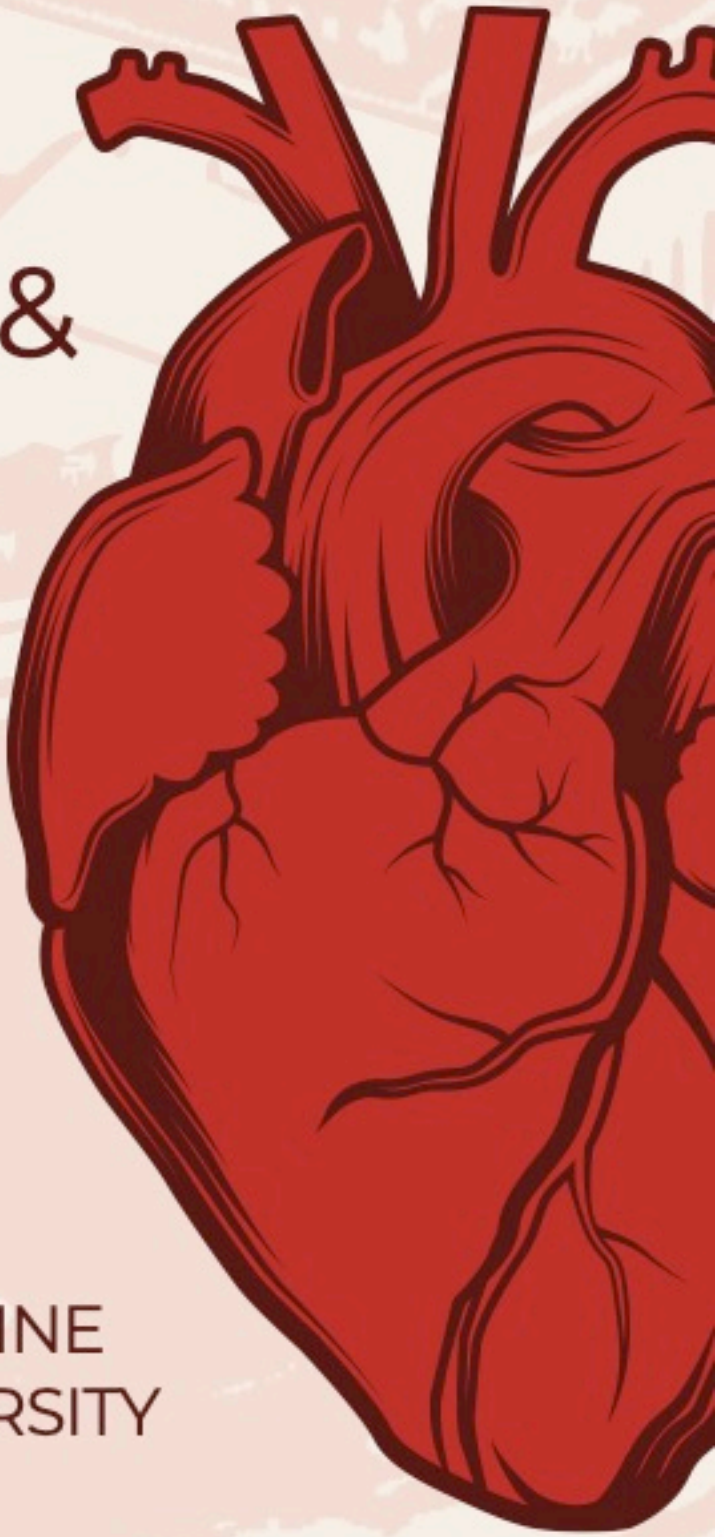
# CURRICULUM BOOK

SPECIALIST MEDICAL EDUCATION

# Cardiology & Vascular Medicine Specialist Program



FACULTY OF MEDICINE
HASANUDDIN UNIVERSITY
2021

**HIGHER EDUCATION CURRICULUM DEVELOPMENT TEAM**
**STUDY PROGRAM (Sp1) CARDIOLOGY AND VASCULAR MEDICINE**
**FACULTY OF MEDICINE HASANUDDIN UNIVERSITY**

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**HEAD OF STUDY PROGRAM**

**CARDIOLOGY AND VASCULAR MEDICINESPECIALIST**

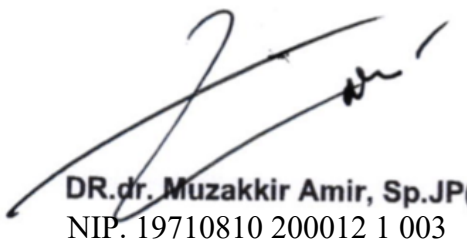
**FACULTY OF MEDICINE HASANUDDIN UNIVERSITY**

Alhamdulillah, we thank God Almighty because it is thanks to His grace and grace that we were finally able to complete the preparation of the Curriculum Book for the 2023 Cardiology Specialist Medical Education Program, Faculty of Medicine, Hasanuddin University.

The Curriculum Book is an important part of the implementation of Cardiology and Vascular Specialist education because it is the guideline and purpose of education, and serves as a reference in the implementation of education and evaluation, measuring the success of educational programs, as well as being used to maintain the quality of education so that it remains in line with the competency demands of Disease Specialist doctors. Heart and Blood Vessels specified by the Association of Indonesian Cardiovascular Specialists (PERKI). This curriculum book was prepared as a form of follow-up to changes in the education curriculum within the scope of the Cardiac and Vascular Study Program, based on the 2018 Cardiology and Blood Vessel Specialist Education Standards.

Finally, to all the teaching staff of the Department of Cardiology and Vascular Medicine, Faculty of Medicine, Hasanuddin University, who have mobilized all their resources and efforts to run the Cardiology and Vascular Medicine Specialist Study Program, Faculty of Medicine, Hasanuddin University, including all efforts for the preparation of this curriculum book, we say thanks and great appreciation.

Makassar, 05 May 2023
Head of Study Program
Cardiologist and Blood Vessel Specialist



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# CHAPTER 1

# INTRODUCTION

## 1.1.HISTORY OF THE ESTABLISHMENT OF THE STUDY PROGRAM

The establishment of the Department of Cardiology and Vascular Medicine, Faculty of Medicine, Hasanuddin University began with the formation of the Cardiology Sub-Section, Section of Internal Medicine, Faculty of Medicine, Hasanuddin University in 1975 which was chaired by Prof.dr. Junus Alkatiri SpPD-KKV, SpJP(K). The advances made by the government both in the industrial, socio-economic and health fields have changed the pattern of disease in which infectious diseases which previously occupied the top rank were replaced by cardiovascular, degenerative and cancer diseases. The average life expectancy of the Indonesian people has also increased.

Seeing the increasing number of heart disease sufferers, the eastern region of Indonesia, with its large area, certainly needs a lot of Cardiology and Vascular Medicinespecialist doctors. Even though in Indonesia, there are only two centers for the education of cardiologists and blood vessels, namely at the Faculty of Medicine, University of Indonesia and the Faculty of Medicine, Airlangga University, a plan emerged to establish a study program for cardiologists and blood vessels specialist at the Faculty of Medicine, Hasanuddin University. Thus it is necessary to establish the Department of Cardiology and Vascular Medicine, Faculty of Medicine, Hasanuddin University.

In an effort to establish the Department of Cardiology and Vascular Medicine, Faculty of Medicine, Hasanuddin University, Prof. dr. Junus Alkatiri SpPD-KKV, SpJP(K) as Chair of the Cardiology Sub-Division of the Internal Medicine Section together with the chairman of the Cardiology SMF Dr. Wahidin Sudirohusodo has conducted open approaches/meetings with the senior staff of the Department of Internal Medicine for this matter. On August 12, 1996, Prof. dr. Junus Alkatiri SpPD, SpJP wrote to PP PERKI to form a Department of Cardiology, Faculty of Medicine, Hasanuddin University. This was well received by PP PERKI (Letter No. 229/PP/X/96 dated: 4 September 1996) to form the Department of Cardiology and Vascular Medicine at Hasanuddin University.

This information was forwarded to the Head of the Department of Internal Medicine, Faculty of Medicine, Hasanuddin University regarding the Education of Specialists in Cardiovascular Diseases, then followed up by a letter to the Dean of the Faculty of Medicine by the Head of the Department of Internal Medicine by attaching a proposal for the Cardiology and Vascular Specialist Education Study Program. Hasanuddin University Medical Faculty Blood. After going through discussions with the Cardiology Section of the Faculty of Medicine, Universitas Airlangga, the Dean of the Faculty of Medicine, Hasanuddin University, forwarded a letter dated 9 February 1998 No. Prof. Dr. dr. H.

Furthermore, the Dean of the Faculty of Medicine, University of Hasanuddin sent a letter dated 22 July 1998 No. 0774/J04.7/PP/17/1998 regarding the request for the educational proposal to the Ministry of Education and Culture of the Health Sciences Consortium and a copy to the relevant agency. Not long after, a response emerged from the Ministry of Education and Culture of the Consortium of Health Sciences on July 29, 1998 agreeing to a collaboration between FK-UNHAS and FK-UNAIR as adoptive fathers, where cardiology education activities are sufficient between faculties, namely the Faculty of Medicine UNAIR and the Faculty of Medicine UNHAS. Also a letter from the Dean of the Faculty of Medicine UNAIR dated 24 August 1998 (No.1235/J03.1.1/PP.

After that a review was carried out by the staff of the Cardiology Section of the Faculty of Medicine UNAIR Surabaya, the KPS Cardiology Faculty of Medicine UNAIR with a letter dated January 27 2000 (No. 175/PP/I/17/IPJ/I/2000) determined the Cardiology Sub-Section of the Faculty of Medicine, University Hasanuddin as a place of preliminary education for prospective Cardiology and Blood Vessel Disease Specialists, with a foster father from Cardiology Department, Faculty of Medicine UNAIR. For this reason, students have been sent to take part in the Preliminary Cardiology Education, Cardiology Sub-Section, Internal Medicine Department, Faculty of Medicine, Hasanuddin University, with a length of study of 4 semesters.

To anticipate these developments, it is necessary to establish a Department of Cardiology, Faculty of Medicine, Hasanuddin University. Through a senior meeting of the Department of Internal Medicine, Faculty of Medicine, Hasanuddin University, then the Head of the Internal Medicine Section followed up with a proposal to the dean to continue at the top level. Then at the dean level a Senate Meeting of the Faculty of Medicine, Hasanuddin University, was held on

February 27, 2001 and it was agreed to propose that the Cardiology Sub-Section of the Internal Medicine Department, Faculty of Medicine, Hasanuddin University be upgraded to the Cardiology Department, Faculty of Medicine, Hasanuddin University. On June 28, 2001 received the Chancellor's Decree of Hasanuddin University regarding the establishment of the Cardiology Section of the Hasanuddin University Faculty of Medicine.

In the next journey, namely in 2005, Prof. dr. Junus Alkatiri, SpPD, SpJP(K) as Head of Cardiology and Vascular Medicine, Faculty of Medicine, Hasanuddin University prepared a Proposal for the Education Study Program for Specialists in Cardiology and Vascular Medicine, Department of Cardiology and Vascular Medicine, Faculty of Medicine, Hasanuddin University towards becoming a full education center for cardiologists- cardiologists in eastern Indonesia. This has received strong support from the Dean of the Faculty of Medicine, Hasanuddin University, Prof. Dr. dr. H. Idrus Paturusi, SpB, SpBO, Head of the Department of Internal Medicine, Faculty of Medicine, Hasanuddin University Prof. dr. A. Rifai Amirudin, SpPD-KGEH, Head of Kindergarten-Specialist Medical Education Program at the Faculty of Medicine, Hasanuddin University, Prof. dr. Farid Nurmantu, SpBA, Main Director of RS Dr. Wahidin Sudirohusodo Dr. H. Nurdin Perdana, SKM, Head of the Department of Health of the Republic of Indonesia, South Sulawesi Province Dr. H. Muh Akib Kamaluddin and General Chairperson of the Indonesian Doctors Association for the South Sulawesi Region Dr. Farid Husain SpB(K).

After going through special negotiations with various parties, on 2 June 2008 an MOU was declared in Surabaya between the Faculty of Medicine UNAIR – RSU Dr Soetomo Surabaya and the Faculty of Medicine, Hasanuddin University- Dr Wahidin Sudirohusodo Hospital on the Development of Education Programs for Specialists in Cardiovascular Diseases. The aim of this collaboration is to foster the Cardiology Section of the Hasanuddin University Faculty of Medicine to become a place of education for Cardiologists and Blood Vessel Specialists.

On October 13 2008, Head of Department – SMF Cardiology and Vascular Medicine Faculty of Medicine UNAIR Prof. Dr. dr. R. Moh. Yogiarto SpJP(K), and Head of the Cardiology and Vascular MedicineStudy Program, Faculty of Medicine UNAIR, dr. Muh. Aminuddin SpJP(K) wrote to the Chair of the Collegium of Cardiovascular Diseases (No. 466/J03.1.17/IPJ-BKII/X/2008) stating that the Department of Cardiology and Vascular Medicine, Faculty of Medicine, University of Hasanuddin Makassar has met the requirements and recommended to

become a Category I / Independent center.

On October 13, 2008 the Head of the Collegium of Cardiovascular Disease Prof. dr. H. Harmani Kalim MPH, SpJP(K) wrote to the Chairman of the Indonesian Medical Collegium Council in Jakarta for data on visiting the Cardiology and Vascular Medicine Section of the Medical Faculty, Hasanuddin University.

on date 23-25 October 2008, the Visitation Team consisting of Prof. Dr. dr. Biran Affandi, SpOG(K) as chairman, Prof. dr. Harmani Kalim MPH, SpJP(K) and Prof. Dr. dr. Dede Kusumana, SpJP(K) as a member conducted a visitation at the Cardiology and Vascular Medicine Section of the Hasanuddin University Faculty of Medicine, and established the Cardiology and Vascular Medicine Section at the Hasanuddin University Faculty of Medicine as an independent education center. The results of the visitation have been reported to the Chairman of the Indonesian Medical Collegium Council and the Head of the MKKI Accreditation Commission and related agencies.

On February 9, 2009, the Director General of the Ministry of National Education, the Directorate General of Higher Education wrote to the Chancellor of Hasanuddin University (No. 153/D/T/2009) stipulating the granting of permission to organize the Study Program in Cardiovascular Disease at the Specialist 1 level (Sp1) ) at Hasanuddin University.

In 2009, the Department of Cardiology and Vascular Medicine, Faculty of Medicine, Hasanuddin University, began accepting students for medical education programs specializing in heart and blood vessels.

## 1.2 VISION OF THE CARDIOLOGY AND VASCULAR MEDICINE SPECIALIST PROGRAM

In accordance with the Strategic Plan of the Faculty of Medicine, Hasanuddin University, the vision of the Cardiology and Vascular Specialist Study Program is formulated as follows:

*"Become a center of excellence, independence and dignity to produce graduates of Cardiology and Vascular Specialists who are professional and qualified, have a maritime spirit, and are able to compete at the national and international levels in 2024."*

## 1.3 MISSION OF THE CARDIOLOGY AND VASCULAR MEDICINESPECIALIST PROGRAM

Mission of the Cardiology and Vascular Medicine Specialist Program, Faculty of Medicine, Hasanuddin University:

1. Organizing service-based education and evidence-based medicine in the field of Cardiology and Vascular Medicine through a comprehensive and quality maritime culture approach.
2. Increasing the quantity and quality of basic and applied research in the field of Cardiology and Vascular Medicine at national and international levels.
3. Creating a good management system for medical education specialists in Cardiology and Vascular Medicine.

## 1.4 OBJECTIVES AND WORK PROGRAM OF THE STUDY PROGRAM

In general, the objectives of the Cardiology and Vascular Medicine Specialist Program are as follows:

1.3.1 Producing high-quality graduates of Cardiology and Vascular Medicine specialist doctors who have high competence in mastering science and technology.

1.3.2 Increase the capacity of the Cardiology and Vascular Medicine Specialist Program in providing access to education services to the community.

1.3.3 Developing Cardiology and Vascular Medicine Specialist Program through optimizing governance in accordance with University principles.

1.3.4 Develop cooperation in various fields to improve the quality of the Tri pillars of higher education.

1.3.5 Producing quality, relevant and competitive research in accordance with developments in science and technology, producing national and international scientific publications and patents for the benefit of society.

To achieve this general objective, there are specific objectives which are described in detail as follows:

### 1. EDUCATIONAL OBJECTIVES

The implementation of a complete, quality health-based education process in the

field of Cardiology and Vascular Medicine, based on evidence-based cardiology and includes a maritime cultural approach.

**OBJECTIVES AND WORK PROGRAM :**

**a. Improving the quality of students**

1) Admission of new students that is structured according to collegium and UNHAS acceptance standards (eg capacity)
2) Provision of new students
3) Development of cooperation for the assignment of independent student stations in the regions. Development of cooperation for independent student assignment assignments abroad
4) Evaluate the progress of students on a regular basis.
5) Inviting guest speakers to guest lectures and round table discussions (RTD).

**b. Improving the quality of teachers**

1) Mapping the needs of teachers per division
2) Encourage teaching staff to develop educational qualifications.
3) Improving the standard of admission/recruitment of teachers in educational programs for doctors specializing in heart and blood vessels.

**c. Improving the quality of educational facilities and infrastructure**

1) Preparation of modules and teaching materials in accordance with curriculum standards
2) Implement international guidelines in education and services
3) Providing library facilities, comfortable and conducive lecture halls, as well as internet access facilities.
4) Improvement of SOP in the field of education and services.

## 2. RESEARCH PURPOSES

The achievement of an increase in the results of quality basic and applied research.

**OBJECTIVES AND WORK PROGRAM :**

**a. Quantity Increase**

1) Participating students in national events (national presentations and international presentations)
2) Facilitate lecturer scientific publications.
3) Provision of study program websites as a means for students to publish scientific work.

**b. Quality Improvement**

1) Application of the research tree in determining student thesis titles and research.
2) Multidisciplinary discussions with other departments (eg conference or parade).

**c. Improved Research Application**

1) adjusting the topic of community service to the field of Cardiology and Vascular Medicine.
2) Presentation of research results at scientific events on cardiology and vascular medicine from both teaching staff and students.

## 3. ACTIVE MANAGEMENT OBJECTIVES

The implementation of management that is effective, efficient, transparent, accountable, responsible, independent, integrated and fair.

**OBJECTIVES AND WORK PROGRAM:**

**a. HR Quality Improvement**

1) Mapping and assessing the needs of educational staff in study programs
2) Jobdesk division according to the organizational structure of the study program
3) Structuring the organizational structure of study programs

**b. Improving the Quality of the Study Program Management Governance system**

1) Making SOPs for all administrative, research and educational activities.
2) Archiving and digitizing student documents (logbooks, data bundles, exam results, journals, cases, recitations, and theses)
3) Archiving and digitizing teaching staff documents (logbooks, data bundles, scientific publications, teaching materials, higher education tridharma data.
4) Archiving and digitizing study program documents (MOU, important decrees, modules, student data and educator data)
5) Procurement of computers for each room
6) Provision of room equipment

**c. Improving PS governance facilities and infrastructure**

1) Procurement of electronic equipment for documentation and presentation of activities
2) Maintenance of PS supporting facilities and infrastructure

## 1.4 JURIDICAL FOUNDATION

Some of the juridical foundations used in the preparation of this Curriculum Book include:

1.4.1 RI Law No. 20 of 2003, concerning the National Education System.

1.4.2 RI Law No. 29 of 2004, concerning Medical Practice.

1.4.3 RI Law No. 12 of 2012, concerning Higher Education.

1.4.4 RI Law No. 20 of 2013, concerning Medical Education.

1.4.5 Presidential Regulation number 8 of 2012 concerning the Indonesian National Qualifications Framework

1.4.6 PP RI No. 4 of 2014, concerning Implementation of Higher Education and Management of Higher Education.

1.4.7 PP RI No. 93 of 2015, regarding Teaching Hospitals.

1.4.8 Minister of Education and Culture No. 3 of 2020, concerning National Higher Education Standards.

1.4.9 Permenristekdikti No 62 of 2016 concerning the Quality Assurance System for PT

1.4.10 Regulation of the Minister of Research, Technology and Higher Education of the Republic of Indonesia Number 18 of 2018 concerning National Standards for Medical Education

1.4.11 Permenristekdikti RI No. 34 of 2017, regarding the STATUTES of Hasanuddin University.

1.4.12 Decree of the Director General of Higher Education, Ministry of Education and Culture of the Republic of Indonesia No. 4669/D/T/2008

1.4.13 Decree of the Chancellor of Hasanuddin University Number 24/UN14.2.2/HK/2022 concerning the Strategic Plan for the Cardiology and Vascular Specialist Study Program for 2020-2024.

## 1.5 OBJECTIVES AND TARGETS OF THE STUDY PROGRAM

The goals set by the Heart and Vascular Study Program from the five main goals above are as follows:

| Strategic goals | Target Strategic |
|---|---|
| 1.5.1 Producing graduates quality who have high competence in the mastery of science and technology | 1.5.1.1 The realization of a quality learning process, relevant, and competitive nationally and internationally across disciplines. |
| | 1.5.1.2 Realization of international standard study programs (internationalization). |
| | 1.5.1.3 The realization of the entrepreneurial spirit and innovation of students and graduates. |
| | 1.5.1.4 International quality and competitiveness. |

| | | | |
|---|---|---|---|
| 1.5.2 | Increasecapacity of the study program in providing access educational services to society. | 1.5.2.1 | The realization of increasing the capacity of study programs |
| | | 1.5.2.2 | The realization of a specialist doctor study program independent, qualified, and has attractiveness. |
| 3. Developing higher education institutions healthy through optimization appropriate governance with the BLU principle. | | 3.1 | Realization of the organizational and leadership capabilities of the study program in line with the principles principles of good higher education governance are appropriate with the principle of quality assurance and BLU |
| 4. Develop cooperation in various fields to improve the quality of the Tri Dharma of higher education. | | 4.1 | The establishment of cooperation in various fields with various parties, both inside and outside the country, to enhance strategic cooperation in the context of accelerating the development of education, research results, scientific, technological innovation results, and culture. |
| 5. Generate research quality, relevant and competitive accordingly with developments science and technology, produce national scientific publication, international and patent for the benefit of public. | | 5.1 | The realization of innovative research and publications based on local wisdom that has a strong impact on science and technology development for the benefit of the nation, country and humanity |

## 1.6 Curriculum Revision Methods and Mechanisms

The Alignment of the Curriculum of the Cardiology and Vascular MedicineStudy Program at the Faculty of Medicine, Hasanuddin University, refers to the Regulation of the Chancellor of Hasanuddin University No. 7/UN4.1/2019 concerning Implementation of Specialist Programs at Hasanuddin University. The composition of this curriculum document also refers to the Higher Education Curriculum Development Guidelines, Ministry of Technology Research and Higher Education Directorate General of Learning in 2016 and Council 57 of 2018 concerning Education Standards for Cardiologists and Blood Vessel Specialists.

The chronology of curriculum development begins with the holding of a PPDS Curriculum Alignment Workshop and Making Semester Learning Plans by the Faculty of Medicine, UNHAS Medical Faculty which was held on August 31 - September 1 2019 at Four Points By Sheraton Hotel attended by the Dean, PPDS Manager and Chair of the Quality Assurance Group as speakers and KPS, SPS and admin as delegates from Study Program. The results of the workshop were followed up with a meeting of the Department of Cardiology and Vascular Medicine to discuss Plans for Developing a Higher Education Curriculum and Forming a Curriculum Development Team on September 4 2019 in the Meeting Room of the Department of Cardiology and Vascular Medicine FK UNHAS attended by Heads of Departments, KPS, SPS, Lecturers and Admin.

The results of the preparation of the curriculum were then presented by KPS, SPS and Admin at the Higher Education Curriculum Development Training Workshop on 12-13 October 2019 at the Claro Hotel, Makassar. The event was attended by the Dean, PPDS Manager, Quality Assurance Group at the Faculty level and resource persons as speakers. Furthermore, a meeting of the Department of Cardiology and Vascular Medicine was held to discuss the revision of the Higher Education Curriculum Development Training workshop on September 11, 18, and 25 in the Meeting Room of the Department of Cardiology and Vascular Medicine, FK UNHAS. On November 22 2019, the results of the revision of the workshop in the form of a Curriculum Book were collected to the TKPPDS Manager to be forwarded to the Hasanuddin University Curriculum Reviewer Team.

At the Annual Work Meeting of the Department of Cardiology and Vascular Medicine

FK Unhas which was held in February 2020, an additional discussion was held for improving the curriculum attended by Representatives of the Dean of the Faculty of Medicine, Hasanuddin University, Head of Department, KPS, SPS, Teaching Lecturers, Director of the Main Teaching Hospital, admin , and PPDS representatives. In July 2020 Curriculum Reviewer Results with 17 criteria / Curriculum Assessment Parameters, 12 criteria met and 5 criteria not met. The results were then followed up with a meeting of the Department of Cardiology and Vascular Medicine to discuss the results of the curriculum review from the Hasanuddin University Review Team on 23 July 2020 through a zoom meeting.

# CHAPTER 2
# PROFILE OF GRADUATES AND LEARNING ACHIEVEMENTS OF GRADUATES

## 2.1 GRADUATE PROFILE

As stated in the Education Standards for Cardiologists and Blood Vessel Specialists established by the Collegium of Cardiologists and Vascular Specialists, it has been determined that the vision of the Cardiology Specialist Education Program is to become a National Education Program Capable of Producing Plenary Cardiologists and Vascular Specialists, Professional and Global Qualified. On this basis, the education of cardiologists is designed in such a way as to achieve the expected graduates.

As one of the education centers for Cardiology and Vascular Medicinespecialists in Indonesia, the Cardiology and Vascular Study Program of FK Unud strives to meet the standards set by the collegium of cardiologists and blood vessels specialists. The educational pattern applied in this study program is directed at producing cardiologist graduates who can work in accordance with their scientific fields in a professional manner, as academics/lecturers, leaders in work institutions, and leaders in professional organizations. Graduates have the following characteristics: scientists, professionals, sensitive and able to adapt to change, independent, think critically, creatively, innovatively, have an entrepreneurial spirit, have dignity, and adhere to ethics. Based on Permendikbud No.3 of 2020, Medical Council Regulation No.57 of 2018.

The Program Learning Outcomes (PLO) and the Intended Learning Outcomes (ILO) are described below:

**Program Learning Outcomes (PLO)**

| | |
|---|---|
| Communicator | Communicator Capable of providing health services interpersonal communication and a holistic perspective. |
| Health Educator and Promoter | The ability to educate, supervise, and train future medical doctors and other health professionals to work in clinical settings as well as in the community to enhance patient and community health particularly in cardiovascular sciences. |
| Care provider | Graduates will be qualified to practice as cardiologists and will be skilled in providing a diagnosis, treatment, and compassionate care across the range from complex illnesses as well as disease prevention and community health promotion. |

| | |
|---|---|
| Manager and Leader | Graduates will be able to work in a multidisciplinary team in cardiovascular health care as a team leader or manager to ensure patient safety and care services. |
| Researcher | Graduates will be qualified to work in government or non-government health care, academic, and scientific institutions asscientists who advance in cardiovascular research. |

**Intended of Learning Outcomes (ILO)**

Upon graduation, students are:

| AREA | CODE | LEARNING OUTCOME |
|---|---|---|
| ATTITUDE (A) | A1 | Able to be faithful to God Almighty, religious, civilised, upholding human values, ethical, independent, and contribute to improving the quality of life of people in medicine and health, particularly in cardiovascular field . |
| KNOWLEDGE (K) | K1 | Able to analyse technical knowledge including basic science (biomedical sciences) and clinical sciences e.g. diagnostic, therapeutic, prevention and rehabilitation in the field of cardiology and vascular medicine. |
| | K2 | Able to determine related theoretical concepts (contextual knowledge) covering clinical research, organisation services, and educational aspects in relation with the field of cardiology and vascular medicine. |
| SKILLS (S) | S1 | Able to implement logical, critical, systematic, and analytical thinking through scientific research, compile scientific conceptions and the results of the studies based on scientific principles, procedures, and ethics in the form of a scientific thesis |
| | S2 | Able to compile ideas, thoughts and scientific arguments based on evidence-based clinical practice, as well as to educate healthcare professionals and wider community |
| | S3 | Able to manage, develop, and maintain networks with national and international colleagues, institutions, as well as peers within a multidisciplinary team in cardiovascular health care |
| COMPETENCE (C) | C1 | Able to display intellectual skills, including problem-solving skills with a scientific approach and determine clinical decision making in the field of cardiology and vascular medicine. |

| | | |
|---|---|---|
| | C2 | Able to implement the concept of interpersonal skills consisting of communication skills, medical interview skills, physical examinations, conducting and interpreting the results of supporting non-invasive examinations (procedures) in the field of cardiology and vascular medicine. |
| | C3 | Able to perform catheterization lab procedures, including patient safety and preparation, infection control, invasive strategies in the field of cardiology and vascular medicine. |
| | C4 | Able to direct individual, family and community health problems in a comprehensive, integrated and sustainable manner in the context of preventive and rehabilitative cardiology and vascular medicine |

## 2.2 GRADUATE COMPETENCE STANDARDS

### 2.1 Competency Standards

Cardiologists who complete their specialist education at the Cardiac and Vascular Study Program are expected to have 6 competencies derived from the description of the duties, roles and functions of a cardiologist, as follows:

1. **Professionalism Competence**

   A Cardiologist and Blood Vessel Specialist who believes in One God, has noble morals and ethics and adheres to ethical codes and medicolegal aspects in medical practice, is disciplined, and respects social culture. Treat all patients with respect, compassion and dignity regardless of the patient's social status, and place the patient's needs above his or her own interests. Understand and recognize the specific effects of age, gender, culture, race, religion, disability and sexual orientation to the health and well-being of patients; provide care according to the specifics of the patient. Cardiologists and vascular specialists are responsible not only to patients and their families, but also to their work partners and the community in their environment.

2. **Competence Mastering Cardiology and Blood Vessels**

   Competence summarizes history, physical examination and results of investigations, to make a diagnosis and start therapy, by applying medical knowledge that is continuously being improved, to give optimal results. Although the goals of this competency prioritize results. but also need to consider efficiency, cost-effectiveness, risk-benefit ratio, and patient preference. This competence is not only applying the latest knowledge and skills in patient care, but also the necessity of lifelong learning and sharing of knowledge with others in a continuous, organized, enthusiastic and effective manner.

3. **Patient Care Competence and Procedure Skills (Patient Care and Procedural Skills) in the Field of Heart and Blood Vessels**

   Cardiologists and Blood Vessel Specialists carry out care care methods with a 'patient-centered' approach, in order to form a bond of patient trust in doctors. Cardiologists and vascular specialists are able to demonstrate the ability to listen to and absorb various patient medical information so that they can make the right diagnosis, convey information and

educate correctly. Plan and perform necessary procedures in a manner that promotes patient safety and comfort, involving the patient in making decisions.

4. **Effective Communication Competency and Ability to Work Together**

   Cardiothoracic specialists demonstrate the ability to exchange information effectively with patients, their families, and partners. Effective communication takes place in two directions, so doctors must be active listeners as well as clear and articulate speakers. For this purpose, doctors must build intensive relationships not only with patients, but also with families

   patients, colleagues and other members of the care team. Interpersonal and communication skills are a combination of verbal and nonverbal interactions with people who work and care for patients. To be successful in sharing information, clinicians must build and maintain a basis of trust with all parties, so that an environment of openness and a spirit for honest dialogue can exist. Combining interpersonal and communication skills with accurate record keeping will ensure that the information communicated during the treatment process is comprehensive, accurate and timely.

5. **System Based Practical Competency**

   System-based practice competencies focus on the basics of good medical practice, namely: patient safety and service quality improvement. Health insurance and other health insurance coverage, pay based on performance of patient centered care, all operate by system.

   Working in a health care facility, a Cardiologist and Blood Vessel Specialist are also required to work in a system, must comply with government regulations, health insurance rules and many more. Therefore, Cardiologists and Blood Vessel Specialists must understand the health care system in their workplace, the management system for available resources, and understand the principles of quality and cost control. Cardiologists and vascular specialists must develop systems thinking; that is, understanding how each part relates to the whole, how the system works, and how the system can work better, with the end goal of fewer errors and better performance.

Using systems thinking, A Cardiologist and Blood Vessel Specialist will solve problems with the aim of fixing the root of the problem, not just creating solutions that can solve temporary problems. For the purposes of system-based management, adequate information technology and strong leadership are needed.

6. **Competence to learn and improve service quality based on practical experience (Practice Based Learning and Improvement)**

Cardiologists and vascular specialists practice medicine with self-awareness, full awareness of their abilities and limitations. Reflect

themselves, evaluating on an ongoing basis the services that have been carried out is a must, in order to overcome deficiencies with lifelong learning. Cardiologists and Blood Vessel Specialists are also expected to actively conduct research either independently or in collaboration with other parties. Cardiologists and vascular specialists are also required to teach medical students, colleagues and other health workers.

## 2. GRADUATE LEARNING ACHIEVEMENTS

Graduate learning outcomes (CPL) of the Cardiology and Vascular Specialist Study Program, Faculty of Medicine, Hasanuddin University (FK Unhas) are formulated based on the vision, mission and profile of graduates of the Cardiology and Vascular Specialist Study Program. The vision of the Cardiology and Vascular Specialist Study Program at the Faculty of Medicine of Udayana University is the realization of a Cardiology and Vascular Specialist Study Program at the Faculty of Medicine, Hasanuddin University which is superior, independent, and cultured and has competitiveness at the national, regional and global levels in 2025. Mission of the Cardiologist Study Program and Blood Vessels, Faculty of Medicine, Hasanuddin University in carrying out the tri dharma of higher education based on the development of science and technology and cultural values. Learning Outcomes of the Heart and Vascular Specialist Study Program, Faculty of Medicine, Hasanuddin University,

Able to behave as a doctor who has noble professionalism (CPL 1

- Attitude):

a. pious to God Almighty and able to show a religious attitude; (S1)
b. uphold human values in carrying out duties as a doctor based on religion, morals,

and ethics; (S2)

c. contribute to improving the quality of life in society, nation, state and civilization based on Pancasila; (S3)
d. act as citizens who are proud and love their homeland, have nationalism and a sense of responsibility to the state and nation; (S4)
e. appreciate the diversity of cultures, views, religions and beliefs, as well as the opinions or original findings of others; (S5)
f. cooperate and have social sensitivity and concern for society and the environment; (S6)
g. law-abiding and disciplined in social and state life (S7)
h. internalize academic values, norms, and ethics; (S8)
i. demonstrate a responsible attitude as a doctor independently; (S9)
j. internalize the spirit of independence, struggle and entrepreneurship; (S10)
k. Demonstrate character as a professional doctor by always having a helpful attitude and culture, prioritizing patient safety, being able to work together both intra- and interprofessionally in a health care team for patient safety and implementing health service efforts within the framework of the national and global health system (S12)

Able to understand the basic principles in the diagnosis and management of Cardiology and Vascular Medicine (CPL 2 – Knowledge):

a) Knowledge and understanding of philosophy of science, molecular biology, research methodology, statistics, evidence based medicine, medical ethics and their application in the development of Cardiology and Vascular Medicinemedicine (P1)
b) Knowing and understanding anatomy, embryology, physiology, pathophysiology, histopathology, pharmacology and their clinical applications in the field of Cardiology and Vascular Medicinemedicine (P2)
c) Knowing the function and operation of various diagnostic tools in Cardiology and Vascular Medicinemedicine (P3)
d) Propose supporting examinations, and interpreting the results of supporting examinations for various types of Cardiology and Vascular Medicinedisorders (P4)

e) Make a diagnosis, carry out management and determine the prognosis of abnormalities in the field of Cardiology and Vascular Medicinemedicine (P5)

Able to apply medical science in managing heart health problems in a holistic and comprehensive manner (CPL 3 – General Skills):

a. Able to work in the main area of expertise/profession for specific and complex types of work and have work competencies that are at least equivalent to professional competency standards that apply nationally/internationally (KU1)
b. Able to make independent decisions in carrying out professional work based on logical, critical, systematic, creative and comprehensive thinking (KU2)
c. Able to compile reports on the results of studies equivalent to theses whose results are compiled in the form of publications in professional scientific journals that are accredited nationally and internationally, or produce specific design works along with their descriptions based on design methods or principles and professional codes of ethics that are recognized by professional societies at the national and international levels ; (KU3)
d. Able to communicate the results of studies, criticism, appreciation, arguments, or innovative works that are beneficial for professional development, entrepreneurship, and human benefit that can be scientifically accounted for and professionally ethical to the general public through various forms of media (KU4)
e. Able to critically evaluate work results and decisions made in carrying out professional work either by himself, colleagues or the institutional system (KU5)
f. Able to improve professional skills in specific fields through training and work experience taking into account the latest professional fields at the national, regional and international levels; (KU6)
a. Able to improve the quality of resources for the development of organizational strategic programs (KU7)
b. Able to lead a work team to solve problems both in the field of profession, as well as problems that are broader than the field of profession (KU8)
c. Able to work with other professions in the same field or not in the same field in solving complex work problems related to their professional field (KU9)
d. Able to develop and maintain work networks with professional communities and

their clients (KU10)

e. Able to be responsible for work in the field of profession in accordance with the professional code of ethics (KU11)
f. Able to increase learning capacity independently and in teams under their responsibility (KU12)
g. Able to contribute to the evaluation or development of national policies in order to improve the quality of professional education or the development of national policies in the field of profession (KU13)
h. Able to document, store, audit, secure, and retrieve data and information for the purposes of developing professional work results (KU14)

Able to solve science, technology and/or art problems in their scientific field through an inter- or multidisciplinary approach (CPL 4 – Special Skills)

a. Able to carry out diagnostic procedures for various types of cardiovascular disease (KK1)
b. Able to carry out individual cardiovascular disease management procedures holistically and comprehensively (KK2)
c. Able to explore and exchange information verbally and nonverbally with patients at all age levels and their families, colleagues, other professions and the community, in order to create a basis of trust with all parties to build a strong collaboration. (KK3)
d. Able to disseminate informationand cardiovascular knowledge effectively to colleagues, partners, patients, related parties and the community to improve the quality of cardiovascular health services (KK4)
e. Able to develop knowledge by conducting research and community service related to cardiovascular health problems in individuals, families and communities and disseminating the results (KK5)

Each module and stage in the curriculum always refers to the results of Graduate Learning Outcomes in accordance with Table 1. It is hoped that later after completing all stages of Education Students will be able to fulfill and achieve all of the Graduate Learning Outcomes that have been mandated.

# CHAPTER 3

# CURRICULUM STRUCTURE

## 3.1 EDUCATIONAL STAGES

The curriculum structure and curriculum mapping of the Heart and Vascular Specialist Study Program, Faculty of Medicine, Hasanuddin University are attached below:

1. Stage

The Cardiology and Blood Vessel Specialist Education Program (PPDS I) is carried out in 3 stages, namely stages I, II and III. The transfer from one stage to the next uses the semester system, and is adjusted to the curriculum load. The transfer is carried out when you have passed the exam and have completed the tasks at the current stage.

2. Time

Each stage consists of a semester. One semester is counted as 6 months.
Phase I: 3 semesters (I-III),
Stage II: 4 semesters (IV-VI), and
Stage III: 1 semester (VIII).

The place of education is the Integrated Heart Center, Wahidin Sudiro Husodo Hospital, Makassar.

### 3.1.1. PHASE I

The first stage of cardiovascular education is given at the beginning of education in the form of basic cardiovascular education, general clinical cardiovascular, basic echocardiography, Internal Medicine, Nephrology, and Endocrine-Metabolic. At this stage students also take general basic courses such as Medicolegal Ethics, Molecular Biology, Clinical Epidemiology, Research Methodology, and Biostatistics. At this stage the participants will undergo education in several sections outside the Department of Cardiology and Vascular Medicine FK Unhas.

### 3.1.2.1. BASIC CARDIOVASCULAR EDUCATION (SEMESTER I)

Understanding of the basis of pathogenesis, diagnosis, prevention, treatment and rehabilitation of cardiovascular disease

1. Rationale

   Clinical knowledge, skills and experience are essential to provide a solid foundation prior to undergoing specialized training. It is necessary to emphasize mastery of the fundamentals in the cardiovascular clinic.

2. Objective

- Proficient in making and carrying out anamnesis, comprehensive cardiovascular physical examination, laboratories, treating, carrying out medical and pre- and post-surgical management, complications prevention and rehabilitation in various conditions of cardiovascular disorders.
- Understand psychogenic factors and the role of age in causing symptoms and reactions, emotional and physical of people with cardiovascular disease.
- Understand the role of prevention and rehabilitation.
- Understand pathogenesis, pathology, risk factors, disease course based on history, physical examination, disease diagnosis based on history, laboratory, treating/carrying out medical and pre- and post-surgical management, complications prevention and rehabilitation in various conditions of cardiovascular disorders
- Have interaction experience with other disciplines.
- Understanding the basic substances of cigarettes and their effects on health, the effects of smoking on the cardiovascular system, the benefits of quitting smoking, stigma that can be a barrier in smoking cessation counseling, and smoking cessation programs.

3. Scope of Basic Cardiovascular Medicine

   3.1. Basic Cardiovascular Science

   3.2. Adult Clinic Cardiovascular I

4. Assessment (Exam)

   Tests on baseline cardiovascular status include:

   - the CEX mini-exam

   - case based discussion (CBD) exam

5. Time and Semester Credit System (SKS)

Basic Cardiovascular Station is carried out for 6 months (24 weeks) and in 17 credits.

### 3.1.2.2 GENERAL CLINIC MEDICINE EDUCATION (SEMESTER 2 AND 3)

Understanding of Pathogenesis, diagnosis, prevention, treatment and rehabilitation of cardiovascular disease.

1. Rationale

Knowledge, skills and clinical experience are very important so that there is a solid foundation in the comprehensive management of cardiovascular disease, a deep emphasis is needed on fundamental mastery in the fields of internal medicine, pulmonary disease, and pediatrics.

2. Objective

- Proficient in making and carrying out anamnesis, physical examination, laboratory, treating and carrying out medical management, complications prevention and rehabilitation in various abnormal conditions in the field of Cardiovascular Diseases.
- Understand psychogenic factors and the role of age in causing symptoms and reactions, emotional and physical of patients in the field of Cardiovascular Disease.
- Understanding the role of prevention and rehabilitation in the field of Cardiovascular Disease.
- Understanding pathogenesis, pathology, risk factors for disease based on history, physical examination, disease diagnosis based on history, laboratory, treating/carrying out medical and pre- and post-surgical management, complications prevention and rehabilitation in various abnormal conditions in the field of Cardiology and Vascular Diseases Blood.

3. Scope of General Clinical Medicine

3.1 Internal Medicine

Internal Medicine Station is carried out in collaboration with the Internal Medicine Study Program, Faculty of Medicine, Hasanuddin University, covering the scope of:

- Nephrology
- Endocrine and Metabolic

4. Assessment (Exam)

Examinations in general clinical medical education are adjusted to each section, but at least include the following:

Internal Medicine Station: 1 journal reading in each division

5. Length of Implementation and Semester Credit System (SKS)

Internal Medicine Study Program: Held for 6 months (24 weeks) with 12 credits.

### 3.1.2.3. ADVANCED BASIC CARDIOVASCULAR EDUCATION (SEMESTER 3)

Further understanding of the basis of pathogenesis, diagnosis, prevention, treatment and rehabilitation of cardiovascular disease.

1. Rationale

Clinical knowledge, skills and experience are essential to provide a solid foundation prior to undergoing specialized training. It is necessary to emphasize mastery of the fundamentals in the cardiovascular clinic.

2. Objective

- Proficient in making and carrying out anamnesis, comprehensive cardiovascular physical examination, laboratories, treating, carrying out medical and pre- and post-surgical management, complications prevention and rehabilitation in various conditions of cardiovascular disorders.
- Understand psychogenic factors and the role of age in causing symptoms and reactions, emotional and physical of people with cardiovascular disease.
- Understand the role of prevention and rehabilitation.
- Understand pathogenesis, pathology, risk factors, disease course based on history, physical examination, disease diagnosis based on history, laboratory, treating/carrying out medical and pre- and post-surgical management, complications prevention and rehabilitation in various conditions of cardiovascular

disorders

- Have interaction experience with other disciplines.

3. Scope of Advanced Basic Cardiovascular Medicine

3.1. Advanced Cardiovascular Clinic

3.2. Independent Cardiovascular

4. Assessment (Exam)

Tests on baseline cardiovascular status include:

- the CEX mini-exam

- case based discussion (CBD) exam

5. Length of Implementation and Semester Credit System (SKS)

Advanced Clinical Cardiovascular Stage is held for 1.5 months (6 weeks) with 3 credits.

Independent Cardiovascular Station is carried out for 3 months (12 weeks) with a total of 8 credits.

6. Assessment (Exam)

Tests on baseline cardiovascular status include:

- the CEX mini-exam

- case based discussion (CBD) exam

7. Length of Implementation and Semester Credit System (SKS)

Advanced Clinical Cardiovascular Stage is held for 1.5 months (6 weeks) with 3 credits.

Independent Cardiovascular Station is carried out for 3 months (12 weeks) with a total of 8 credits.

Curriculum mapping is presented in Table 3.1 and Figure 3.1 below:

| SEM | Modules | | Credit Points (CP) | ECTS | Learning Objectives | Intended Learning Outcomes (ILO) | | | | | | | | | | Teaching Strategy & Methods | Student Assessment | Academic Staff/Instructors | Laboratory/Practicum | Lifelong Learning Components |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | A | K | | S | | | C | | | | | | | | |
| | title | code | | | | 1 | 1 | 2 | 1 | 2 | 3 | 1 | 2 | 3 | 4 | | | | | |
| Semester I | Biostatistics | 20Y0051032 | 2 | 3.6 | Students are able to apply appropriate statistical tests in processing research data to reach appropriate conclusions and can be scientifically justified and able to properly compile systematic reviews and meta analyzes. | √ | √ | √ | | | | √ | | | | Lecture, Self-directed learning, practicum | Active participation, Practicum | Dr. dr. Burhanuddin Bahar, M.ScDr. dr. A. Alfian Zainuddin, MKM | laboratory computer | Critical thinking and communication skills |
| | Research methods | 20Y0051022 | 2 | 3.6 | Students are able to understand and master the knowledge and skills regarding Research Methodology in the field of Medical and Health sciences and then compile research proposals, analyze research data and report the research findings. | √ | | √ | √ | | √ | √ | | | | Lectures, Self-directed learning | Active participation, Written Tasks, Oral Presentation | Prof. Dr. dr. Suryani As'ad, MSc., Sp.GK(K) Dr. dr. A. Alfian Zainuddin, MKM Dr. dr. Ilhamjaya Patellongi, M.Kes | n/a | Critical thinking and communication skills |
| | Clinical epidemiology | 20Y0051042 | 2 | 3.6 | Students are able to master the knowledge of clinical epidemiology and evidence-based medicine from causal, diagnostic, prognostic and intervention research. | √ | √ | √ | √ | | √ | √ | | | | Lectures, Self-directed learning, literature reviews | Active participation, Written Tasks, literature review, Oral Presentation | Prof. Dr. Nur Nasry Noor, MPH Prof. dr. Husein Albar, SpA(K) | n/a | Critical thinking and communication skills |

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| | Molecular Biology | 20Y0051052 | 2 | 3.6 | Students are able to outline the structure of the biomolecules found in all living organisms and are able to describe the function and structure of cells, including the metabolic reactions that occur in cells. | √ | √ | √ | √ | √ | | √ | | | | Lectures, Self-directed learning, literature reviews | Active participation, Written Tasks, literature review, Oral Presentation | Prof. dr. Rosdiana Natsir, Ph.D | n/a | Critical thinking and communication skills |
| | Medicolegal Ethics | 20Y0051012 | 2 | 3.6 | Students are able to implement the principles of medical professional ethics and apply them in the services of the medical profession, health, education, research and be able to detect ethical violations of the medical and medicolegal professions so as to improve the quality and quality of medical professional services. | √ | √ | √ | | √ | | | | | | Lectures, Self-directed learning, literature reviews, small-group discussions | Active participation, Written Tasks, literature review | Prof. Dr. dr. Gatot Lawrence, Sp.PA(K), Sp.F, DFM | n/a | Critical thinking and communication skills |
| | Basic Cardiology | 20C16510112 | 12 | 24.3 | Students are able to comprehend the basic knowledge that is needed in the field of cardiovascular clinical practice | √ | √ | √ | √ | √ | | √ | √ | √ | √ | Case report, morning report, Small Group Discussion (SGD), literature review, journal discussion, bedside teaching, self-directed learning | Active participation, Oral Presentation, Mini-CEX, Case-based discussion (CBD), Journal Reading, DOPS, Portfolio (log-book) | Prof. dr. Junus Alkatiri, SpPD, SpJP(K)<br>Prof. Dr. dr. Ali Aspar Mappahya, SpPD, SpJP(K)Prof. dr. Peter Kabo, PhD, SpFK, SpJP(K)Dr. dr. Idar Mappangara, SpPD, SpJP(K)<br>Dr. dr. Muzakkir Amir, SpJP(K)Dr. dr. Abdul Hakim Alkatiri, SpJP(K)<br>dr. Pendrik Tandean, SpPD-KKV<br>Dr. dr. Khalid Saleh, SpPD-KKVdr. Almudai, SpPD, SpJPdr. Akhtar Fajar Muzakkir, SpJP(K)dr. Zaenab Djafar,Mkes, SpPD, SpJP(K)<br>dr. Aussie Fitriani Ghaznawie, Sp.JP(K)<br>dr. Az Hafid Nashar, | n/a | Critical thinking and communication skills |

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| | | | | | | | | | | | | | | | | Sp. JP(K)<br>dr. Fadillah Maricar, Sp. JP(K)<br>dr. Amelia Arindanie, Sp.JP<br>dr. Bogie Putra Mostgi, Sp.JP | | |
| **Semester II** | General Internal Medicine | 20C16510106 | 6 | 11.8 | Students are able to comprehend knowledge of diseases and clinical skills in the field of general internal medicine | √ | √ | √ | √ | √ | | √ | | | √ | Case report, Small Group Discussion (SGD), morning report, journal discussion, case report discussion, bedside teaching, self-directed learning | Active participation, Death case presentation, journal reading, portfolio (log-book), oral examination | Prof. Dr. dr. Haerani Rasyid, Sp.GK, Sp.PD, K-GH, Prof. Dr. dr. Syakib Bakri, Sp.PD, K-GH, Prof. Dr. dr. Ali Aspar Mappahya, SpPD, SpJP(K) Prof. Dr. dr. Makbul Aman, Sp.PD, K-EMD,Dr. dr. Khalid Saleh, SpPD-KKV, SpJP(K)dr. Pendrik Tandean, SpPD-KKV Dr. dr. Idar Mappangara, SpPD, SpJP(K)dr. Almudai, SpPD, SpJPdr. Zaenab Djafar,Mkes, SpPD, SpJP(K) | n/a | Critical thinking and communication skills |
| | Nephrology | 20C16510203 | 3 | 5.8 | Students are able to comprehend knowledge of diseases and clinical skills in the field of nephrology | √ | √ | √ | √ | √ | | √ | | | √ | Case report, Small Group Discussion (SGD), morning report, journal discussion, case report discussion, bedside teaching, self-directed learning | Active participation, Death case presentation, journal reading, portfolio (log-book), oral examination | Prof. Dr. dr. Haerani Rasyid, Sp.GK, Sp.PD, K-GH, Prof. Dr. dr. Syakib Bakri, Sp.PD, K-GH, | n/a | Critical thinking and communication skills |
| | Endocrine Metabolic | 20C16510303 | 3 | 5.8 | Students are able to comprehend knowledge of diseases and clinical skills in the field of endocrine and metabolic diseases | √ | √ | √ | √ | √ | | √ | | | √ | Case report, Small Group Discussion (SGD), morning report, journal discussion, case report discussion, bedside teaching, self-directed learning | Active participation, Death case presentation, journal reading, portfolio (log-book), oral examination | Prof. Dr. dr. Makbul Aman, Sp.PD, K-EMD Dr. dr. Khalid Saleh, SpPD-KKV, SpJP(K) dr. Pendrik Tandean, SpPD-KKV | n/a | Critical thinking and communication skills |

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| **Semester III** | Adult Clinical Cardiology I | 20C16520106 | 6 | 12.2 | Students are able to plan various diagnostic strategies and manage patient medication, as well as to educate patients in the setting of an outpatient clinic. | √ | √ | √ | | √ | | √ | √ | | √ | small-group discussions, morning reports, journal discussions, self-directed learning | Active participation, Oral Presentation, Mini-CEX, Case-based discussion (CBD), Journal Reading, Portfolio (log-book) | Prof. Dr. dr. Ali Aspar Mappahya, SpPD, SpJP(K)Prof. dr. Peter Kabo, PhD, SpFK, SpJP(K)<br>Dr. dr. Khalid Saleh, SpPD-KKV, SpJP(K)dr. Pendrik Tandean, SpPD-KKV<br>dr. Zaenab Djafar,Mkes, SpPD, SpJP(K) | n/a | Critical thinking and communication skills |
| | Echocardiography I | 20C16520206 | 6 | 12.2 | Students are able to practice basic echocardiography skills and are able to interpret the echocardiography findings related to the patient's clinical conditions or diseases. | √ | √ | √ | √ | √ | | √ | √ | | √ | lectures, small-group discussions, morning reports, journal discussions, bedside teaching, practicum, self-directed learning | Active participation, Oral Presentation, DOPS, Case-based discussion (CBD), Journal Reading, Portfolio (log-book), oral/written examination | dr. Pendrik Tandean, SpPD-KKVdr. Akhtar Fajar Muzakkir, SpJP(K)dr. Aussie Fitriani Ghaznawie, SpJP | practical echocardiography | Critical thinking and communication skills |
| **Semester IV** | Invasive Cardiology & Non Surgical Interventions I | 20C16520306 | 6 | 11.8 | Students are able to practice basic skills in the field of invasive cardiology procedures under supervision and are able to interpret the findings. | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | lecture, small-group discussion, morning report, journal discussion, literature review, bedside teaching, practicum, self-directed learning | Active participation, DOPS, Journal Reading, Portfolio (log-book), oral/written examination | Prof. Dr. dr. Ali Aspar Mappahya, SpPD, SpJP(K)Dr. dr. Abdul Hakim Alkatiri, SpJP(K)<br>dr. Az Hafid Nashar, Sp. JP(K) | catheterisation laboratory | Critical thinking and communication skills |

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| | Critical Cardiology I | 20C16520406 | 6 | 12.2 | Students are able to practice basic skills in the field of critical and intensive care of cardiology, to analyze patient-based problems and work-up the diagnosis, and deliver intensive management related to critical cardiovascular diseases. | √ | √ | √ | √ | √ | | √ | √ | √ | √ | lecture, small-group discussion, morning report, journal discussion, literature review, bedside teaching, practicum, self-directed learning | Active participation, Oral Presentation, Mini-CEX, DOPS, Case-based discussion (CBD), Journal Reading, Portfolio (log-book), oral/written examination | dr. Akhtar Fajar Muzakkir, SpJP(K) dr. Fadillah Maricar, Sp. JP(K) | invasive ventilation, central venous catheter implantation | Critical thinking and communication skills |
| **Semester V** | Pulmonology | 20C16530103 | 3 | 5.8 | Students are able to comprehend knowledge of diseases and clinical skills in the field of pulmonology and respiratory medicine | √ | √ | √ | √ | √ | | √ | | | √ | Case report, Small Group Discussion (SGD), journal discussion, literature review, bedside teaching, self-directed learning | Active participation, literature review, journal reading | Dr. dr. Irawaty Djaharuddin, Sp.P(K) | n/a | Critical thinking and communication skills |
| | Cardiovascular emergency I | 20C16530203 | 3 | 6.1 | Students are able to practice their knowledge and skills in the field of cardiovascular emergencies, to determine the clinical diagnosis, and to deliver fast-response management related to acute cardiovascular diseases. | √ | √ | √ | √ | √ | | √ | √ | √ | | Case report, Small Group Discussion (SGD), morning report, journal discussion, literature review, bedside teaching, practicum, self-directed learning | Active participation, Oral Presentation, Mini-CEX, Case-based discussion (CBD), Journal Reading, Portfolio (log-book), oral/written examination | Dr. dr. Idar Mappangara, SpPD, SpJP(K)dr. Akhtar Fajar Muzakkir, SpJP(K) | n/a | Critical thinking and communication skills |

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| | Cardiovascular Prevention and Rehabilitation | 20C16530303 | 3 | 6.1 | Students are able to competently perform diagnostic and prognostic exercise assessments, validate the results and afterwards compile exercise and physical activity recommendations. | √ | √ | √ | √ | √ | | √ | | √ | journal discussion, bedside teaching, practicum, self-directed learning | Active participation, Journal Reading, DOPS, Portfolio (log-book), oral/written examination | Prof. dr. Junus Alkatiri, SpPD, SpJP(K)dr. Zaenab Djafar,Mkes, SpPD, SpJP(K)dr. Almudai, SpPD, SpJP | practical treadmill test | Critical thinking and communication skills |
| | Pediatric Cardiology I | 20C16530403 | 3 | 5.8 | Students are able to practice fundamental learning in pediatric cardiology in order to determine the clinical diagnosis, to carry out invasive and non-invasive procedures, and to deliver proper therapy related to pediatric and congenital heart disease. | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | Lecture, Case report, Small Group Discussion (SGD), morning report, journal discussion, literature review, bedside teaching, practicum, self-directed learning | Active participation, Oral Presentation, Mini-CEX, DOPS, Case-based discussion (CBD), Literature review, Journal Reading, Portfolio (log-book), oral/written examination | dr. Yulius Patimang, SpA, SpJP(K) dr. Andi Alief Utama Armyn, MKes, SpJP(K) | practical echocardiography, laboratory catheterization | Critical thinking and communication skills |
| **Semester VI** | Electrophysiology & Arrhythmia | 20C16530503 | 3 | 5.8 | Students are able to perform diagnostic and therapeutic skills associated with cardiac devices and cardiac electrophysiology procedures under supervision. | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | Small Group Discussion (SGD), morning report, journal discussion, bedside teaching, practicum, self-directed learning | Active participation, Oral Presentation, Mini-CEX, DOPS, Case-based discussion (CBD), Literature review, Journal Reading, Portfolio (log-book), oral/written examination | Dr. dr. Muzakkir Amir, SpJP(K) | catheterisation laboratory | Critical thinking and communication skills |

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| | Cardiovascular Imaging | 20C16530603 | 3 | 5.8 | Students are able to practice numerous non-invasive diagnostic modalities in cardiology such as cardiac CT, cardiac MRI as well as nuclear cardiology | √ | √ | √ | √ | √ | | √ | √ | | | lectures, morning reports, journal discussions, self-directed learning | Active participation, Oral Presentation, Journal Reading, oral/written examination | Prof. dr. Muh Ilyas, SpRad(K)dr. Aussie Fitriani Ghaznawie, SpPD, SpJP | n/a | Critical thinking and communication skills |
| | Vascular | 20C16530703 | 3 | 6.1 | Students are able to work-up clinical diagnosis and deliver management related to acute and chronic vascular diseases, including arterial diseases, venous diseases, and large vessel abnormalities. | √ | √ | √ | √ | √ | | √ | √ | | √ | small-group discussions, morning reports, journal discussions, bedside teaching, practicum, self-directed learning | Active participation, Oral Presentation, DOPS, Journal Reading, Portfolio (log-book), oral/written examination | Dr. dr. Idar Mappangara, SpPD, SpJP(K)<br>dr. Amelia Arindanie, Sp.JP | practical echo doppler vascular | Critical thinking and communication skills |
| | Cardiothoracic Surgery | 20C16530803 | 3 | 5.8 | Students are able to assist pre-operative, intra-operative and post-operative care in coronary artery bypass grafting, valvular surgery, and endovascular procedures. | √ | √ | √ | √ | √ | | √ | √ | √ | √ | small-group discussions, case-based discussions, journal discussions, bedside teaching, self-directed learning | Active participation, Oral Presentation, Case-based discussion, DOPS, Case report presentation, Portfolio (log-book), oral/written examination | dr. Muhammad Nuralim Mallapasi, SpB, SpBTKV<br>Prof. Dr. dr. Syafri K. Arif, Sp.An, KIC-KAKV<br>Dr. dr. Hizbullah, Sp.An, KIC-KAKV | n/a | Critical thinking and communication skills |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Research Thesis Proposals | 20C16550503 | 3 | 6.4 | Students are able to deliver a comprehensive research proposal presentation and are able to determine a hypothesis or key research points in their thesis proposal | √ | √ | √ | √ | √ | √ | √ | | | Lectures, Project research, self-directed learning | Thesis proposal: preparation and seminar (oral presentation) | Prof. dr. Junus Alkatiri, SpPD, SpJP(K)<br>Prof. Dr. dr. Ali Aspar Mappahya, SpPD, SpJP(K)Prof. dr. Peter Kabo, PhD, SpFK, SpJP(K)Dr. dr. Idar Mappangara, SpPD, SpJP(K)<br>Dr. dr. Muzakkir Amir, SpJP(K)Dr. dr. Abdul Hakim Alkatiri, SpJP(K)<br>dr. Pendrik Tandean, SpPD-KKV<br>Dr. dr. Khalid Saleh, SpPD-KKVdr. Almudai, SpPD, SpJPdr. Akhtar Fajar Muzakkir, SpJP(K)dr. Zaenab Djafar,Mkes, SpPD, SpJP(K)<br>dr. Aussie Fitriani Ghaznawie, Sp.JP(K)<br>dr. Az Hafid Nashar, Sp. JP(K)<br>dr. Fadillah Maricar, Sp. JP(K)<br>dr. Andi Alief Utama Armyn, MKes, SpJP(K)dr. Yulius Patimang, SpA, SpJP(K) dr. Az Hafid Nashar, Sp. JP(K) | n/a | Critical thinking and communication skills |
| **National Board Computer-based Test** | | | | | | | | | | | | | | | | | | | |
| **Semester VII** | Advanced Cardiology A | 20C16540103 | 3 | 6.4 | Students are able to demonstrate skills independently in the field of clinical cardiology, to provide and manage services for hospitalized patients. | √ | √ | √ | √ | √ | | √ | √ | | √ | Case report, morning report, Small Group Discussion (SGD), literature review, journal discussion, bedside teaching, self-directed learning | Active participation, Oral Presentation, Mini-CEX, Case-based discussion (CBD), Journal Reading, DOPS, Portfolio (log-book) | Prof. dr. Peter Kabo, PhD, SpFK, SpJP(K)<br>Prof. Dr. dr. Ali Aspar Mappahya, SpPD, SpJP(K)dr. Pendrik Tandean, SpPD-KKV<br>Dr. dr. Khalid Saleh, SpPD-KKVdr. Zaenab Djafar,Mkes, SpPD, SpJP(K) | n/a | Critical thinking and communication skills |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Advanced Cardiology B | 20C16540203 | 3 | 6.4 | Students are able to demonstrate skills independently in the field of clinical cardiology, to provide and manage services for hospitalized patients particularly for patients requiring a multidisciplinary approach. | √ | √ | √ | √ | √ | | √ | √ | | √ | Case report, morning report, Small Group Discussion (SGD), literature review, journal discussion, bedside teaching, self-directed learning | Active participation, Oral Presentation, Mini-CEX, Case-based discussion (CBD), Journal Reading, DOPS, Portfolio (log-book) | Prof. dr. Junus Alkatiri, SpPD, SpJP(K)<br>Prof. dr. Peter Kabo, PhD, SpFK, SpJP(K)<br>Prof. Dr. dr. Ali Aspar Mappahya, SpPD, SpJP(K)dr. Pendrik Tandean, SpPD-KKV<br>Dr. dr. Khalid Saleh, SpPD-KKVdr. Zaenab Djafar,Mkes, SpPD, SpJP(K) | n/a | Critical thinking and communication skills |
| | Adult Clinical Cardiology II | 20C16540303 | 3 | 6.4 | Students are able to plan and manage comprehensive diagnostic and therapeutic strategies as well as to educate patients in the setting of an outpatient clinic. | √ | √ | √ | √ | √ | | √ | √ | | √ | small-group discussions, morning reports, journal discussions, self-directed learning | Active participation, Oral Presentation, Mini-CEX, Case-based discussion (CBD), Journal Reading, Portfolio (log-book) | Prof. dr. Peter Kabo, PhD, SpFK, SpJP(K)<br>Prof. Dr. dr. Ali Aspar Mappahya, SpPD, SpJP(K)<br>Dr. dr. Muzakkir Amir, SpJP(K)<br>Dr. dr. Idar Mappangara, SpPD, SpJP(K)<br>Dr. dr. Abdul Hakim Alkatiri, Sp.JP(K) | n/a | Critical thinking and communication skills |
| | Echocardiography II | 20C16540403 | 3 | 6.4 | Students are able to practice advanced echocardiography skills including transesophageal echocardiography, stress echocardiography and other procedures as well as to interpret echocardiography findings related to the patient's clinical conditions or diseases. | √ | √ | √ | √ | √ | | √ | √ | √ | √ | lectures, small-group discussions, morning reports, journal discussions, bedside teaching, practicum, self-directed learning | Active participation, Oral Presentation, DOPS, Case-based discussion (CBD), Journal Reading, Portfolio (log-book), oral/written examination | dr. Pendrik Tandean, SpPD-KKVdr. Yulius Patimang, SpA, SpJP(K)dr. Aussie Fitriani Ghaznawie, Sp.JP(K) | practical echocardiography | Critical thinking and communication skills |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Semester VIII** | Invasive Cardiology & Non-Surgical Interventions II | 20C16540503 | 3 | 6.4 | Students are able to plan and manage diagnostic and therapeutic procedures as well as to practice skills in the field of invasive cardiology under supervision. | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | lecture, small-group discussion, morning report, journal discussion, literature review, bedside teaching, practicum, self-directed learning | Active participation, DOPS, Journal Reading, Portfolio (log-book), oral/written examination | Prof. Dr. dr. Ali Aspar Mappahya, SpPD, SpJP(K)Dr. dr. Abdul Hakim Alkatiri, SpJP(K)<br>dr. Az Hafid Nashar, Sp. JP(K) | catheterisation laboratory | Critical thinking and communication skills |
| | Critical Cardiology II | 20C16540603 | 3 | 6.4 | Students are able to analyze patient-based problems and afterward plan and manage diagnostic and therapeutic strategies in the field of critical and intensive cardiovascular care. | √ | √ | √ | √ | √ | | √ | √ | √ | √ | lecture, small-group discussion, morning report, journal discussion, literature review, bedside teaching, practicum, self-directed learning | Active participation, Oral Presentation, Mini-CEX, DOPS, Case-based discussion (CBD), Journal Reading, Portfolio (log-book), oral/written examination | dr. Akhtar Fajar Muzakkir, SpJP(K)<br>dr. Fadillah Maricar, Sp. JP(K) | invasive ventilation, central venous catheter implantation, endotracheal tube insertion | Critical thinking and communication skills |
| | Cardiovascular Emergency II | 20C16540703 | 3 | 6.4 | Students are able to provide fast decision-making based on their knowledge and skills in the field of cardiovascular emergencies in order to deliver fast-response management related to acute cardiovascular diseases. | √ | √ | √ | √ | √ | | √ | √ | √ | | Case report, Small Group Discussion (SGD), morning report, journal discussion, literature review, bedside teaching, practicum, self-directed learning | Active participation, Oral Presentation, Mini-CEX, Case-based discussion (CBD), Journal Reading, Portfolio (log-book), oral/written examination | Dr. dr. Idar Mappangara, SpPD, SpJP(K)<br>dr. Akhtar Fajar Muzakkir, SpJP(K) | n/a | Critical thinking and communication skills |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pediatric Cardiology II | 20C16540803 | 3 | 6.4 | Students are able to practice advanced learning in pediatric cardiology in order to determine a clinical diagnosis, to carry out invasive and non-invasive procedures, and to deliver proper therapy related to pediatric and congenital heart disease. | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | Lecture, Case report, Small Group Discussion (SGD), morning report, journal discussion, literature review, bedside teaching, practicum, self-directed learning | Active participation, Oral Presentation, Mini-CEX, DOPS, Case-based discussion (CBD), Literature review, Journal Reading, Portfolio (log-book), oral/written examination | dr. Yulius Patimang, SpA, SpJP(K)<br>dr. Andi Alief Utama Armyn, MKes, SpJP(K) | practical echocardiography, laboratory catheterization | Critical thinking and communication skills |
| **Semester IX** | Advanced Integrated Cardiology I | 20C16550102 | 2 | 4.3 | Students are able to independently perform comprehensive clinical cardiovascular practice. In addition, students are able to build networks in other cardiovascular health services and interact with local staff and communities in other districts. | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | Self-directed learning, practicum, small-group discussions | Active participation, portfolio (log-book), Mini-CEX, DOPS | Prof. dr. Peter Kabo, PhD, SpFK, SpJP(K)<br>Dr. dr. Idar Mappangara, SpPD, SpJP(K) | n/a | Critical thinking and communication skills |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Advanced Integrated Cardiology II | 20C16550202 | 2 | 4.3 | Students are able to independently perform comprehensive clinical cardiovascular practice. In addition, students are able to build networks in other cardiovascular health services and interact with local staff and communities in other districts. | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | Self-directed learning, practicum, small-group discussions | Active participation, portfolio (log-book), Mini-CEX, DOPS | Dr. dr. Idar Mappangara, SpPD, SpJP(K)dr. Zaenab Djafar,Mkes, SpPD, SpJP(K) | n/a | Critical thinking and communication skills |
| | Advanced Integrated Cardiology III | 20C16550302 | 2 | 4.3 | Students are able to independently perform comprehensive clinical cardiovascular practice. In addition, students are able to build networks in other cardiovascular health services and interact with local staff and communities in other districts. | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | Self-directed learning, practicum, small-group discussions | Active participation, portfolio (log-book), Mini-CEX, DOPS | Dr. dr. Muzakkir Amir, SpJP(K)Dr. dr. Abdul Hakim Alkatiri, SpJP(K) | n/a | Critical thinking and communication skills |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Advanced Integrated Cardiology IV | 20C16550402 | 2 | 4.3 | Students are able to independently perform comprehensive clinical cardiovascular practice. In addition, students are able to build networks in other cardiovascular health services and interact with local staff and communities in other districts. | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | Self-directed learning, practicum, small-group discussions | Active participation, portfolio (log-book), Mini-CEX, DOPS | Dr. dr. Abdul Hakim Alkatiri, SpJP(K)<br>dr. Aussie Fitriani Ghaznawie, Sp.JP(K) | n/a | Critical thinking and communication skills |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Final Thesis Defense | 20C16550606 | 6 | 12.8 | Students are able to present the research findings, interpret the results of data analysis in a scientific manner, to discuss research findings related to current literature and research, to summarize and draw conclusions, and finally to defend the final thesis. | √ | √ | √ | √ | √ | √ | √ | | | Lectures, Project research, self-directed learning | Final Thesis Defense: preparation and seminar (oral presentation) | Prof. dr. Junus Alkatiri, SpPD, SpJP(K)<br>Prof. Dr. dr. Ali Aspar Mappahya, SpPD, SpJP(K)Prof. dr. Peter Kabo, PhD, SpFK, SpJP(K)Dr. dr. Idar Mappangara, SpPD, SpJP(K)<br>Dr. dr. Muzakkir Amir, SpJP(K)Dr. dr. Abdul Hakim Alkatiri, SpJP(K)<br>dr. Pendrik Tandean, SpPD-KKV<br>Dr. dr. Khalid Saleh, SpPD-KKVdr. Almudai, SpPD, SpJPdr. Akhtar Fajar Muzakkir, SpJP(K)dr. Zaenab Djafar,Mkes, SpPD, SpJP(K)<br>dr. Aussie Fitriani Ghaznawie, Sp.JP(K)<br>dr. Az Hafid Nashar, Sp. JP(K)<br>dr. Fadillah Maricar, Sp. JP(K)<br>dr. Andi Alief Utama Armyn, MKes, SpJP(K)dr. Yulius Patimang, SpA, SpJP(K) dr. Az Hafid Nashar, Sp. JP(K) | n/a | Critical thinking and communication skills |
| **Local OSCE Examination** | | | | | | | | | | | | | | | | | | |
| **National Board OSCE Examination** | | | | | | | | | | | | | | | | | | |

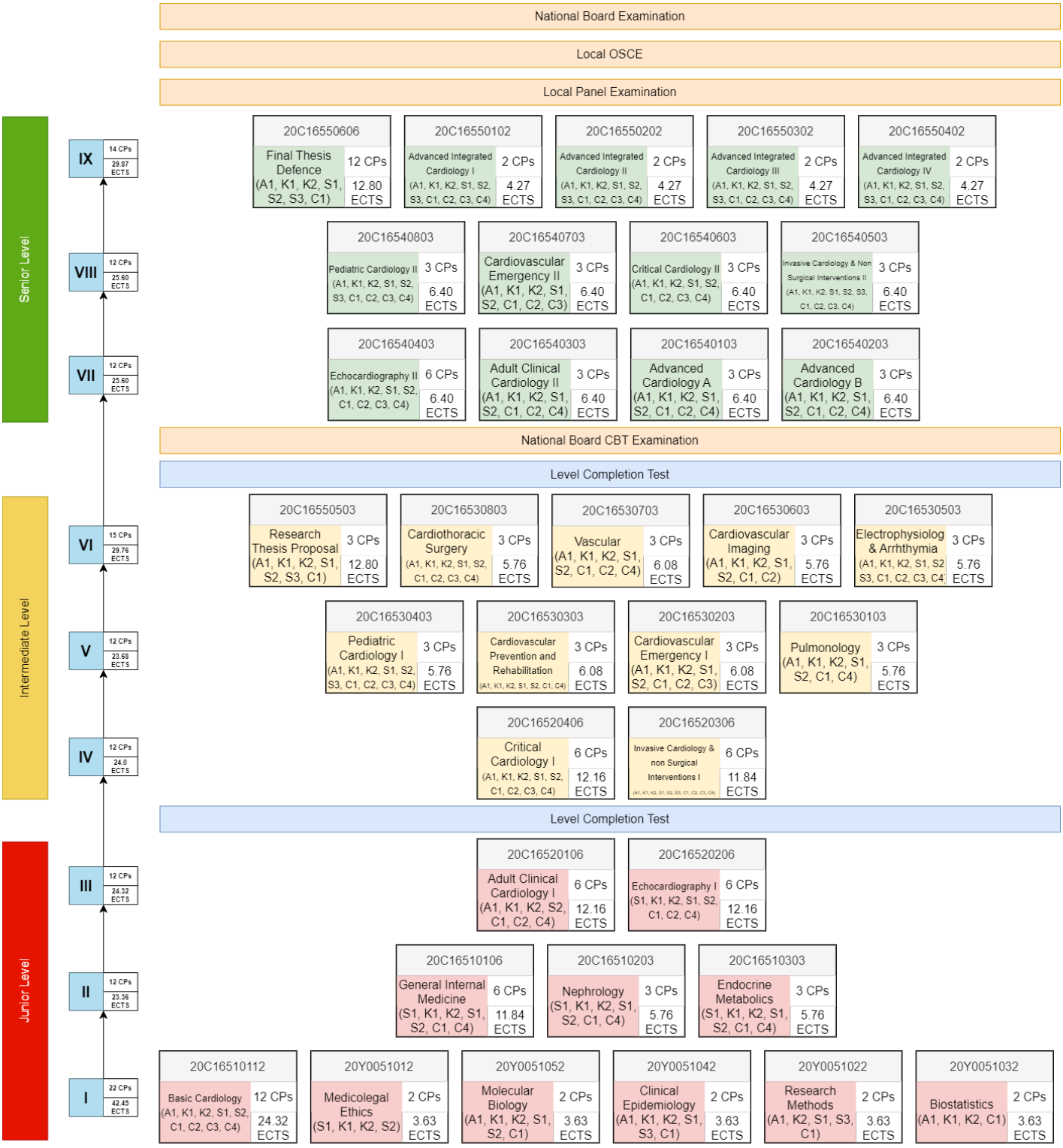



**Figure 3.1 Curriculum mapping of the Cardiology and Vascular Specialist Study Program**

### 3.1.2.4. MAJOR SCIENTIFIC ASSIGNMENT PHASE I

The scientific tasks completed in stage I are:

- 1 case report and 1 literature review at basic cardiology stage
- 1 case report/death case at internal medicine station

### 3.1.2.5. FINAL ASSESSMENT OF PHASE I

The final assessment of stage I is in the form of a stage I exam. The exam is in the form of multiple choice questions. Conducted 2 weeks before stage I is completed. If you do not pass the stage exam, a remedial exam will be held 1 week before the end of stage I.

### 3.1.2.6 LEARNING ACHIEVEMENT TARGET PHASE I

After completing Stage 1 Education, students are expected to:

1. Able to explain the process of multidisciplinary clinical learning, research methodology and biostatistics, clinical epidemiology, and molecular biology correctly.
2. Able to do medical communication.
3. Able to explain basic cardiology principles correctly and perform Basic Cardiology skills.
4. Able to explain the principles of cardiology examination at the initial level correctly and carry out the principles of basic cardiology examinations correctly.
5. Able to correctly explain basic and advanced life support principles at the initial level.
6. Able to explain the basics of cardiac arrest management correctly and perform cardiac arrest management.
7. Able to explain anatomy, physiology and pharmacology related to Cardiology correctly
8. Able to make and present scientific work in the form of 1 case report and 1 literature review on Basic Cardiology and 1 Death Case in Internal Medicine Stage

Minimum competence as a prerequisite for increasing the level by taking the stage exam.

### 3.1.3 TAHAP II (MADYA)

The second stage of cardiovascular education is given after the education participants pass the first stage exam. At this stage participants will undergo special clinical cardiovascular education in special sub-sections/clinics in the Cardiology and Vascular Medicine Section of FK Unhas.

Below is presented the Second Stage (Madya) program curriculum.
Description of the subjects as listed below.

#### 3.1.3.1 CLINICAL CARDIOVASCULAR EDUCATION

In-depth understanding of the pathogenesis, diagnosis, prevention, treatment and rehabilitation of cardiovascular disease

1. Rationale

   Knowledge, skills and clinical experience are very important so that there is a solid foundation before undergoing training in more specialized fields. It is necessary to emphasize mastery of the fundamentals in the cardiovascular clinic.

2. Objective

   - Proficient in making and carrying out history taking, physical examination, medical management as well as pre and post surgery, complications prevention and rehabilitation in various conditions of cardiovascular disorders.
   - Understand psychogenic factors and the role of age in causing symptoms and reactions, emotional and physical in patients with cardiovascular disease. Understand the role of prevention and rehabilitation.
   - Understanding pathogenesis, pathology, risk factors, disease course based on history, physical examination, disease diagnosis based on history, laboratory, treating/carrying out medical and pre- and post-surgical management, complications prevention and rehabilitation in various conditions of cardiovascular disorders
   - Have interaction experience with other disciplines.

3. The scope of specialized clinical cardiovascular medicine

   3.1 Division of Invasive Diagnostics and Non-Surgical Interventions

   3.1.1 Limitation

   - Invasive imaging module-cardiac catheterization and angiography

   3.1.2 Assessment (Exam)

Exams in the Invasive Diagnostic and Non-Surgical Intervention division include:

- Pre-test : weight value 10 %
- 1 fruit journal reading : weight value 15 %
- 1 piece of reading textbook : weight value 15 %
- PAT mini-exam : weight value 15 %
- *DOPS* : weight value 15 %
- Post test : weight value 30 %

3.1.3 Time and Semester Credit System (SKS)

The Invasive Diagnostic and Non-Surgical Intervention Division is held for 3 months (12 weeks) and in 4 credit hours (48 meeting hours).

*3.2* Division of Non-Invasive Echocardiography

3.2.1 Limitation

- Non-invasive echocardiography Imaging Module

3.2.2 Assessment (Exam)

Exams in the non-invasive echocardiography division include:

- Pre-test
- 1 fruit journal reading
- 1 piece of reading textbook
- PAT mini-exam
- direct observational procedural skills (DOPS) test
- Post test

3.2.3 Time and Semester Credit System (SKS)

The non-invasive echocardiography division is carried out for 3 months (12 weeks) and in 4 credits

3.3 Division of Cardiovascular Surgery and Postoperative ICU

The Cardiovascular Surgery Division and the Post-Surgery ICU were carried out in collaboration with the BTKV Division, the Surgery Study Program, Faculty of Medicine, Hasanuddin University.

3.3.1 Limitation

Cardiac Surgery and Postoperative ICU Care Module

3.3.2 Evaluation(Exam)

Examinations in the Cardiovascular Surgery and Post-Surgery ICU divisions were adjusted to the assessment method of the BTKV Division of the Study Program of Surgery, Faculty of Medicine, Udayana University. But at least includes 1 reading journal (50% weight) and 1 reading textbook (50% weight).

3.3.3 Time and Semester Credit System (SKS)

The Cardiovascular Surgery Division and Post-Surgery ICU are held for 1 month (4 weeks) and in 2 credits

3.4 Division of Pediatric Cardiology

The Division of Pediatric Cardiology is carried out in collaboration with the Division of Cardiology, Study Program of Child Health, Faculty of Medicine, Hasanuddin University.

3.4.1 Limitation

- Pediatric Cardiology Module
- Congenital Heart Disease Module

3.4.2 Assessment (Exam)

The examination in the Pediatric Cardiology division is adjusted to the assessment method of the Pediatric Cardiology Division. However, it includes at least 2 journal readings (50% weight) and 2 case reports or literature review (50% weight).

3.4.3 Time and Semester Credit System (SKS)

The Pediatric Cardiology Division is held for 3 months (12 weeks) and in 6 credits

3.5 Division of Cardiovascular Prevention and Rehabilitation

3.5.1 Limitation

- Cardiovascular Disease Prevention Module: Management and Assessment of Risk Factors

- Exercise Rehabilitation and Physiology Module
- Cardiac Training Test Module
- Preventive Cardiology and Rehabilitation

3.5.2 Assessment (Exam)

Exams in the Cardiovascular Prevention and Rehabilitation division include:

- Pre-test
- 1 fruit journal reading
- 1 piece of reading textbook
- direct observational procedural skills (DOPS) test
- Post test

3.5.3 Time and Semester Credit System (SKS)

The cardiovascular prevention and rehabilitation division is held for 1.5 months (6 weeks) and in 3 credits

3.6 Research I

Research Module I Cardiology Specialist Study Program

3.6.1 Limitation

Research Module preparation of Research Proposals

3.6.2 Evaluation

Research Proposal Examination

3.6.3 Time and Semester Credit System

Research Module I is carried out during phase II and is worth 3 credits.

3.7 Vascular Division

3.7.1 Limitation

- Peripheral Artery Vascular Disease Module
- Module Aortic Diseases and Trauma to the Aorta and Heart
- Venous Thromboembolic Disease Module
- Pulmonary Embolism and Chronic Pulmonary Hypertension

3.7.2 Assessment (Exam)

Exams in the Vascular division include:

- Pre-test
- 1 fruit journal reading
- 1 piece of reading textbook
- PAT mini-exam
- direct observational procedural skills (DOPS) test
- Post test

3.7.3 Time and Semester Credit System (SKS)

The Vascular Division is carried out for 1.5 months (6 weeks) and in 4 credits

3.8 Electrophysiology Division

3.8.1 Limitation

- Arrhythmia Module
- Atrial Fibrillation Module
- Syncope Module

3.8.2 Assessment (Exam)

Exams in the Electrophysiology division include:

- Pre-test
- 1 fruit journal reading
- 1 piece of reading textbook
- PAT mini-exam
- direct observational procedural skills (DOPS) test
- Post test

3.8.3 Time and Semester Credit System (SKS)

The Electrophysiology Division is held for 1.5 months (6 weeks) and in 2 credits

3.9 ER/Emergency Division

3.9.1 Limitation

Comprehensive Cardiovascular Emergency Modules II :

- Acute Cardiovascular Module
- Acute Coronary Syndrome Module
- Sudden Cardiac Death and Resuscitation Module
- Hypertension Module
- Diabetic Heart Disease Module
- Cardiac Failure Module
- Myocardial Disease Module
- Pericardial Diseases Module
- Syncope Module
- Module Aortic Disease and Trauma to the Aorta and Heart
- Peripheral Artery Vascular Disease Module
- Venous Thromboembolic Disease Module
- Pulmonary Embolism Module
- Intensive Cardiovascular Module

3.9.2 Assessment (Exam)

Exams in the ER/Emergency division include:

- Pre-test
- 1 fruit journal reading
- 1 piece of reading textbook
- PAT mini-exam
- direct observational procedural skills (DOPS) test
- Post test

3.9.3 Time and Semester Credit System (SKS)

The ER/Emergency Division is held for 3 months (12 weeks) and in 4 credits

3.10 Division of Nuclear Cardiology and Cardiovascular Imaging

The Division of Nuclear Cardiology and Cardiovascular Imaging is operational together with the Study Program of Cardiology and Vascular Medicine, Faculty of Medicine, University of Indonesia. Education in this division is carried out at Harapan Kita Heart Hospital because the facilities at the Sanglah Central General Hospital are inadequate.

3.10.1 Limitation

Non-Invasive Imaging Modules-CMR, CT and Nuclear

3.10.2 Assessment (Exam)

The examination in the Nuclear Cardiology and Cardiovascular Imaging division was adjusted to the assessment method of the Nuclear Cardiology and Non Cardiovascular Imaging division of FK UI/ Harapan Kita Heart Hospital.

3.10.3 Time and Semester Credit System (SKS)

The Nuclear Cardiology and Cardiovascular Imaging Division is held for 1.5 months (6 weeks) and in 2 credits.

## 3.11 Intensive Cardiovascular Division

3.11.1 Limitation

- Intensive Cardiovascular Modules I
- General Intensive Care Clinic Capability Modules

3.11.2 Assessment (Exam)

Exams in the Intensive Cardiovascular division include:

- Pre-test
- 1 fruit journal reading
- 1 piece of reading textbook
- PAT mini-exam
- direct observational procedural skills (DOPS) test
- Post test

3.11.3 Time and Semester Credit System (SKS)

The intensive cardiovascular division is carried out for 3 months (12 weeks)

and in 4 credits

3.12 Division of Echocardiography (advanced echocardiography)

Division of Echocardiography (advanced Echocardiography) Cardiology and Vascular Specialist Study Program, Faculty of Medicine, Hasanuddin University.

3.12.1 Limitation

- Non-invasive echocardiography Imaging Module focused on TEE (Transophageal Echocardiography)

3.12.2 Assessment (Exam)

Exams in the non-invasive echocardiography division include:

- Pre-test
- 1 fruit journal reading
- 1 piece of reading textbook
- PAT mini-exam
- direct observational procedural skills (DOPS) test
- Post test

3.12.3 Time and Semester Credit System (SKS)

The non-invasive echocardiography division was carried out for 1.5 months (6 weeks) and in 4 credits

**3.1.3.2. MAJOR SCIENTIFIC ASSIGNMENT PHASE II**

The scientific tasks that were completed in phase II were: 7 Case Reports or Literature Review from the Divisions: ER/Emergency, Non-Invasive Echocardiography and Holter, Intensive Cardiovascular, Cardiovascular Prevention and Rehabilitation, Invasive Diagnostics and Non-Surgical Intervention, Vascular, Cardiology Nuclear and Cardiovascular Imaging, Electrophysiology, Pediatric Cardiology

**3.1.3.3 FINAL ASSESSMENT OF PHASE II**

Phase II final assessment is in the form of a phase II written exam. The exam is in the form of an essay exam. Conducted 2 weeks before stage II is completed. If you do not pass the stage exam, a remedial exam will be held 1 week before the end of stage II.

### 3.1.3.4 LEARNING ACHIEVEMENT TARGET PHASE II

At the end of Stage 2 Education, students are expected to:

1. Able to make and correctly present scientific papers in the form of 7 case reports or literature reviews from the divisions: ER/Emergency, Non-Invasive Echocardiography and Holter, Intensive Cardiovascular, Cardiovascular Prevention and Rehabilitation, Invasive Diagnostics and Non-Surgical Intervention, Vascular, Nuclear Cardiology and Cardiovascular imaging, Electrophysiology, Pediatric Cardiology
2. Able to do medical communication correctly
3. Capable explain principle echocardiography with Correct And do echocardiography skills properly
4. Able to explain the principles of basic and advanced life support correctly, able to properly manage basic and advanced life support.
5. Able to explain the principles of cardiology prevention and rehabilitation correctly and carry out actions in the field of prevention and rehabilitation correctly.
6. Able to explain the scientific principles of vascular medicine correctly and carry out actions in the field of cardiology correctly.
7. Able to explain the principles of electrophysiology cardiology correctly and carry out competency actions in the field of electrophysiology correctly.
8. Able to explain the principles of cardiologypediatrics properly and properly manage pediatric cardiology.
9. Minimum competence as a prerequisite for increasing the level by taking the stage 2 exam.

### 3.1.4 PHASE III (CHIEF RESIDENT)

The third stage of cardiovascular education is given after the education participants pass the second stage of the exam. At this stage participants will undergo integrated education/application of clinical cardiovascular science at the Cardiology and Vascular Medicine Section of the Faculty of Medicine UNUD and at Teaching Hospitals in the regions. In this educational process the participants are educated

are expected to be able to apply clinical cardiovascular science in an integrated and independent manner.

Below is presented the curricula of the Phase Three (continued) stage of the clerkship program. Description of the subjects as listed below.

Understanding of Integration and Application

1. Rationale

Knowledge, skills and experience to integrate and apply Cardiovascular, Internal Medicine, Pulmonary and Respiratory Medicine as well as Pediatrics in a comprehensive manner

2. Objective

- Proficient in making and carrying out anamnesis, comprehensive cardiovascular physical examination, laboratories, treating, carrying out medical and pre- and post-surgical management, complications prevention and rehabilitation in various conditions of cardiovascular disorders.
- Understand psychogenic factors and the role of age in causing symptoms and reactions, emotional and physical of people with cardiovascular disease.
- Understand the role of prevention and rehabilitation.
- Understand pathogenesis, pathology, risk factors, disease course based on history, physical examination, disease diagnosis based on history, laboratory, treating/carrying out medical and pre- and post-surgical management, complications prevention and rehabilitation in various conditions of cardiovascular disorders
- Have interaction experience with other disciplines.

3. Scope of Cardiovascular Integration (Chief)

3.13 Room Chief, Critical, and Poli

3.13.1 Limitation

- Adult Clinical Cardiovascular Modules III

3.13.2 Length and Semester Credit System

Room Chief is held for 12 weeks (3 months) and in 2 credits

3.14 Chief Diagnostic Invasive And Non Surgical Interventions

3.14.1 Limitation

- Invasive Imaging-Cardiac Catheterization and Angiography Module

3.14.2 Length and Semester Credit System

Chief Diagnostic Invasive And Non Surgical Intervention is held for 1 month (4 weeks) and in 2 credits (8 meeting hours).

3.15 Chief of Pediatric Cardiology

3.15.1 Limitation

- Pediatric Cardiology Module
- Congenital Heart Disease Module

3.15.2 Length and Semester Credit System

Pediatric Cardiology Chief is held for 1 month (4 weeks) and in 4 credits

3.16 Comprehensive Cardiovascular Emergency III

3.16.1 Limitation

- Comprehensive Cardiovascular Emergency Modules III :
  - Acute Cardiovascular Module
  - Acute Coronary Syndrome Module
  - Sudden Cardiac Death and Resuscitation Module
  - Hypertension Module
  - Diabetic Heart Disease Module
  - Cardiac Failure Module
  - Myocardial Disease Module
  - Pericardial Diseases Module
  - Syncope Module
  - Module Aortic Disease and Trauma to the Aorta and Heart
  - Peripheral Artery Vascular Disease Module
  - Venous Thromboembolic Disease Module
  - Pulmonary Embolism Module
  - Intensive Cardiovascular Module

3.16.2 Length and Semester Credit System

Chief Emergency-Polyclinic is held during phase III and in 6 credits.

3.17 Chief Mandiri (Academic Application)

3.17.1 Limitation

- Integrative of all modules

3.17.2 Length and Semester Credit System

The duration and Semester Chief Credit System independently are carried out during phase III and in 10 credits

3.18 Research II

Research Module II Cardiology and Vascular Specialist Study Program

3.18.1 Limitation

- Research Module Final Research Examination

3.18.2 Evaluation

Research Final Examination

3.18.3 Time and Semester Credit System

Research Module II is carried out during stage III and 4 credits.

3.19 Comprehensive Community Cardiovascular

3.19.1 Limitation

- Integrative of all modules

3.19.2 Length and Semester Credit System

The duration and Semester Chief Credit System independently are carried out for 1 month (4 weeks) and in 5 credits

**3.1.4.1. MAJOR SCIENTIFIC ASSIGNMENT PHASE III**

The scientific assignments that are completed in stage III are: 1 Final Work in the form of a Thesis, with the stages of assessment covering: proposal seminar, proposal examination, results seminar, and final thesis examination.

**3.1.4.2. ASSESSMENT PHASE III**

At the final stage of education a comprehensive final assessment is carried out. This assessment is carried out if PPDS Participants have completed all stages of education and have passed the previous periodic evaluation.

Study Program of Heart and Vascular Diseases PPDS-I FK Unud Hasanuddin University carried out 2 (two) final assessment stages, namely:

1. Executed by Study Program itself (Institutional Examination)

   1.1. Stage III exam

   In the form of a written exam with all the material during education.

   1.2. OSCE/Skill Exams

   The exam tests clinical competence objectively and is structured in the form of round stations with a certain time. Objective because all residents are tested with the same exam.

   1.3. Comprehensive examination

   In the form of an oral panel exam with all examiners determined by the Head of the Study Program

   1.4. Stage III exam

   In the form of a written exam with all the material during education.

   1.5. OSCE/Skill Exams

   The exam tests clinical competence objectively and is structured in the form of round stations with a certain time. Objective because all residents are tested with the same exam.

   1.6. Comprehensive examination

   In the form of an oral panel exam with all examiners determined by the Head of the Study Program

2. Held in a manner National as Exam National (National boardsexamination)

   This Final Phase Examination is conducted to assess whether the PPDS Participant has reached the final ability as stated in the Catalog in a comprehensive manner and is used as the basis for providing certification as a Specialist Doctor for Cardiovascular Disease (SpJP).

Examination implementation there are two, namely:

2.1 Written Exam

The written exam is carried out computer-based by the Collegium of the Cardiovascular Specialist Doctors Association / PERKI.

2.2 Oral Exam

This exam was made by the National Level Final Examination Team. Examiners at the national level are determined by the Collegium of the Association of Cardiovascular Specialists / PERKI

### 3.1.4.3 STAGE III LEARNING ACHIEVEMENT TARGET

At the end of Stage 3 Education, students are expected to:

1. Able to produce scientific work / research properly.
2. Able to perform patient care management, critical rooms and polyclinics cardiology and vascular medicine with plenary.
3. Able to perform invasive diagnostic and non-surgical interventions in cardiology and vascular medicine in a plenary manner.
4. Perfectly able to perform echocardiography.
5. Able to complete pediatric cardiology management.
6. Able to perform and present scientific work in full.
7. Able to perform and provide cardiology and vascular medicine services at the network hospital with supervision by a cardiology and vascular specialist at the network hospital.
8. Completing Phase 3 Assignments in the form of Final Work in the form of a Thesis, with the stages of assessment including: proposal seminars, proposal examinations, results seminars, and final thesis examinations.

## 3.2 EDUCATIONAL MATERIALS

### 3.2.1 Basic Materials of General Medicine

1. Scientific method (research methodology and biostatistics, clinical process, problem based learning)
2. Communication (interpersonal, publication)
3. Medical professionalism and ethics

### 3.2.2 Special Basic Material

1. Biochemistry and molecular biology (genomics and proteinomics)
2. Clinical epidemiology - clinical pharmacology
3. *Evidence-based medicine*

### 3.2.3 Integrated Knowledge and Disciplines

1. History and physical examination
2. clinic method
3. Continuity of health services/nursing care
4. Continuous learning
5. Medical information technology
6. Nutrition
7. Preventive Medicine
8. Nursing home care
9. Palliative services

### 3.2.4 Educational Materials in the Study Program of the Heart and Blood Vessels According to Study Program Subjects

A. The basic module of Cardiology and Vascular Medicines

B. Adult Clinic Cardiovascular :

1. Clinical pharmacology
2. Chronic ischemic heart disease
3. Heart failure
4. Hypertension
5. Pulmonary arterial hypertension
6. Rheumatic fever and valvular heart disease
7. Diabetic heart disease
8. Congenital heart disease
9. Diabetic heart disease
10. Congenital heart disease in adults
11. Atrial fibrillation
12. Infectiveendocardits
13. Pericardial disease
14. Myocardial disease
15. Cardiac tumor
16. Peri and postoperative cardiac and non cardiac surgery

C. Pediatric Cardiovascular :

1. Clinical Pharmacology
2. Cardiovascular genetics
3. Congenital heart disease
4. Pediatric Cardiology
5. Rheumatic fever and valvular heart disease
6. Infective endocarditis
7. Hypertension
8. Heart failure
9. Pulmonary arterial hypertension
10. Myocardial disease
11. Pericardial disease
12. Arrhythmia
13. Cardiac tumors
14. Peri and postoperative cardiac surgery (pediatrics)
15. Cardiopulmonary resuscitation (pediatric)

E. Internal Medicine:

1. Nephrology
2. Endocrinology

F. Echocardiography

G. Pregnancy and Cardiovascular Disease

H. Invasive Diagnostics and Non-Surgical Interventions

I. Nuclear Cardiology and Cardiovascular Imaging

J. Comprehensive Cardiovascular Emergency

1. Hypertension
2. Diabetic heart disease
3. Acute coronary syndrome
4. Heart failure
5. Myocardial disease
6. Pericardial disease
7. syncope
8. Sudden cardiac death and resuscitation
9. Aortic disease and trauma to the aorta and heart
10. Peripheral arterial vascular disease
11. Venous thromboembolic disease
12. Pulmonary embolism
13. Acute Cardiovascular
14. Intensive Cardiovascular

K. Intensive Cardiovascular :

1. Hypertension
2. Acute coronary syndrome
3. Heart failure
4. Diabetic heart disease
5. Arrhythmia
6. Atrial fibrillation
7. Myocardial disease
8. Pericardial disease
9. Sudden cardiac death and resuscitation
10. Aortic disease and trauma to the aorta and heart

11. Peripheral arterial vascular disease
12. Venous thromboembolic disease
13. Pulmonary embolism
14. Acute cardiovascular
15. Intensive cardiovascular

L. Cardiovascular Prevention and Rehabilitation :
1. Prevention of cardiovascular disease
2. Heart exercise test
3. Rehabilitation and exercise physiology

M. Vascular Medicine :
1. Peripheral Artery Vascular Disease
2. Venous Thromboembolic Disease

N. Vascular Surgery and Adult Postoperative ICU
1. Ischemic Heart Disease (adult)
2. Valvular Heart Disease (adult)
3. Congenital Heart Disease (adult)
4. Aortic disease and trauma to the Aorta and heart
5. Peripheral Vascular and Arterial Disease (adult)
6. Peri and Post Operative Cardiac Surgery (adult)

O. Cardiovascular Surgery and Pediatric ICU Post Surgery
1. Heart valve disease (child)
2. Congenital Heart Disease (children and Adults)
3. Peri and Post Operative Cardiac (child)

P. Pacemakers and Electrophysiology
1. syncope
2. Arrhythmia
3. Atrial Fibrillation

Q. Comprehensive Community
Cardiovascular Independent work

R. Study
Research Proposal Final
Research Examination

# CHAPTER 4

# MATERIAL AND SUBJECT

## 4.1 List Competence

Skills of a Cardiologist and Deep Blood Vessel Specialist

in the cardiovascular field is divided into 4 (four) levels according to Miller's criteria.

<table>
<tr><th>CRITERIA</th><th>LEVEL 1</th><th>LEVEL 2</th><th>LEVEL 3</th><th>LEVEL 4</th></tr>
<tr><td rowspan="4">Clinical skill level</td><td colspan="3" rowspan="2"></td><td>Able to do independent</td></tr>
<tr><td colspan="2">Able to perform under supervision</td></tr>
<tr><td colspan="3">Understanding Clinical Reasoning & Problem solving</td></tr>
<tr><td colspan="4">Knowing Skill Theory</td></tr>
<tr><td rowspan="4">Learning method</td><td colspan="3" rowspan="2"></td><td>Performed on patient</td></tr>
<tr><td colspan="2">Practice with standardized props/patients</td></tr>
<tr><td colspan="3">Direct observation, demonstration</td></tr>
<tr><td colspan="4">Lectures, discussions, independent study assignments</td></tr>
<tr><td>Assessment Method</td><td>Written exam</td><td>Completion of cases in writing and/or orally (oral test)</td><td>Objective, Structured Clinical Examination (OSCE)</td><td>The workbase assessment is like a mini-CEX, portfolio, logbookAnd etc</td></tr>
</table>

**Table 4.1.**Matrix of Clinical Skill Levels, Learning Methods and Assessment Methods for Each Ability Level

The preparation of the educational curriculum for the Cardiology and Vascular Specialist Study Program is made based on competence (competence-based), active learning methods, and process skills approaches, both for service, education, and research issues. The curriculum is oriented towards formulating learning outcomes with an approach to mastering theory and applications in the cardiovascular field. Where is the content of the curriculum that refers tobCompetency Standards for Cardiologists and Blood Vessel Specialists and National Standards for Professional Education for Cardiologists and Blood Vessel Specialists, serve as the basis of reference in the learning and assessment of students.

| Competence | Competency Level | | | |
|---|---|---|---|---|
| 1. Anamnesis | 1 | 2 | 3 | 4 |
| 2. Physical examination | 1 | 2 | 3 | 4 |
| 3. Cardiovascular Non Invasive Diagnostics | | | | |
| 3.1 Electrocardiography | | | | |
| - Holter monitors | 1 | 2 | 3 | 4 |
| 3.2 Chest photo interpretation | 1 | 2 | 3 | 4 |
| 3.3 Heart load training test | 1 | 2 | 3 | 4 |
| *3.4 Tilt Table test* | 1 | 2 | 3 | 4 |
| 3.5 Ambulatory Blood Pressure Monitoring | 1 | 2 | 3 | 4 |
| 3.6 Non-invasive Hemodynamics | 1 | 2 | 3 | 4 |
| 3.7 Echocardiography | | | | |
| - Trans Thoracic Echocardiography | 1 | 2 | 3 | 4 |
| - Fetal Echocardiography | 1 | 2 | 3 | 4 |
| - Adult Trans Esophageal Echocardiography | 1 | 2 | 3 | 4 |
| - Pediatric Trans Esophageal Echocardiography | 1 | 2 | 3 | 4 |
| - Stress Echocardiography | 1 | 2 | 3 | 4 |
| 3.8 Lung Ultrasound | 1 | 2 | 3 | 4 |
| 3.9 Vascular Ultrasound | | | | |
| - Duplex sonography | 1 | 2 | 3 | 4 |
| - Ankle Brachialis Index with Doppler | 1 | 2 | 3 | 4 |
| - Transcranial Doppler (TCD) | 1 | 2 | 3 | 4 |
| - Plethysmography | 1 | 2 | 3 | 4 |
| - Flow-mediated dilation (FMD) | 1 | 2 | 3 | 4 |
| - Fluximetry | 1 | 2 | 3 | 4 |
| 3.10 Cardiovascular Imaging | | | | |
| - Adult Cardiovascular Computed Tomography | 1 | 2 | 3 | 4 |
| - Adult Cardiovascular Magnetic Resonance Imaging | 1 | 2 | 3 | 4 |
| - Pediatric Cardiovascular Computed Tomography | 1 | 2 | 3 | 4 |
| **Competence** | **Competency Level** | | | |
| - Children's Cardiovascular Magnetic Resonance Imaging | 1 | 2 | 3 | 4 |
| - Lung Perfusion Scan | 1 | 2 | 3 | 4 |
| - Cardiac Nuclear | 1 | 2 | 3 | 4 |

| | | | | | |
|---|---|---|---|---|---|
| 4. and | Diagnostic Cardiovascular Invasive In Children<br><br>Mature | | | | |
| | 4.1 Right and left cardiac tapping, right and left ventriculography aortography, pulmonary<br>4.2 Coronary Angiography and Interpretation | 1 | 2 | 3 | 4 |
| 4.3 | 4.3 Arteriography | 1 | 2 | 3 | 4 |
| | 4.4 Venography | 1 | 2 | 3 | 4 |
| | 4.5 Invasive Electrophysiology Studies | 1 | 2 | 3 | 4 |
| 5 | Non Surgical Intervention | 1 | 2 | 3 | 4 |
| | 5.1 Basic Cardiac Life Support (BCLS) | | | | |
| | 5.2 Advanced Cardiac Life Support (ACLS) | 1 | 2 | 3 | 4 |
| | 5.3 Venous Access | 1 | 2 | 3 | 4 |
| | - Peripheral venous access in pediatric and adult patients | | | | |
| | - Adult central venous access | 1 | 2 | 3 | 4 |
| | - Central venous access in pediatric patients | 1 | 2 | 3 | 4 |
| | 5.4 Arterial Access | 1 | 2 | 3 | 4 |
| | - Peripheral arterial access in pediatric and adult patients | | | | |
| | - Central arterial access in pediatric and adult patients | 1 | 2 | 3 | 4 |
| | 5.5 Invasive hemodynamic monitoring | 1 | 2 | 3 | 4 |
| | 5.6 Swan Ganz catheter insertion and monitoring | 1 | 2 | 3 | 4 |
| | 5.7 Child and adult intubation | 1 | 2 | 3 | 4 |
| | 5.8 Management of Non-invasive Mechanical Ventilation/CPAP | 1 | 2 | 3 | 4 |
| | 5.9 Management of basic invasive mechanical ventilation | 1 | 2 | 3 | 4 |
| | 5.10 IABP and other hemodynamic aids | 1 | 2 | 3 | 4 |
| | 5.11 Phlebotomy | 1 | 2 | 3 | 4 |
| | 5.12 Pericardiocentesis | 1 | 2 | 3 | 4 |
| | 5.13 Coronary Intervention | 1 | 2 | 3 | 4 |
| | 5.14 Structural Abnormalities Intervention | 1 | 2 | 3 | 4 |
| **Competence** | | **Competency Level** | | | |
| | 5.15 Peripheral Interventions | 1 | 2 | 3 | 4 |
| | 5.16 Coronary fibrinolytic therapy, primary, peripheral | 1 | 2 | 3 | 4 |

| | | | | | |
|---|---|---|---|---|---|
| | 5.17 Preliminary Handling of Electrical Storm | 1 | 2 | 3 | 4 |
| | 5.18 Temporary Pacemaker | 1 | 2 | 3 | 4 |
| | 5.19 Catheter ablation in tachyarrhythmias | 1 | 2 | 3 | 4 |
| | 1.20 implant cardiovascular electronics (Permanent pacemaker/PPM, ICD, CRT, etc.) | 1 | 2 | 3 | 4 |
| | 1.21 Interrogation & Reprogramming PPM/ICD/CRT | 1 | 2 | 3 | 4 |
| | 1.22 Catheter Ablation in Atrial Fibrillation | 1 | 2 | 3 | 4 |
| | 1.23 Bebat Compression vein/lymph manual/ mechanic | 1 | 2 | 3 | 4 |
| | 1.24 Intervention Aortic Disease: EVAR, TEVAR | 1 | 2 | 3 | 4 |
| | 1.25 Intervention Peripheral arteries : PIAT, PTA, Hyperbaric | 1 | 2 | 3 | 4 |
| | 1.26 Intervention Veins: Superficial Vein Ablation, Sclerosing Therapy, PTV | 1 | 2 | 3 | 4 |
| | 1.27 Procedure Non Surgery DiseaseThrombombolic vein : CDT, Thrombosuction, Vena Cava Filter | 1 | 2 | 3 | 4 |
| 6. | Surgical Intervention | | | | |
| | 6.1 Coronary Bypass Surgery 6.2 Heart Valve Surgery | 1 | 2 | 3 | 4 |
| | 6.3 Congenital Heart Disease Surgery | 1 | 2 | 3 | 4 |
| | 6.4 Cardiac Tumor Surgery | 1 | 2 | 3 | 4 |
| | 6.5 Cardiac Pericardial Surgery | 1 | 2 | 3 | 4 |
| | 6.6 Aortic Surgery, Bentall, Total Arch Replacement, Hemiarch Replacement, Debranching | 1 | 2 | 3 | 4 |
| | 6.7 Surgery Artery peripheral, Bypass peripheral, Embolectomy, Carotid Endartectomy | 1 | 2 | 3 | 4 |
| | 6.8 Hybrid Procedures (Non Surgical and Surgical) | 1 | 2 | 3 | 4 |

**Table 3.**List of Competency Skills of Cardiologists and Blood Vessel Specialists

| Competence | Competency Level | | | |
|---|---|---|---|---|
| 1. Electrocardiography Technique Material | 1 | 2 | 3 | 4 |

| | | | | |
|---|---|---|---|---|
| 2. Echocardiography Technique Material | 1 | 2 | 3 | 4 |
| 3. Heart Training Test Technique Material | 1 | 2 | 3 | 4 |
| 4. Cardiac Catheterization and Radiation Protection | 1 | 2 | 3 | 4 |
| 5. Cardiovascular Genetics | | | | |
| 5.1 Hypertrophic Cardiomyopathy | 1 | 2 | 3 | 4 |
| 5.2 Dilated Cardiomyopathy | 1 | 2 | 3 | 4 |
| 5.3 Syndromes associated with marfan cardiovascular disease, trisomy 13,18,21, DiGeorge (del22q11), Rubella, Aortopathy, Familial Ehler Danlos, Willam, Noonan, Turner, Familial Dilated Cardiomyopathy, Familial Channelopathies, conotruncal anomalies<br>Familial Dyslipidemia. | 1 | 2 | 3 | 4 |
| 5.4 Familial dyslipidemia, especially low density lipoproprotein receptors | 1 | 2 | 3 | 4 |
| 6. Cardiovascular Clinical Pharmacology | 1 | 2 | 3 | 4 |
| 6.1 Anti Arrhythmic | 1 | 2 | 3 | 4 |
| 6.2 Lipid lowering agents | 1 | 2 | 3 | 4 |
| 6.3 Anti-Hypertension | 1 | 2 | 3 | 4 |
| 6.4 Oral hyperglycemic drugs | 1 | 2 | 3 | 4 |
| 6.5 Medication for Heart Failure | 1 | 2 | 3 | 4 |
| 6.6 Antiplatelets | 1 | 2 | 3 | 4 |
| 6.7 Inotropes | 1 | 2 | 3 | 4 |
| 6.8 Vasoconstrictors | 1 | 2 | 3 | 4 |
| 6.9 Anticoagulants | 1 | 2 | 3 | 4 |
| 6.10 Insulin | 1 | 2 | 3 | 4 |
| 6.11 Fibrinolytic | 1 | 2 | 3 | 4 |
| 6.12 Principle Pharmacology in the elderly / geriatric | 1 | 2 | 3 | 4 |
| 7. Prevention of Cardiovascular Disease | | | | |
| 7.1. Cardiovascular Risk Factors | 1 | 2 | 3 | 4 |
| 7.2. Primary and Secondary Prevention Efforts | 1 | 2 | 3 | 4 |

| Competence | Competency Level | | | |
|---|---|---|---|---|
| 8. Hypertension | | | | |
| 8.1 Essential Hypertension | 1 | 2 | 3 | 4 |
| 8.2 Hypertension with Target Organ Damage | 1 | 2 | 3 | 4 |
| 8.3 Secondary Hypertension | 1 | 2 | 3 | 4 |
| 9. Heart Disease + Other disorders | | | | |
| 9.1 Heart Disease with Hyperglycemia | 1 | 2 | 3 | 4 |
| 9.2 Heart Disease with Hyperthyroidism | 1 | 2 | 3 | 4 |

| | | | | | |
|---|---|---|---|---|---|
| 9.3 Heart Disease with Metabolic Disorders (Lipids, Carbohydrates, Calcium, Electrolytes) | 1 | 2 | 3 | 4 |
| 9.4 Heart Disease with Autoimmune Disorders | 1 | 2 | 3 | 4 |
| 9.5 Metabolic Syndrome | 1 | 2 | 3 | 4 |
| 9.6 Cardio-Renal Syndrome | 1 | 2 | 3 | 4 |
| 9.7 Contrast Induced Nephropathy | 1 | 2 | 3 | 4 |
| 10. Acute Coronary Syndrome with/without complications | 1 | 2 | 3 | 4 |
| 10.1 Unstable angina pectoris | 1 | 2 | 3 | 4 |
| 10.2 Non ST elevation myocardial infarction (NSTEMI) | 1 | 2 | 3 | 4 |
| 10.3 ST elevation myocardial infarction (STEMI) | 1 | 2 | 3 | 4 |
| 11. Management of Post Acute Coronary Syndrome | 1 | 2 | 3 | 4 |
| 11.1 Management of Post STEMI | 1 | 2 | 3 | 4 |
| 11.2 Non-STEMI Post Management | 1 | 2 | 3 | 4 |
| 11.3 Management of Patients without Revascularization | 1 | 2 | 3 | 4 |
| 11.4 Management of Post-Revascularization Patients | 1 | 2 | 3 | 4 |
| 12. Ischemic Heart Disease (CHD) | 1 | 2 | 3 | 4 |
| 12.1 Chronic Ischemic Heart Disease | 1 | 2 | 3 | 4 |
| 12.2 Stable angina pectoris | 1 | 2 | 3 | 4 |
| 13. Myocardial Disease | 1 | 2 | 3 | 4 |
| 13.1 Cardiomyopathy | 1 | 2 | 3 | 4 |
| 13.2 myocarditis | 1 | 2 | 3 | 4 |
| 14. Pericardial Disease | 1 | 2 | 3 | 4 |
| 14.1 Acute Pericarditis | 1 | 2 | 3 | 4 |
| 14.2 Chronic Pericarditis | 1 | 2 | 3 | 4 |
| 14.3 Constrictive and Restrictive Pericarditis | 1 | 2 | 3 | 4 |
| 14.4 Pericardial effusion and cardiac tamponade | 1 | 2 | 3 | 4 |
| 15. Heart Tumor | 1 | 2 | 3 | 4 |
| 15.1 Primary Cardiac Tumors | 1 | 2 | 3 | 4 |
| 15.2 Metastatic Cardiac Tumor | 1 | 2 | 3 | 4 |
| 16. Pregnancy in Heart Disease | 1 | 2 | 3 | 4 |
| 16.1 Hypertension in Pregnancy | 1 | 2 | 3 | 4 |
| 16.2 Abnormalities of the Heart Valves in Pregnancy | 1 | 2 | 3 | 4 |
| 16.3 Congenital Abnormalities of Pregnancy | 1 | 2 | 3 | 4 |
| 16.4 Coronary Heart Disease in Pregnancy | 1 | 2 | 3 | 4 |
| 16.5 Cardiomyopathy in Pregnancy | 1 | 2 | 3 | 4 |
| 16.6 Arrhythmias in Pregnancy | 1 | 2 | 3 | 4 |
| 16.7 Aortic/peripheral vascular disease in pregnancy | 1 | 2 | 3 | 4 |
| 17. Rheumatic Fever and Rheumatic Heart Valve Disease | 1 | 2 | 3 | 4 |
| 17.1 Acute Rheumatic Fever and Reactivation | 1 | 2 | 3 | 4 |
| 17.2 Obstruction/Regurgitation of Valves due to Rheumatism | 1 | 2 | 3 | 4 |
| 18. Infective Endocarditis | 1 | 2 | 3 | 4 |
| 19. Heart failure | 1 | 2 | 3 | 4 |
| 19.1 Chronic Heart Failure | 1 | 2 | 3 | 4 |
| 19.2 Acute Heart Failure | 1 | 2 | 3 | 4 |
| 19.3 Heart Failure with low ejection fraction | 1 | 2 | 3 | 4 |
| 19.4 Heart failure with normal ejection fraction | 1 | 2 | 3 | 4 |
| 20. Pulmonary Hypertension | 1 | 2 | 3 | 4 |
| 20.1 Idiopathic Pulmonary Hypertension | 1 | 2 | 3 | 4 |
| 20.1 Pulmonary hypertension secondary to left ventricular dysfunction, | 1 | 2 | 3 | 4 |

| | | | | |
|---|---|---|---|---|
| 21. Heart disease due to autoimmune disease | 1 | 2 | 3 | 4 |
| 22. Arrhythmia | | | | |
| 22.1 Basic Electrophysiology | 1 | 2 | 3 | 4 |
| 22.2 Bradyrhythmia | | | | |
| - Sinus Node Dysfunction | 1 | 2 | 3 | 4 |
| - Atrioventricular Block | 1 | 2 | 3 | 4 |
| 22.3 Supraventricular Tachyarrhythmia | | | | |
| - *Atrial Flutter* | 1 | 2 | 3 | 4 |
| - Atrial Fibrillation | 1 | 2 | 3 | 4 |
| - Atrial Tachycardia | 1 | 2 | 3 | 4 |
| - *Supraventricular Tachycardia* | 1 | 2 | 3 | 4 |
| - *Junctional Tachycardia* | 1 | 2 | 3 | 4 |
| 22.4 Supraventricular Tachyarrhythmia | | | | |
| - Ventricular Tachyarrhythmia | 1 | 2 | 3 | 4 |
| - Ventricular Arrhythmias in various conditions (Cardiomyopathy, Non-Ischemic Cardiomyopathy, Channelopathies, structurally normal heart) | 1 | 2 | 3 | 4 |
| | 1 | 2 | 3 | 4 |
| 22.5 Atrial Fibrillation | 1 | 2 | 3 | 4 |
| 23. Syncope Management | 1 | 2 | 3 | 4 |
| 24. Sudden Cardiac Death (KJM) and Resuscitation | | | | |
| 25. Aortic disease and aortic trauma | 1 | 2 | 3 | 4 |
| 25.1 Thoracic Aortic Disease | 1 | 2 | 3 | 4 |
| 25.2 Abdominal Aortic Disease | 1 | 2 | 3 | 4 |
| 25.3 thoracoabdominal aortic disease | 1 | 2 | 3 | 4 |
| 25.4 Aorto-iliac disease | | | | |
| 26. Peripheral arterial disease, diabetic microangiopathy | 1 | 2 | 3 | 4 |
| 26.1 Diseases of the aortic branches (intra and extra cranial) and Abdomen | 1 | 2 | 3 | 4 |
| 26.2 Arterial disease of the upper and lower extremities | | | | |
| 27. Peripheral Vein Disease (deep, superficial, perforator) | 1 | 2 | 3 | 4 |
| 27.1 Chronic Venous Insufficiency Disease | | | | |
| 28. Thromboembolic Disease | 1 | 2 | 3 | 4 |
| 28.1 Deep Vein Thrombosis | 1 | 2 | 3 | 4 |
| 28.2 Chronic Venous Obstruction in Vena Kava, Lung, Hepatic, Portal, Extra/Intracranial, Extremities | 1 | 2 | 3 | 4 |
| 28.3 Acute and chronic pulmonary embolism | 1 | 2 | 3 | 4 |
| 28.4 Prosthetic Valve Thrombosis | | | | |
| 29. Lymph Disease | 1 | 2 | 3 | 4 |
| 29.1 Lymphedema | 1 | 2 | 3 | 4 |
| 29.2 Lymphangitis | | | | |
| | | | | |
| 30. Acute Cardiovascular | 1 | 2 | 3 | 4 |
| 30.1 Acute Chest Pain | 1 | 2 | 3 | 4 |
| 30.2 Acute Shortness of Breath | 1 | 2 | 3 | 4 |
| 30.3 Hypotension and Shock | 1 | 2 | 3 | 4 |
| 30.4 Emergency Hypertension | | | | |
| 31. Use of antiplatelets or anticoagulants | 1 | 2 | 3 | 4 |
| 31.1 Indications for use of antiplatelet/anticoagulants in the cardiovascular field | 1 | 2 | 3 | 4 |
| 31.2 Manage the use of antiplatelet / anticoagulant | | | | |

| | | | | |
|---|---|---|---|---|
| cardiovascular field | 1 | 2 | 3 | 4 |
| 31.3 Treating Bleeding Complications due to the use of antiplatelets or anticoagulants | | | | |
| 32. Structural Cardiology and Congenital Heart Disease (CHD) | | | | |
| | 1 | 2 | 3 | 4 |
| 32.1 Asianotic PJB (Not Blue) | 1 | 2 | 3 | 4 |
| – *atrial Septal defects*(ASD) | 1 | 2 | 3 | 4 |
| – *Ventricular Septal defects*(VSD) | 1 | 2 | 3 | 4 |
| – *Patent Ductus Arteriosus*(PDAs) | 1 | 2 | 3 | 4 |
| – *atrioventricular Septal defects*(AVSD) | 1 | 2 | 3 | 4 |
| – Other Asianotic Congenital Heart Diseases | 1 | 2 | 3 | 4 |
| – *Coarctation Aorta*(CoA) | 1 | 2 | 3 | 4 |
| – Eisenmenger syndrome | | | | |
| 32.2 PJB Cyanotic (Blue) | 1 | 2 | 3 | 4 |
| – *Tetralogy of Fallot*(TOF) | 1 | 2 | 3 | 4 |
| – *Transpositions of the Great Arteries*(TGA) | 1 | 2 | 3 | 4 |
| – *Ebstein's Tricuspid Valve Anomaly* | 1 | 2 | 3 | 4 |
| – PJB Blue Complex | 1 | 2 | 3 | 4 |
| 32.3 Hypoxia Spell | | | | |
| 33. CHD Problems in Adolescents & Adults | | | | |
| 33.1 Complications of CHD in adolescents and adults who have not or are not operated on at a young age | 1 | 2 | 3 | 4 |
| 33.2 Residues and sequelae in CHD that have been operated on at a young age | 1 | 2 | 3 | 4 |
| 33.3 Indications, contraindications, and time for intervention or re-intervention | 1 | 2 | 3 | 4 |
| 34. Cardiorenal Syndrome | | | | |
| 34.1 Renal disorders due to cardiovascular disease | 1 | 2 | 3 | 4 |
| *34.2* Prevention of Contrast-Induced Nephropathy | 1 | 2 | 3 | 4 |
| | 1 | 2 | 3 | 4 |

| | | | | |
|---|---|---|---|---|
| *34.3 Acute Kidney Injury*<br><br>*34.4 Renal Replacement Therapy* | 1 | 2 | 3 | 4 |
| 35. Cardiac Oncology | 1 | 2 | 3 | 4 |
| 36. Geriatric Cardiovascular | 1 | 2 | 3 | 4 |
| 37. Low Cardiac Output Syndrome | 1 | 2 | 3 | 4 |
| 38. Disorders of electrolyte balance, acid base | 1 | 2 | 3 | 4 |
| 39. Cardiac Rehabilitation and Exercise Physiology<br>39.1 Exercise | | | | |
| - *Exercise Training and Physiology Application* | 1 | 2 | 3 | 4 |
| - *Exercise Testing for Cardiac Rehabilitation (CR) Program* | 1 | 2 | 3 | 4 |
| - *Exercise Prescription for Patients with Heart Disease* | 1 | 2 | 3 | 4 |
| - *Exercise Prescription for Normal Patients and Those with Risk Factors* | 1 | 2 | 3 | 4 |
| 39.2 Patient risk assessment and stratification for follow CR program | 1 | 2 | 3 | 4 |
| 39..3 Education and Counseling | 1 | 2 | 3 | 4 |
| 39. 4 Supervision of Cardiac Rehabilitation Program | | | | |
| - Phase I | 1 | 2 | 3 | 4 |
| - Phase II | 1 | 2 | 3 | 4 |
| - Phase III | 1 | 2 | 3 | 4 |

**Table 4.**List of Types and Levels of Competency Skills of Cardiologists and Blood Vessel Specialists

# CHAPTER 5

# METHODS AND FORMS OF LEARNING

## 5.1 EDUCATIONAL METHODS

1. Read textbooks (textbook reading)

a. Limitation:

Textbook reading is carried out in stage II education in the division, namely presenting writing (articles) that are published in the compulsory textbook of Cardiovascular Diseases according to each division The topic of the textbook is determined by the relevant division

Total : 1 fruit in each

presentation division

1. The presentation schedule is determined by the division concerned.
2. The resident concerned must prepare all needs such as audiovisual for presentations
3. Presentations are held under division heads
4. Time allocation is:
   - 20 minutes for presentation,
   - 20 minutes for discussion,
   - 5 minute supervisor summary.
6. Place of presentation: meeting room of the Heart and Vascular Study Program.
7. If deemed necessary, the presentation can be repeated again

b. Evaluation

According to the assessment format in each division

2. Journal reading

a. Journal reading is the presentation of an article published in a scientific

magazine, either in the form of research results, reviews or case reports.

b. Condition

The topic and title of the journal are determined by the relevant division.

c. Amount

1 fruit in each division.

d. Presentation

Same with textbook reading

e. Evaluation

According to the assessment format in each division

3. Case Report

a. Limitation

A case report is a report on a case that is considered to have a feature, or convey a message/mission. The privileges in question include: rare cases, unique cases and problematic cases. Cases can be taken at basic cardiology, internal medicine and divisional stages.

b. Condition

Must obtain approval from the head of the relevant division.

c. Amount

The number of cases made is at least 4 during the education period (up to stage II)

Compilation/preparation:

1. The case plan has been approved by the head of the relevant division.
2. Cases are documented with good visual tools
3. Preparation according to a predetermined format
4. Time of preparation: during the division stase

d. Presentation

1. The case text to be presented must be signed by the supervisor.
2. Multiply case papers for the total number of residents and supervisors and submitted to the KPS secretariat.
3. The presentation schedule is determined by the supervisor
4. The event was led by the supervisor of the case report which was read out
5. 45 minutes of time is provided with the allocation of:

- 20 minutes for presentation
- 20 minutes for discussion
- 5 minutes for a summary from the supervisor

e. Evaluation

1. The assessors consist of 1 examiner determined by the KPS.
2. According to the assessment format (attachment)
3. If deemed insufficient, the reading can be repeated again

4. Literature Review (TK)

a) Limitation

Literature review is a scientific study of a topic which is the essence of some literature, whether in the form of textbooks, magazines, dissertations, results of seminars/symposiums, etc. Literature Review can be taken at the internal medicine and divisional stages.

b) The topic chosen should have specificity, such as:

- This is a new problem
- Something that is still controversial

Topics and titles are determined by the division supervisor.

c) Preparation/preparation

1. Learners report kindergarten plans to be made to the head of the division for approval.
2. Preparation in accordance with the standard format (attachment)

f. Compilation time

During the station or division.

g. Presentation

1. The Kindergarten manuscript that will be presented has been signed by the supervisor and the KPS.
2. The TK manuscripts that will be presented are multiplied by the total number of residents
   and supervisors and submitted to the KPS secretariat.
3. Manuscript submitted 1 week before presentation
4. The presentation schedule is determined by the supervisor
5. The event is led by a mentor
6. 45 minutes of time is provided with the allocation of:

   - 20 minutes for presentation
   - 20 minutes for discussion
   - 5 minutes for a summary from the supervisor

h. Evaluation

1. Performed by assessors consisting of 1 examiner
2. Appropriate assessment format
3. If deemed insufficient, the reading can be repeated again

5. Research/Final Work (Thesis)

5.1 Research Essay Presentation

The research essay is a description of the research conducted by the author on the research subject to be assessed

5.2 Proposal Examination

a. The exam was attended by: 2 supervisors, 3 examiners, Head of Section / SMF Heart and Blood Vessels, KPS, Korlit, All staff and all residents.

b. The meeting was guided by a moderator appointed by KPS

c. Time Allocation:

- Presentation of proposals: 20 minute
- Discussion : 40 minutes.
- Summary : 5 minutes

d. Seminar minutesrecord all input at the seminar.

e. Within a maximum of 4 weeks after the exam, the proposal has been submitted

completed must have been submitted to KPS/SPS for examination.

The consent form is signed by the supervisor and KPS.

f. Completed proposals are followed by conducting research for approval or improvement

5.3 Literature Review Related to Thesis

Literature Review is a critical and in-depth evaluation of previous studies, with the aim of:

a. Describe the research variables that must be taken into account by the author so that the purpose of making a thesis can be achieved.

b. Give limitations to the author which is done by showing the relevant independent or dependent variable

c. It is a reference for writers in interpreting data analysis techniques collected in the making of the thesis

d. Provide a rationale or reason for the writer to conclude the research results are in accordance with the objectives (objectives) of the thesis

5.4 Results Seminars

a. The Research Results Seminar was attended by: 2 supervisors, 3 examiners, Head of Section / SMF Heart and Blood Vessels, KPS, Korlit, all staff and all residents.
b. The meeting was guided by a moderator appointed by KPS
c. Time Allocation:
    - Presentation of proposals : 20 minute
    - Discussion : 40 minutes.
    - Summary : 5 minutes
d. Seminar minutes record all input during the seminar.
e. Within a maximum of 4 weeks after the research results seminar, the refined proposal must have been submitted to KPS/SPS for the research results examination. The consent form is signed by the supervisor and KPS.

5.5 Results Examination (Thesis)

a. The exam was attended by: 2 supervisors and 3 examiners
b. The meeting is guided by a moderator/adviser
c. Time Allocation:
    - Presentation of the proposal : 20 minute
    - Discussion : 40 minutes.
    - Summary : 5 minutes
d. The minutes of the research results exam recorded all input during the seminar.
e. Research results are given an assessment according to the assessment format. The results of the assessment are:
    - Passed
    - Graduated with repairs
    - Not pass

f. Within a maximum of 4 weeks after the exam, the finalized thesis must be submitted to KPS/SPS for examination. The consent form is signed by the supervisor and KPS.

g. Completed research is followed by conducting research to obtain approval or improvement

5.6 Presentation of Thesis Results

a. Limitation

Thesis is a statement or theory based on the results of a systematic study of a problem

b. Condition

Research topics and problems have been approved by academic supervisors

c. Assessment Stage

A. Thesis Seminar

a. The seminar was attended by: Advisor, Head of Section / SMF Heart and Blood Vessels, KPS, Korlit, all staff and all residents.

b. The meeting was guided by a moderator appointed by KPS

c. Time Allocation:

- Presentation of Thesis : 20 minute
- Discussion : 40 minutes.
- Summary : 5 minutes

d. Seminar minutes record all input during the seminar.

e. Within a maximum of 4 weeks after the seminar, the finalized thesis must be submitted to KPS/SPS for examination. The consent form is signed by the supervisor and KPS.

B. Thesis Exam

a. The exam was attended by: 2 supervisors, 3 examiners, Head of Section / SMF Heart and Blood Vessels, KPS, Korlit, all staff and all residents.

b. The meeting was guided by a moderator appointed by KPS

c. Time Allocation:

- Presentation of Thesis : 20 minute
- Discussion : 40 minutes.
- Summary : 5 minutes

g. Seminar minutes record all input during the exam.

h. Within a maximum of 4 weeks after the examination, the finalized thesis must be submitted to the KPS/SPS for approval. The validation sheet is signed by the supervisor and KPS.

# CHAPTER 6

# LEARNING ASSESSMENT

## 6.1 EDUCATIONAL EVALUATION (EXA)

1. Stage I Exam/Evaluation
    1. Limitation
        - Academic evaluation of stage I residents
    2. Condition
        - Has undergone a period of education according to schedule
    3. Material
        - Comprehensive Examination of Cardiovascular Disease according to the module material contained in stage I
    4. How to evaluate
        - Written exam
    5. Evaluation Instrument

    Evaluation instrumentation based on

    6. Evaluation value

    According to the evaluation value criteria. If you don't pass, you will be given a maximum of 4 weeks to prepare for the test

    7. If you still don't pass: your ability will be evaluated, whether you can continue education by KPS together with the Head of Section/SMF, with the approval of the Leadership Meeting
2. Phase II test/evaluation
    1. Limitation
        - Academic evaluation of stage II residents
    2. Condition
        - Has undergone a period of education according to schedule
    3. Material
        - Comprehensive Examination of Cardiovascular Disease according to the module material contained in stage II

4. How to evaluate
    - Written exam

5. Evaluation Instrument

The evaluation uses the Multiple Choice Question (MCQ) Exam with a total of 100 questions. The questions tested are evaluations of the modules given in stage II.

3. Phase III examination/evaluation
    1. Limitation
        - Phase III academic evaluation is in the form of local and national exams
    2. Condition
        - Have completed all major scientific assignments and final research work
    3. Material
        - The science of cardiology and vascular medicine according to the curriculum
    4. How to evaluate
        - Local Examination :
            - Phase III Writing Examination

              In the form of a written exam with material for all educational modules.
            - OSCE/Skill Exams

              The exam is in the form of procedural action skills which are divided into stations.
            - Departmental Comprehensive Examination
            - Panel exam with examiners appointed by KPS.
        - National exam :
            - NBOE Writing Exam

              The NBOE written exam is carried out in accordance with the provisions of the PERKI Collegium.
            - NBOE Oral Exam

              The NBOE oral exam is carried out in accordance with the provisions of the PERKI Collegium.

5. Evaluation Instrument

The evaluation uses the Multiple Choice Question (MCQ) Exam with a total of 100 questions. The questions tested are evaluations of the modules given in stage III. For OSCE/Skills exams use the OSCE scoring rubric. The NBOE exam uses instruments in accordance with the provisions of the Collegium.

6. Evaluation score

- According to the evaluation score criteria

Notes :

**NB: Criteria for the Evaluation Value of Scientific Activities Educational Methods**

A. = 3.75 – 4

B. = 3.25 - 3.74

C. = 2.75 – 3.24

D. = 2.00 – 2.75

E. = < 2.00

For grades C & D: must repeat

For E grades : repeat with special guidance, if more than 2 times, it is recommended to switch majors. Criteria for switching majors/dropping out of education.

a. Phase I participants: with more than 2 X E evaluation results, it is recommended to switch majors

b. Each stage I, II and III participant drops out of education if;

- Seriously sick

- The affective aspect is very bad

c. The decision to drop out of education is made at a staff plenary meeting

d. Each stage I, II and III participant drops out of education if;

- Seriously sick

- The affective aspect is very bad

e. The decision to drop out of education is made at a staff plenary meeting

# CHAPTER 7

# PROGRAM EVALUATION AND CURRICULUM EVALUATION

The Management of the Cardiology and Vascular Specialist Study Program at the Faculty of Medicine of Udayana University formed a Quality Assurance Implementation Team (TPPM) to plan and carry out monitoring and evaluation of the achievement of higher education standards. The quality assurance of the Cardiology and Vascular Medicinestudy program is a systematic and continuous monitoring and evaluation process of the implementation of the educational program in the Cardiac and Vascular Study Program conducted by TPPM. TPPM is independent in carrying out its activities and submits its work program reports to study programs on a regular and periodic basis in order to maintain the quality of study programs on an ongoing basis.

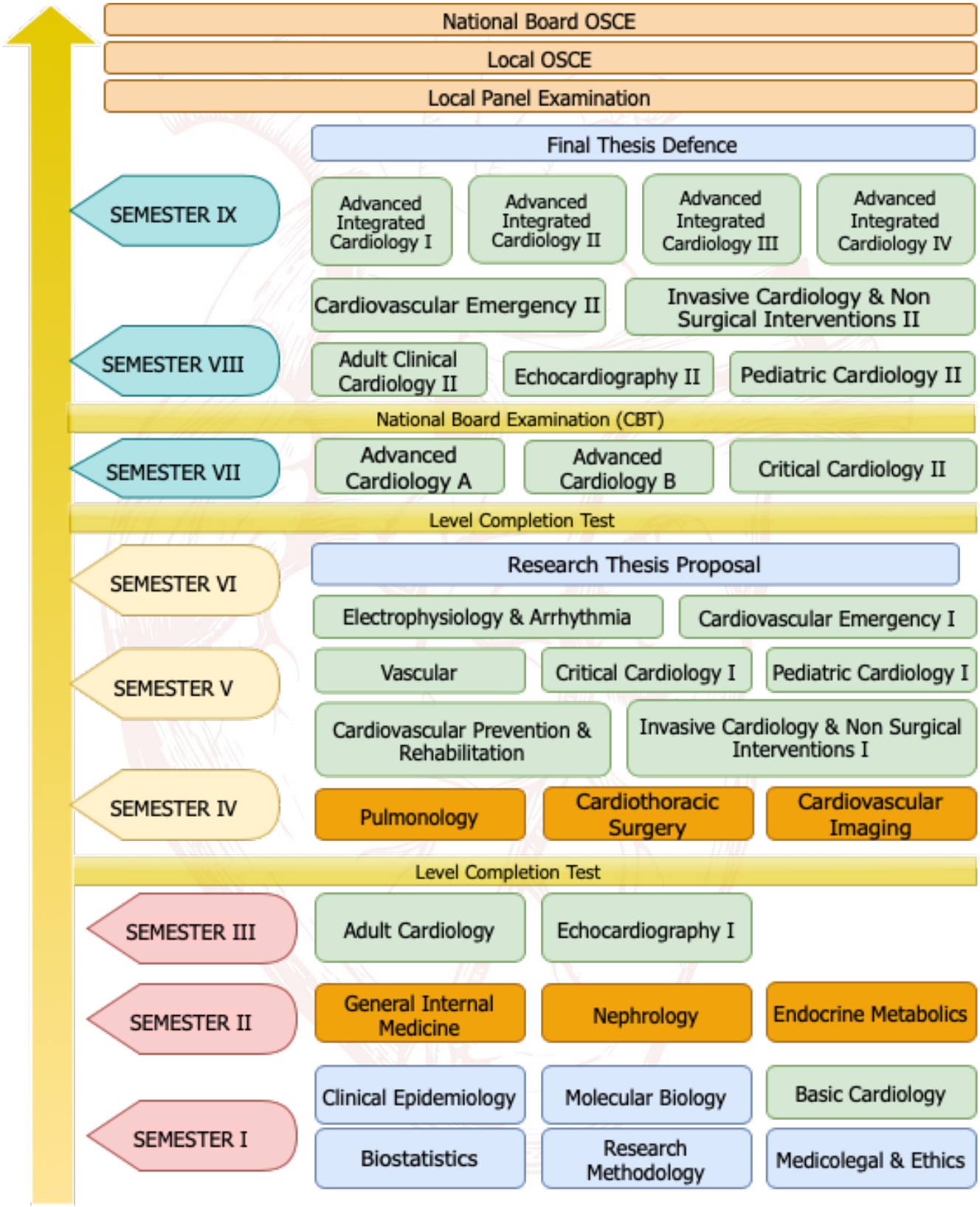
Planning and implementation of monitoring and evaluation is carried out routinely every year (at least once) where the implementation is carried out by collecting objective and subjective data through special questionnaires aimed at students and teaching staff. Monitoring and evaluation (monev) activities are carried out at the three stages of the PPDS I Cardiology and Vascular Medicineeducation at the Faculty of Medicine of Udayana University/Sanglah Hospital in Makassar and reported in an annual report to the Head of the Study Program. In monev, three things that are monitored and evaluated are the input of students, the educational process, and the output of students.

The results of monitoring and evaluation findings from the Study Program TPPM will later be followed up as materials for developing and improving the quality of the curriculum. By holding curriculum development, it is expected to improve a better quality of education. With this curriculum development plays an important role. Curriculum development by involving all internal stakeholders from the Study Program, as well as external stakeholders from the Study Program. In engaging external stakeholders, tracer studies and employer studies are regularly conducted. The results of the survey conducted will be followed up within the Study Program internally and will later become the basis for consideration for curriculum improvement as an Outcome-Based Curriculum.

**Mapping of Student Assessment Strategies to measure the Achievement of LO**

| NO | ASSESSMENT STRATEGIES | INTENDED LEARNING OUTCOMES | | | | | | | | | | DOMAIN | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | K | | S | | | C | | | | AFFECTIVE | COGNITIVE | PSYCHOMOTOR |
| | | 1 | 1 | 2 | 1 | 2 | 3 | 1 | 2 | 3 | 4 | | | |
| 1 | Active participation | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 2 | Oral/written examination | √ | | | √ | √ | | √ | √ | √ | √ | √ | √ | √ |
| 3 | Mini-CEX (Clinical Evaluation Exercise) | √ | | | √ | √ | | √ | √ | √ | √ | √ | √ | √ |
| 4 | Case-based Discussion (CbD) | √ | √ | √ | √ | √ | | | | | √ | | √ | |
| 5 | Literature Review Presentations | √ | √ | √ | √ | √ | √ | | | | | √ | √ | |
| 6 | Death Case Presentation | √ | √ | √ | √ | √ | √ | √ | | | | √ | √ | |
| 7 | Case Report Presentation | √ | √ | √ | √ | √ | √ | √ | | | | √ | √ | |
| 8 | Analysis and critical appraisal on medical journal | √ | √ | √ | √ | | | √ | | | | √ | √ | |
| 9 | Direct Observation of Procedural Skills (DOPS) | √ | | | √ | √ | | √ | √ | √ | | | √ | √ |
| 10 | Portfolio (log-book) | √ | √ | √ | √ | √ | | √ | √ | √ | √ | √ | √ | √ |
| 11 | Level Completion Test | √ | √ | √ | | | | √ | √ | √ | √ | | √ | √ |
| 12 | Proposal Thesis | √ | √ | √ | √ | √ | | √ | | | | √ | √ | |
| 13 | Final Thesis Defense | √ | √ | √ | √ | √ | | √ | | | | √ | √ | |
| 14 | Computer-based Test | √ | √ | √ | √ | √ | | √ | | | | | √ | √ |
| 15 | Examination panels | √ | √ | √ | √ | √ | | √ | | | | √ | √ | √ |
| 16 | Objective structured clinical examination (OSCE) | √ | √ | √ | √ | √ | | √ | √ | √ | √ | √ | √ | √ |

**Curriculum Structure of the Cardiology and Vascular Specialist Study Program**



## Module Description: General Internal Medicine

| | |
|---|---|
| **Module name** | General Internal Medicine |
| **Module level, if applicable** | Junior |
| **Code, if applicable** | 20C16510106 |
| **Subtitles, if applicable** | - |
| **Course, if applicable** | General Internal Medicine |
| **Semester(s) in which the module is taught** | 2 |
| **Person responsible for the module** | Dr. dr. Khalid Saleh, SpPD-KKV, SpJP(K) |
| **Lecturer** | Prof. Dr. dr. Haerani Rasyid, Sp.GK, Sp.PD, K-GH, Prof. Dr. dr. Syakib Bakri, Sp.PD, K-GH, Prof. Dr. dr. Ali Aspar Mappahya, SpPD, SpJP(K) Prof. Dr. dr. Makbul Aman, Sp.PD, K-EMD,Dr. dr. Khalid Saleh, SpPD-KKV, SpJP(K)dr. Pendrik Tandean, SpPD-KKV Dr. dr. Idar Mappangara, SpPD, SpJP(K)dr. Almudai, SpPD, SpJPdr. Zaenab Djafar,Mkes, SpPD, SpJP(K) |
| **language** | Indonesian Language [Indonesian] |
| **Relations to Curriculum** | This course is a compulsory subject in the third semester and must be passed by students before completing the Academic Phase |
| **Type of teaching, contact hours** | Learning methods in this course<br>1. Small-group discussion<br>2. morning reports<br>3. Journal discussions<br>4. Bedside teaching |
| **Workloads** | For this course, students are required to meet a minimum of 296 hours in one semester, which consists of:<br>• 90.67 hours for Theory<br>• 45.33 hours for practice<br>• 160 hours for Fieldwork |
| **credit points** | 6 credit points (equivalent to 11.84 ECTS) |
| **Requirements according to the examination Regulations** | Students must have attended all classes and submitted all assignments that are scheduled before the final test. |
| **Recommended prerequisites** | - |
| **Module objective / intended learning outcomes** | After taking this course, students are expected to :<br><br>**Attitudes:**<br>**CLOS 1:**Possess knowledge (cognitive), professional skills (psychomotor), attitudes, professional ethics, and behaviors in comprehensively recognizing and managing general internal diseases related to cardiovascular conditions (A1).<br><br>**Knowledge:**<br>**CLOS 2**: Able to conduct patient history-taking, physical examinations, and diagnostic assessments, identify comorbidities and risk factors related to cardiovascular diseases (K1).<br>**CLOS 3**: Able to interpret clinical examination results related to cardiovascular disease risk factors, diabetes, cardiorenal issues, and complications, integrating this data to determine patient risk status, as well as performing Medical Check Ups for internal medicine patients related to heart and blood vessels (K2 ). |

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| | **Skills**<br>**CLOS 4**: Capable of collecting, interpreting, and analyzing medical data that has been gathered and presenting it in the form of scientific work such as case presentations and reports (GS1).<br>**CLOS 5**: Able to accurately and responsibly document patient medical records, including examination results, diagnoses, and therapies, for the general practice of internal medicine related to the heart and blood vessels (GS2).<br><br>**Competence**<br>**CLOS 6**: Able to perform scientifically-based analyzes of cardiovascular disease risk factors to aid in diagnosis and clinical management planning (SS1).<br>**CLOS 7**: Capable of providing comprehensive explanations to patients and/or their families about disease diagnoses, prognoses, and therapy plans (SS2). |
| **Content** | Students will learn about:<br>Knowledge of the basic information, preparation and performing skills of General Internal Medicine.<br>• The relationship between internal medicine in general and cardiovascular disease<br>• Cardiovascular disease therapy with general internal medicine |
| **Forms of Assessment** | • Written Examination (20%)<br>• Direct Observational Performing Skills (50%)<br>• Journal reading (10%)<br>• Oral Presentation (20%) |
| **Study and examination requirements and form of examination** | **Study and examination requirements:**<br>• Students must attend all courses activity<br>• Students should be present 30 minutes before examination start<br>• Students must switch off all electronic devices (for offline class)<br>• Students must inform the lecturer if they will not attend the class due to sickness, etc.<br>• Students must submit all assignments before the deadline<br>• Students must attend the exam to get the final grade<br><br>**For examination:**<br>DOPS and Writen examination : Real case practical and written panel examination for theory. |
| **Media Employed** | Power Point Presentations |
| **Reading List** | 1. Harrison's Principles of Internal Medicine, 6th edition, Mc-Graw Hill Medical Publishing Division<br>2. Textbook of Internal Medicine, 5th Edition Volume 1, InternaPublishing<br>3. Henry's Clinical Diagnosis and Management by Laboratory Methods, 21st ed., Saunders Elseviere |

## Module Description: Nephrology

| | |
|---|---|
| **Module name** | Nephrology |
| **Module level, if applicable** | Cardiology And Vascular Medicine Specialist Programme |
| **Code, if applicable** | **20C16510203** |
| **Subtitles, if applicable** | - |
| **Course, if applicable** | Nephrology |
| **Semester(s) in which the module is taught** | 2 |
| **Person responsible for the module** | Prof. Dr. dr. Haerani Rasyid, Sp.GK, Sp.PD, K-GH |
| **Lecturer** | Prof. Dr. dr. Syakib Bakri, SpPD, K-GH<br>Prof. Dr. dr. Haerani Rasyid, M.Kes, SpPD-KGH, SpGK<br>Dr. dr. Hasyim Kasim, SpPD, KGH |
| **language** | Indonesian Language [Indonesian] |
| **Relations to Curriculum** | This course is a compulsory subject in the second semester and must be passed by students before completing the Academic Phase |
| **Type of teaching, contact hours** | Learning methods in this course<br>1. Small-group discussion<br>2. Morning Reports<br>3. Journal discussions<br>4. Literature Reading<br>5. Bedside teaching<br>6. Self Directed Learning |
| **Workloads** | For this course, students are required to meet a minimum of 144 hours in one semester, which consists of<br>• 45.33 hours for theoretical learning<br>• 45.33 hours for practical learning |
| **credit points** | 3 credit points |
| **Requirements according to the examination Regulations** | Students must have attended all classes and submitted all assignments that are scheduled before the final test. |
| **Recommended prerequisites** | - |
| **Module objective/intended learning outcomes** | After taking this course, students are expected to :<br><br>**Attitudes:**<br>**CLO1**: Students are able to demonstrate and uphold humanity values, attitude, professional ethics and discipline in improving the quality of life in treating cardiovascular disease with comorbid renal impairment(A1)<br><br>**Knowledge:**<br>**CLO2:**Students are able to analyze biomedical science and clinical science according to the nephrology system. (K1)<br><br>**CLO3:**Students are able to decide theoretical concepts including pathophysiology, clinical evidence based medicine, and natural history of diseases related to nephrology and cardiovascular disease (K2)<br><br>**Skills**<br>**CLO4:**Students are able to implement logical, critical, systematic and analytical thinking through scientific research based on scientific rules, procedures and ethics related to nephrology and cardiovascular disease (GS1)<br><br>**CLO5:**Students are able to formulate ideas, critical thinking and scientific arguments based on evidence-based medicine related to nephrology and cardiovascular disease. (GS2) |

| | |
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| | **Competence**<br>**CLO6:**Students are able to perform intellectual skills, including analytical and problem solving through a scientific approach and able to make clinical decisions in nephrology and cardiovascular disease. (SS1)<br><br>**CLO7:**Students are able to implement interpersonal skills concept which consists of communication skills, history taking, physical examination in nephrology and cardiovascular system. (SS2) |
| **Content** | Students will learn about:<br>Knowledge of the basic information, preparation and performing skills of Cardiovascular medicine related to Nephrology system<br>• Diagnostic approach of cardiovascular disease related to Nephrology system<br>• Promotion, prevention and management of diseases/disorders of Nephrology system |
| **Forms of Assessment** | • Multi-Source Feedback (10%)<br>• Written Examination (20%)<br>• Case Based Discussion (30%)<br>• Oral Presentation (40%) |
| **Study and examination requirements and form of examination** | **Study and examination requirements:**<br>• Students must attend all courses activity<br>• Students should be present 30 minutes before examination start<br>• Students must switch off all electronic devices (for offline class)<br>• Students must inform the lecturer if they will not attend the class due to sickness, etc.<br>• Students must submit all assignments before the deadline<br>• Students must attend the exam to get the final grade<br><br>**General Assessment/Non-Test**<br>Oral Presentation<br>**Special Assessment/Test**<br>Exam (CbD, Literature Review, Written Examination) |
| **Media Employed** | Power Point Presentations |
| **Reading List** | 1. Harrison's Principles of Internal Medicine 20th edition<br>2. Textbook of Internal Medicine PAPDI 6th edition<br>3. Bates Physical Examination 11th edition<br>4. KDIGO 2021 Clinical Practice Guideline for the Management of Blood Pressure in Chronic Kidney Disease<br>5. KDIGO 2012 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease<br>6. KDIGO Clinical Practice Guideline for Acute Kidney Injury<br>7. McGraw-Hill Professional, 2018. Feehally, J., Floege, J., Tonelli, M., Johnson, R. Comprehensive Clinical Nephrology. 6th edition. Elsevier. 2019 Brenner & Rector's The Kidney. 10th edition by Barry M. Brenner, Floyd C. Rector, Elsevier Health Sciences, 2016.<br>8. Kaplan NM. Clinical Hypertension. Williams & Wilkins, Baltimore, 9th edition, 2005.<br>9. Renal and Electrolyte Disorders, 6th Edition, 2002 Robert W. Schrier, MD Lippincott, Williams and Wilkins.<br>10. Clinical Physiology of Acid Base and Electrolytes Disorders, 5th Edition, 2000 Burton David Rose, MD |

| | |
|---|---|
| | 11. Fluid, Electrolyte, and Acid-Base Physiology, A Problem-Based Approach. Halperin and Goldstein, 3rd edition, WBSaunders Company, 1999<br>12. Handbook of Dialysis. Lippincott William & Wilkins, 2007 |

## Module Description: Endocrine and Metabolic

| | |
|---|---|
| **Module name** | Endocrine and Metabolic |
| **Module level, if applicable** | Junior |
| **Code, if applicable** | 20C16510303 |
| **Subtitles, if applicable** | - |
| **Course, if applicable** | Endocrinology and Metabolic |
| **Semester(s) in which the module is taught** | 2 |
| **Person responsible for the module** | Dr. dr. Husaini Umar, Sp.PD, KEMD |
| **Lecturer** | 1. Dr. dr. A Makbul Aman, SpPD, K-EMD<br>2. Dr. dr. Husaini Umar, SpPD, K-EMD<br>3. Dr. dr. Khalid Saleh, Sp.PD-KKV<br>4. dr. Pendrik Tandean, Sp.PD-KKV |
| **language** | Indonesian Language [Indonesian] |
| **Relations to Curriculum** | This course is a compulsory subject in the second semester and must be passed by students before completing the Academic Phase |
| **Type of teaching, contact hours** | Learning methods in this course<br>1. Small-group discussion<br>2. Morning Reports<br>3. Journal discussions<br>4. Literature Reading<br>5. Bedside teaching<br>6. Self Directed Learning |
| **Workloads** | For this course, students are required to meet a minimum of 144 hours in one semester, which consists of<br>• 45.33 hours for theoretical learning<br>• 45.33 hours for practical learning<br>• 53.33 hours for fieldwork |
| **credit points** | 3 credit points |
| **Requirements according to the examination Regulations** | Students must have attended all classes and submitted all assignments that are scheduled before the final test. |
| **Recommended prerequisites** | - |
| **Module objective/intended learning outcomes** | After taking this course, students are expected to :<br><br>**Attitudes:**<br>**CLO1**: Students are able to demonstrate and uphold humanity values, attitude, professional ethics and discipline in improving the quality of life in treating endocrine and metabolic diseases. (A1)<br><br>**Knowledge:**<br>**CLO2:**Students are able to analyze biomedical science and clinical science according to the endocrine and metabolic system. (K1)<br>**CLO3:**Students are able to decide theoretical concepts including pathophysiology, clinical evidence based medicine, and natural history of diseases related to endocrine and metabolic disease (K2)<br><br>**Skills**<br>**CLO4:**Students are able to implement logical, critical, systematic and analytical thinking through scientific research based on scientific rules, procedures and ethics related to the endocrine and metabolic system (GS1)<br>**CLO5:**Students are able to formulate ideas, critical thinking and scientific arguments based on evidence based medicine related to the endocrine and metabolic system. (GS2) |

| | |
|---|---|
| | **Competence**<br>**CLO6:**Students are able to perform intellectual skills, including analytical and problem solving through a scientific approach and able to make clinical decisions in the endocrine and metabolic system. (SS1)<br>**CLO7:**Students are able to implement interpersonal skills concept which consists of communication skills, anamnesis, physical examination in endocrine and metabolic system (SS2) |
| **Content** | Students will learn about:<br>Knowledge of the basic information, preparation and performing skills of Cardiovascular medicine related to Endocrine and Metabolic diseases<br>• Diagnostic approach of cardiovascular disease related to Endocrine and Metabolic diseases<br>• Promotion, prevention and management of diseases/disorders of endocrine and metabolic diseases |
| **Forms of Assessment** | • Multi-Source Feedback (10%)<br>• Written Examination (20%)<br>• Case Based Discussion (30%)<br>• Oral Presentation (40%) |
| **Study and examination requirements and form of examination** | **Study and examination requirements:**<br>• Students must attend all courses activity<br>• Students should be present 30 minutes before examination start<br>• Students must switch off all electronic devices (for offline class)<br>• Students must inform the lecturer if they will not attend the class due to sickness, etc.<br>• Students must submit all assignments before the deadline<br>• Students must attend the exam to get the final grade<br>**General Assessment/Non-Test**<br>Oral Presentation<br>**Special Assessment/Test**<br>Exam (CbD, Literature Review, Written Examination) |
| **Media Employed** | Power Point Presentations |
| **Reading List** | Harrison's Principles of internal medicine: Endocrinology and metabolism. Character Building. Jakarta. 2013.<br>Williams Textbook of Endocrinology. Elsevier. 2015<br>Supporters:<br>Teaching Books on Internal Medicine<br>1. PERKENI Consensus 2015<br>2. ADA Journal Diabetes Care<br>3. Technical Guidelines for Examination and Clinical Procedures of Internal Medicine. Collegial Science of Internal Medicine. 2017<br>Greenspan's Basic & Clinical Endocrinology 10th. Editioin. Lange. 2018 |

## Module Description: Adult Clinical Cradiology I

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| **Module name** | Adult Clinical Cradiology I |
| **Module level, if applicable** | Junior |
| **Code, if applicable** | 20C16520106 |
| **Subtitles, if applicable** | - |
| **Course, if applicable** | **ADULT CLINICAL CARDIOLOGY I** |
| **Semester(s) in which the module is taught** | 3 |
| **Person responsible for the module** | Prof. Dr. dr. Ali Aspar Mappahya, SpPD, SpJP(K) |
| **Lecturer** | 1. Prof. dr. Peter Kabo, PhD, SpFK, SpJP(K)<br>2. Dr. dr. Khalid Saleh, SpPD-KKV, SpJP(K)<br>3. dr. Pendrik Tandean, SpPD-KKV<br>4. dr. Zaenab Djafar,Mkes, SpPD, SpJP(K) |
| **language** | Indonesian Language [Indonesian] |
| **Relations to Curriculum** | This course is a compulsory subject in the third semester and should be passed by residents before completing the Academic Phase |
| **Type of teaching, contact hours** | Learning methods in this course:<br>1. Focused-group discussion and lecture<br>2. morning reports<br>3. Journal discussions<br>4. Self-directed learning |
| **Workloads** | For this course, students are required to meet a minimum of 304 hours in one semester, which consists of:<br>• 26.7 hours for lectures and discussions<br>• 32.0 hours for structured study (morning report, journal discussion)<br>• 32.0 hours for private study<br>• 213.3 hours for clinical practice |
| **credit points** | 6 credit points (equivalent to 12.16 ECTS) |
| **Requirements according to the examination Regulations** | Students must have attended all activities and the examination recording to the regulation. |
| **Recommended prerequisites** | Should be passed the basic cardiology |
| **Module objective/intended learning outcomes** | After taking this course, students are expected to :<br><br>**Attitudes:**<br>**CLO1**:<br>Upholding the values of humanity, ethics, independence, and contributing to the improvement of the community's quality of life in the management of heart disease. (S1)<br><br>**Knowledge:**<br>**CLO2:**<br>Understanding and applying the knowledge of biomedical sciences (anatomy, physiology, and pharmacology) and clinical sciences (such as diagnostic and therapeutic approaches, prevention, and rehabilitation) in the field of adult clinical cardiology. (P1)<br>**CLO3:**<br>Understanding and applying theoretical concepts related to clinical research (stable angina pectoris or chronic coronary syndrome, arrhythmia, chronic heart failure, and valvular heart disease) and implementing evidence-based medicine into healthcare aspects in relation to the field of adult clinical cardiology. (P2) |

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| | **Skills**<br>**CLO4:**<br>Applying scientific thinking and ideas based on evidence-based clinical practice, as well as disseminating knowledge related to guidelines and the latest information regarding the management and treatment of patients to peers and the general public. (KU2)<br><br>**Competence**<br>**CLO5:**<br>Applying intellectual skills, conducting analysis and problem-solving with a scientific approach, and making clinical decisions following guidelines and evidence-based medicine in the field of adult clinical cardiology. (KK1)<br>**CLO6:**<br>Implementing communication skills, history-taking skills, physical examination, and interpreting the results of non-invasive diagnostic tests in the field of adult clinical cardiology. (KK2)<br>**CLO7:**<br>Applying preventive and rehabilitative strategies and management in the field of adult clinical cardiology. (KK4) |
| **Content** | Students will learn about:<br>1. Electrocardiography<br>2. Exercise Stress Test<br>3. Echocardiography and Imaging<br>4. Cardiovascular Imaging: Cardiac CT, CMR<br>5. Clinical Pharmacology of Cardiovascular Diseases<br>6. Cardiovascular Disease Prevention<br>7. hypertension<br>8. Pulmonary Arterial Hypertension<br>9. Heart Disease with Endocrinology and Metabolic Abnormalities, Cardiorenal Syndrome, and Thyroid Heart Disease<br>10. Chronic Ischemic Heart Disease: Stable Angina Pectoris<br>11. Myocardial Diseases<br>12. Pericardial Diseases<br>13. Rheumatic Fever, Rheumatic and Non-rheumatic Heart Valve Diseases<br>14. Infective Endocarditis<br>15. Chronic Heart Failure<br>16. Arrhythmia<br>17. Pregnancy in Cardiovascular Disease<br>18. Rehabilitation and Exercise Physiology<br>19. Cardiac Tumors<br>20. Peri-procedural and Post-procedural Angiography and Catheterization<br>21. Perioperative and Postoperative Cardiac and Non-cardiac Surgeries. |
| **Forms of Assessment** | • active participation (5%),<br>• oral presentations (10%),<br>• case-based discussions (10%),<br>• mini-CEX (10%),<br>• portfolio or logbook (5%),<br>• DOPS (50%),<br>• journal reading (10%). |
| **Study and examination requirements and form of examination** | **Study and examination requirements:**<br>• Students must attend 15 minutes before the structured activities start, and 30 minutes before the examination starts |

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| | • Students must switch off all electronic devices (for offline class)<br>• Students must switch on the camera/video during the class (for online class)<br>• Students must inform the lecturer if they will not attend the activities due to sickness.<br>• Students must all undergo assessments before the deadline |
| **Media Employed** | Power points, videos, journals |
| **Reading Lists** | 1. 2018 National Cardiology and Blood Vessel Specialist Education Standard Book (PERKI).<br>2. Robert Krams, Magnus Bäck. 2017. The ESC Textbook of Vascular Biology. Oxford UniversityPress<br>3. Leonard S. Lily. 2019. Pathophysiology of Heart Disease 6th edition<br>4. Stephan Gielen, Guy De Backer, Massimo Piepoli, and David Wood. 2015. The ESC Textbook of Preventive Cardiology. Oxford UniversityPress |

## Module Description: Echocardiography 1

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| **Module name** | Echocardiography 1 |
| **Module level, if applicable** | Junior |
| **Code, if applicable** | 20C16510106 |
| **Subtitles, if applicable** | - |
| **Course, if applicable** | Echocardiography 1 |
| **Semester(s) in which the module is taught** | 3 |
| **Person responsible for the module** | Dr. Aussie Fitriani Ghaznawie Sp.JP(K) |
| **Lecturer** | 1. dr. Aussie Fitriani Ghaznawie, Sp.JP(K)<br>2. dr. Akhtar Fajar Muzakkir Sp.JP(K)<br>3. dr. Pendrik Tandean Sp.PD-KKV |
| **language** | Indonesian Language [Indonesian] |
| **Relations to Curriculum** | This course is a compulsory subject in the third semester and must be passed by students before completing the Academic Phase |
| **Type of teaching, contact hours** | Learning methods in this course<br>1. Lectures<br>2. Small-group discussion<br>3. morning reports<br>4. Journal discussions<br>5. Bedside teaching<br>6. Practicum<br>7. Self-directed learning |
| **Workloads** | For this course, students are required to meet a minimum of 288 hours in one semester, which consists of:<br>• 197 hours for fieldwork and practicum<br>• 91 hours for self-directed learning and discussions |
| **credit points** | 6 credit points (equivalent to 11.52 ECTS) |
| **Requirements according to the examination Regulations** | Students must have attended all classes and submitted all assignments that are scheduled before the final test. |
| **Recommended prerequisites** | - |
| **Module objective / intended learning outcomes** | After taking this course, students are expected to :<br><br>**Attitudes:**<br>**CLO1**: Students are able to demonstrate attitude, professional ethics and discipline in performing echocardiography examination.(A1)<br><br>**Knowledge:**<br>**CLO2:**Students are able to analyze biomedical science and clinical science according to echocardiography examination. (K1)<br>**CLO3:**Students are able to decide theoretical concepts related to clinical research, organizational services and education related to echocardiography. (K2) |

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| | **Skills**<br>**CLO4:**Students are able to implement logical, critical, systematic and analytical thinking through scientific research based on scientific rules, procedures and ethics related to echocardiography. (S1)<br>**CLO5:**Students are able to formulate ideas, critical thinking and scientific arguments based on evidence based medicine related to echocardiography. (S2)<br><br>**Competence**<br>**CLO6:**Students are able to perform intellectual skills, including analytical and problem solving through a scientific approach and able to make clinical decisions in echocardiography examination. (C1)<br>**CLO7:**Students are able to implement the interpersonal skills concept which consists of communication skills, history taking, physical examination, and echocardiography examination results interpretation. (C2)<br>**CLO8:**Students are able to perform basic echocardiography skills and able to apply preventive and rehabilitative strategies to the community. (C3) |
| **Content** | Students will learn about:<br>Knowledge of the basic information, preparation and performing skills of echocardiography examination.<br>• Diagnostic approach of cardiovascular disease through echocardiography examination.<br>• Valvular diseases / disorders and congenital disease/malformations of the heart<br>• Promotion, prevention and management of diseases/disorders of the valvular diseases and congenital heart diseases. |
| **Forms of Assessment** | • Written Examination (40%)<br>• Direct Observational Performing Skills (50%)<br>• Oral presentations (5%)<br>• Journal reading (5%) |
| **Study and examination requirements and form of examination** | **Study and examination requirements:**<br>• Students must attend all courses activity<br>• Students should be present 30 minutes before examination start<br>• Students must switch off all electronic devices<br>• Students must inform the lecturer if they will not attend the class due to sickness, etc.<br>• Students must submit all assignments before the deadline<br>• Students must attend the exam to get the final grade<br><br>**For examination:**<br>DOPS and Written Examination |
| **Media Employed** | Power Point Presentations<br>Echocardiography machine |
| **Reading List** | 1. Lang, R., Goldstein, S., Kronzon, I., Khandheria, BK., Saric, M., & Mor-Avi, V. (2021). ASE's Comprehensive Echocardiography Textbook 3rd Edition.<br>2. Lancellotti, P., Zamorano, JL, Habib, G., & Badano, L. (Eds.). (2016). The EACVI textbook of echocardiography. Oxford UniversityPress. |

## Module Description: Invasive Cardiology & Non Surgical Interventions I

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| **Module name** | Invasive Cardiology & Non Surgical Interventions I |
| **Module level, if applicable** | Intermediate |
| **Code, if applicable** | 20C16520306 |
| **Subtitles, if applicable** | - |
| **Course, if applicable** | Invasive Cardiology & Non Surgical Interventions I |
| **Semester(s) in which the module is taught** | IV |
| **Person responsible for the module** | Prof. Dr. dr. Ali Aspar Mappahya, SpPD, SpJP(K) |
| **Lecturer** | 1. Prof. Dr. dr. Ali Aspar Mappahya, SpPD, SpJP(K)<br>2. Dr. dr. Abdul Hakim Alkatiri, SpJP(K)<br>3. dr. Az Hafid Nashar, Sp. JP(K) |
| **language** | Indonesian Language [Indonesian] |
| **Relations to Curriculum** | This course is a compulsory subject in the fourth semester and must be passed by students before completing the Academic Phase |
| **Type of teaching, contact hours** | Learning methods in this course<br>1. Lectures<br>2. Small-group discussion<br>3. morning reports<br>4. Journal discussions<br>5. literature reviews<br>6. Bedside teaching<br>7. Practicum<br>8. Self-directed learning |
| **Workloads** | For this course, students are required to meet a minimum of 296 hours in one semester, which consists of:<br>- 45 hours for Theory:<br>- 13 hours for lectures<br>- 16 hours for structured learning<br>- 16 hours for private study/ self-directed learning<br>- 91 hours for practice<br>- 160 hours for fieldwork |
| **credit points** | 6 credit points (ECTS 11.8) |
| **Requirements according to the examination Regulations** | Students must have attended all classes and submitted all assignments that are scheduled before the final test |
| **Recommended prerequisites** | - |
| **Module objective / intended learning outcomes** | After taking this course, students are expected to :<br><br>**Attitudes:**<br>**CLO1**:<br>Able to demonstrate responsibility in requesting, performing and interpreting invasive examinations by properly considering the risks and benefits of action (A1)<br>**CLO2**:<br>Able to collaborate with nurses, technicians and other medical personnel in a professional manner (A2)<br><br>**Knowledge:**<br>**CLO3:**<br>Able to apply understanding of the basic principles of invasive procedures in the catheterization laboratory regarding the selection of the appropriate treatment modality (medical, percutaneous or surgical) based on clinical data, as well as complications and management (K1)<br>**CLO4:**<br>Able to apply understanding of radiological anatomy of the heart, |

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| | aorta, great vessels and coronary arteries, as well as the femoral, radial and brachial arteries used to access blood vessels during catheterization. (K2)<br><br>**Skills**<br>**CLO5:**<br>Able to analyze and explain research or journals related to invasive and interventional cardiology. (S1)<br>**CLO6:**<br>Able to use catheterization laboratory equipment to minimize radiation exposure so that patients/staff are protected, and minimize the use of nephrotoxic contrast. (S2)<br>**CLO7:**<br>Able to analyze and determine the need for cooperation with other areas of expertise. (S3)<br><br>**Competence**<br>**CLO8:**<br>Able to determine indications and perform temporary pacemaker and pericardiocentesis procedures (C1)<br>**CLO9:**<br>Able to evaluate the results of coronary angiography, ventriculogram, aortogram and pulmonary angiography, as well as hemodynamic data. (C2)<br>**CLO10:**<br>Able to perform left heart catheterization which includes: percutaneous arterial access, coronary angiography, ventriculography (C3)<br>**CLO11:**<br>Able to handle life-threatening arrhythmias and other emergencies in the catheterization laboratory. (C3)<br>**CLO12:**<br>Able to use drugs that correct hemodynamic disorders in a timely and safe manner (C4) |
| | Students will learn about:<br>- Basic skills in the field of invasive cardiology procedures under supervision<br>- Knowledge to interpret the findings from invasive cardiology procedures |
| **Content** | • Multi-Source Feedback (10%)<br>• Oral/Written Examination (20%)<br>• Direct Observational Performing Skills (60%)<br>• Journal reading (5%)<br>• Portfolio (log-book) (5%) |
| **Forms of Assessment** | **Study and examination requirements:**<br>• Students must attend all courses activity<br>• Students should be present 30 minutes before examination start<br>• Students must switch off all electronic devices (for offline class)<br>• Students must inform the lecturer if they will not attend the class due to sickness, etc.<br>• Students must submit all assignments before the deadline<br>• Students must attend the exam to get the final grade<br><br>**For examination:**<br>Oral/written examination |
| **Study and examination requirements and form of examination** | Power Point Presentations<br>Catheterisation laboratory |

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| **Media Employed** | 1. Andrew Mitchell, Giovanni Luigi De Maria, Adrian Banning, Paul Leeson, Nick West, Angie Ghattas. 2020. Cardiac Catheterization and Coronary Intervention. Oxford UniversityPress. Oxford UniversityPress<br>2. Sandy Watson, Kenneth A. Gorski. 2010. Invasive Cardiology: A Manual for Cath Lab Personnel |
| **Reading List** | 1. Andrew Mitchell, Giovanni Luigi De Maria, Adrian Banning, Paul Leeson, Nick West, Angie Ghattas. 2020. Cardiac Catheterization and Coronary Intervention. Oxford UniversityPress. Oxford UniversityPress<br>2. Sandy Watson, Kenneth A. Gorski. 2010. Invasive Cardiology: A Manual for Cath Lab Personnel |

## Module Description: Critical Cardiology I

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| **Module name** | Critical Cardiology I |
| **Module level, if applicable** | Intermediate |
| **Code, if applicable** | 20C16520406 |
| **Subtitles, if applicable** | - |
| **Course, if applicable** | Cardiology and Vascular Medicine |
| **Semester(s) in which the module is taught** | 4 |
| **Person responsible for the module** | dr. Akhtar Fajar Muzakkir, SpJP(K) |
| **Lecturer** | 1. dr. Akhtar Fajar Muzakkir, SpJP(K)<br>2. dr. Fadilla Maricar, SpJP(K) |
| **language** | Indonesian Language [Indonesian] |
| **Relations to Curriculum** | Critical Cardiology I course is a course presented in the second year of education, especially at the beginning of the Intermediate Level phase in the 4th Semester. This course aims to study the basic clinical theory of cardiovascular critical illness to implement a comprehensive management strategy for cardiovascular disease in the field of cardiovascular intensive care. |
| **Type of teaching, contact hours** | Learning methods in this course:<br>• Focused-Group Discussion<br>• Morning Reports<br>• Journal & Literature Review<br>• Bedside Teaching<br><br>Contact hours:<br>• Theory (90.6 hours) :<br>  ○ Lectures (26.7hours)<br>  ○ Structured assignments (32.0 hours)<br>  ○ Private study (32.0 hours)<br>• Fieldwork (213.3 hours) |
| **Workloads** | ECTS: 12.16 ECTS<br>• Lectures (1.07 ECTS)<br>• Structured (1.28 ECTS)<br>• Private Study (1.28 ECTS)<br>• Fieldwork (8.53 ECTS) |
| **credit points** | 6 credit points (equivalent to 12.16 ECTS) |
| **Requirements according to the examination Regulations** | Students must attend the learning process and submit all assignments that are scheduled before the final test. |
| **Recommended prerequisites** | - |
| **Module objective / intended learning outcomes** | After taking this course, students are expected to be :<br><br>**Attitudes:**<br>CLOS 1 :<br>Able to carry out the application of knowledge (cognitive), professional skills (psychomotor), and have the same attitude<br><br>**Knowledge:**<br>CLO 2 :<br>Able to apply knowledge in writing patient medical records including examination results<br>CLOS 3 :<br>Able to independently identify and classify diseases in the cardiovascular intensive care unit<br><br>**Skills:** |

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| | CLOS 4 :<br>Able to analyze and explain research or scientific journals in the field of cardiovascular intensive care<br>CLO 5 :Able to conduct scientific arguments against evidence-based scientific findings and studies in the field of cardiovascular intensive care<br><br>**Competence:**<br>CLOS 6 :<br>Able to analyze the condition and development of the disease in a comprehensive manner as well as the next management plan<br>CLO 7 :<br>Able to independently carry out diagnostic examination procedures and their interpretations in the field of inpatient care<br>CLOS 8 :<br>Able to independently perform therapeutic measures in the field of cardiovascular intensive care which includes<br>CLOS 9 :<br>Able to carry out preventive and rehabilitative management independently in the cardiovascular intensive care unit |
| **Content** | 1. Hypertensive crises<br>2. Shocks<br>3. Respiratory Failure<br>4. Disorders of electrolyte and acid-base balance<br>5. Cardiac arrest<br>6. Stop breathing<br>7. Pulmonary embolism<br>8. Acute coronary syndrome with/without complications<br>9.Ischemic heart disease<br>10. Myocardial disease (cardiomyopathy, myocarditis)<br>11. Pericardial disease (acute pericarditis, constrictive pericarditis, pericardial effusion/cardiac tamponade)<br>12. Heart tumor disease<br>13. Pregnancy with hypertension, valvular and/or congenital disease, CHD, arrhythmia, aortic disease)<br>14. Rheumatic fever and rheumatic valvular heart disease<br>15. Infective endocarditis<br>16. Heart failure<br>17. Pulmonary hypertension<br>18. Arrhythmia<br>19. Syncope<br>20. Sudden cardiac arrest and resuscitation<br>21. Aortic disease and aortic trauma<br>22. Peripheral vascular disease of arteries and veins<br>23. Congenital structural and heart disease<br>24. Cardiorenal syndrome<br>25. Low cardiac output syndrome |
| **Forms of Assessment** | • MSF 5%<br>• Oral Presentation 15%<br>• Case-Based Discussion 5%<br>• Mini-CEX 10%<br>• Written examination 5%<br>• DOPS 60% |
| **Study and examination requirements and form of examination** | **Study and examination requirements:**<br>• Students must have fulfilled their logbook activities<br>• Students must complete the assignment before participating in the examinations |
| **Media Employed** | Videos and Power Point Presentations |

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| **Reading List** | 1. L Braunwald, E. 2002. Heart Disease, A Textbook of Cardiovascular Medicine, 6th ed. FA Davis Company, Philadelphia.<br>2. Marco Tubaro, Pascal Vranckx, Susanna Price, Christiaan Vrints, and Eric Bonnefoy. 2021. The ESC Textbook of Intensive and Acute Cardiovascular Care, Third Edition. Oxford UniversityPress<br>3. Graham Barker, Claire Colebourn, James Day, James Day, James Day. 2017. Acute and Critical Care Echocardiography. Oxford UniversityPress |

## Module Description: Pulmonology

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| **Module name** | Pulmonology |
| **Module level, if applicable** | Intermediate |
| **Code, if applicable** | 20C16530103 |
| **Subtitles, if applicable** | - |
| **Course, if applicable** | Pulmonology |
| **Semester(s) in which the module is taught** | 5 |
| **Person responsible for the module** | Dr. dr. Irawaty Djaharuddin, Sp.P(K) |
| **Lecturer** | Dr. dr. Irawaty Djaharuddin, Sp.P(K) |
| **language** | Indonesian Language [Indonesian] |
| **Relations to Curriculum** | This course is a compulsory subject in the fifth semester and must be passed by the students |
| **Type of teaching, contact hours** | Learning methods in this course<br>1. Focused Group Discussion (FGD)<br>2. morning reports<br>3. Journal discussions<br>4. Bedside teaching<br>5. Practicum<br>6. Self-directed learning |
| **Workloads** | For this course, students are required to meet a minimum of 144 hours in one semester, which consists of:<br>• 90 hours for self-directed learning and discussions<br>• 54 hours for fieldwork and practicum |
| **credit points** | 3 credit points (equivalent to 5.8 ECTS) |
| **Requirements according to the examination Regulations** | Students must have completed all student assessment before the final test. |
| **Recommended prerequisites** | - |
| **Module objective / intended learning outcomes** | After taking this course, students are expected to :<br>**Attitudes:**<br>**CLO1**: Students are able to Show good attitude and ethics towards patients with lung disease (A1)<br><br>**Knowledge:**<br>**CLO2:**Students are able to Comprehensively analyze cases of lung disease and be able to apply basic knowledge and clinical science to identify diagnoses, therapeutic management and determine preventive and rehabilitative strategies (K1)<br>**CLO3:**Students are able to interpret the results of pulmonary disease investigations in a clinical context by integrating other clinical data in order to diagnose and manage lung disease (K1)<br><br>**Skills**<br>**CLO4:**Students are able to analyze, evaluate and compare specific scientific theories and findings reported in scientific journals, manuals and research reports in the field of pulmonology. (GS1)<br>**CLO5:**Students are able to compile a literature review and express scientific-based thoughts or ideas in the field of pulmonology (GS2)<br>**CLO6 :**Students are able to Manage patient care together with a multidisciplinary care team that contributes to improving pulmonary disease patient outcomes. (GS 3)<br>**CLO7 :**Students are able to apply critical thinking to solve problems based on scientifically based literature and be able to make decisions in the management of pulmonary disease patients. (SS1) |

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| | **CLO8 :**Students are able to apply good interpersonal communication skills to be effective in treating pulmonary disease patients. (SS2)<br>**CLO9 :**Students are able to perform non-invasive procedures in the field of pulmonology.(SS2)<br>**CLO10 :**Students are able to independently perform invasive procedures in the field of pulmonology. (SS3)<br>**CLO11 :**Students are able to plan the management of lung disease pharmacologically and invasive interventions based on the examinations that have been carried out. (SS4)<br>**CLO12 :**Students are able to evaluate the rationale for further management both in terms of curative and rehabilitative in accordance with available resources and technology. (SS4) |
| **Content** | Students will learn about:<br>• Knowledge of the structure of the body that composes the respiratory system and the mechanism of the respiratory system ( anatomy, histology, biochemistry and physiology)<br>• Diagnostic examination of the respiratory system ( clinical pathology, radiology, anatomical pathology)<br>• Diseases / disorders of the respiratory system<br>• Management of diseases / disorders of the respiratory system<br>• Promotion, prevention and management of diseases/disorders of the respiratory system |
| **Forms of Assessment** | • Oral Examination (25%)<br>• Journal reading (50%) |
| **Study and examination requirements and form of examination** | **Study and examination requirements:**<br>• Students must attend all courses activity<br>• Students should be present 30 minutes before the courses start<br>• Students must inform the lecturer if they will not attend the class due to sickness, etc.<br>• Students must submit all class assignments before the deadline<br>• Students must attend the exam to get the final grade |
| **Media Employed** | Videos and Power Point Presentations |
| **Reading List** | 1. Shanti Paramothayan. 2019. Essential Respiratory Medicine. Willey Blackwell<br>2. Willian Herring, Learning Radiology- Recognize The Basic.3rd. Elsevier 2015 |

## Module Description: Cardiology Emergency I

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| **Module name** | Cardiology Emergency I |
| **Module level, if applicable** | Intermediate |
| **Code, if applicable** | 20C16510106 |
| **Subtitles, if applicable** | - |
| **Course, if applicable** | Cardiology Emergency I |
| **Semester(s) in which the module is taught** | |
| **Person responsible for the module** | dr. Akhtar Fajar Muzakkir Sp.JP(K) |
| **Lecturer** | Dr. dr. Idar Mappangara, SpPD, SpJP(K)<br>dr. Akhtar Fajar Muzakkir, SpJP(K) |
| **language** | Indonesian Language [Indonesian] |
| **Relations to Curriculum** | This course is a compulsory subject in the third semester and must be passed by students before completing the Academic Phase |
| **Type of teaching, contact hours** | Learning methods in this course<br>1. Oral Presentation<br>2. Case Based Discussion<br>3. MiniCEX<br>4. Oral Examination<br>5. DOPS<br>6. MSF |
| **Workloads** | For this course, students are required to meet a minimum of 152 hours in one semester, which consist of:<br>• 45.33 hours for Theory<br>• 106.67 hours for Fieldwork |
| **credit points** | 3 credit points (Equivalent to ECTS 6.08) |
| **Requirements according to the examination Regulations** | Students must have attended all classes and submitted all assignments that are scheduled before the final test. |
| **Recommended prerequisites** | - |
| **Module objective / intended learning outcomes** | After taking this course, students are expected to :<br>**Attitudes:**<br>**CLOS 1**: Able to apply knowledge (cognitive), professional skills (psychomotor), and have attitudes and behaviors in caring for patients in the cardiovascular emergency room (A1)<br><br>**Knowledge:**<br>**CLOS 2**: Able to apply knowledge in writing patient medical records including examination, diagnosis and therapy results (K1)<br>**CLOS 3**: Able to independently identify and classify cardiovascular disease in the Emergency Room (K2)<br><br>**Skills**<br>**CLOS 4**: Able to analyze and explain research or scientific journals in the field of cardiovascular emergencies (GS1)<br>**CLOS 5**: Able to independently make arguments based on evidence-based scientific ideas and clinical research on diseases related to cardiovascular emergencies (GS2)<br><br>**Competence**<br>**CLOS 6:**Able to comprehensively analyze the condition and development of the disease as well as the next management plan based on theory and related clinical research (SS1)<br>**CLOS 7:**Able to independently carry out diagnostic examination procedures and their interpretation in the field of cardiovascular emergencies (SS2)<br>**CLOS 8:**Able to independently carry out therapeutic actions in the |

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| | field of cardiovascular emergencies which include strategy, preparation and procedure safety (SS3) |
| **Content** | Students will learn about:<br>- Knowledge of the basic information, preparation and performing skills of Emergency examination.<br>• Diagnostic approach of cardiovascular disease through a physical examination and supporting examination.<br>• Promotion, prevention and management in emergency situations. |
| **Forms of Assessment** | • Active Participation (10%)<br>• Case Based Discussion (10%)<br>• Mini CEX (10%)<br>• Oral Presentation (5%)<br>• Oral Examination (25%)<br>• Direct Observational Performing Skills (40%) |
| **Study and examination requirements and form of examination** | **Study and examination requirements:**<br>• Students must attend all courses activity<br>• Students should be present 30 minutes before examination start<br>• Students must switch off all electronic devices (for offline class)<br>• Students must inform the lecturer if they will not attend the class due to sickness, etc.<br>• Students must submit all assignments before the deadline<br>• Students must attend the exam to get the final grade<br><br>**For examination:**<br>DOPS and Oral examination : Real case practical emergency examination and oral panel examination for theory. |
| **Media Employed** | Power Point Presentations |
| **Reading List** | 1. Marco Tubaro, Pascal Vranckx, Susanna Price, Christiaan Vrints, and Eric Bonnefoy. 2021. The ESC Textbook of Intensive and Acute Cardiovascular Care, Third Edition. Oxford UniversityPress<br>2. Graham Barker, Claire Colebourn, James Day, James Day, James Day. 2017. Acute and Critical Care Echocardiography. Oxford UniversityPress |

## Module Description: Cardiovascular Prevention and Rehabilitation

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| **Module name** | Cardiovascular Prevention and Rehabilitation |
| **Module level, if applicable** | Intermediate |
| **Code, if applicable** | 20C16530303 |
| **Subtitles, if applicable** | - |
| **Course, if applicable** | Cardiovascular Prevention and Rehabilitation |
| **Semester(s) in which the module is taught** | 5 |
| **Person responsible for the module** | dr. Zaenab Djafar, M.Kes, SpPD, SpJP(K) |
| **Lecturer** | 1. Prof. dr. Junus Alkatiri, SpPD, SpJP(K)<br>2. dr. Zaenab Djafar,Mkes, SpPD, SpJP(K)<br>3. dr. Almudai, SpPD, SpJP |
| **language** | Indonesian Language [Indonesian] |
| **Relations to Curriculum** | This course is a compulsory subject in the fifth semester and must be passed by students before completing the Academic Phase |
| **Type of teaching, contact hours** | Learning methods in this course<br>1. Small-group discussion<br>2. Journal discussions<br>3. Bedside teaching |
| **Workloads** | For this course, students are required to meet a minimum of 152 hours in one semester, which consist of:<br>• 45.33 hours for Theory<br>• 106.67 hours for Fieldwork |
| **credit points** | 3 credit points (equivalent to 6.08 ECTS) |
| **Requirements according to the examination Regulations** | Students must have attended all classes and submitted all assignments that are scheduled before the final test. |
| **Recommended prerequisites** | - |
| **Module objective / intended learning outcomes** | After taking this course, students are expected to :<br><br>**Attitudes:**<br>**CLO1**: Students are able to analyze technical knowledge including basic science (biomedical science) and clinical science such as diagnostic and therapeutic approaches, prevention and rehabilitation in the fields of cardiology and vascular medicine. (A1)<br><br>**Knowledge:**<br>**CLO2:**Students are able to retrieve information regarding relevant medical history and perform appropriate clinical examinations (K1)<br>**CLO3:**Students are able to independently carry out cardiac exercise test examinations and physiological applications in rehabilitation programs in the field of cardiology and vascular medicine (K2)<br><br>**Skills**<br>**CLO4:**Students are able to describe the clinical procedure of a heart exercise test with a treadmill and the purpose of its use in clinical practice including indications and contraindications based on logical, critical, systematic, and analytical thinking through scientific research (S1)<br>**CLO5:**Students are able to manage risk factors appropriately and communicate the importance of controlling risk factors to patients, families and communities (S2)<br><br>**Competence**<br>**CLO6:**Students are able to independently carry out clinical procedures for cardiac training rehabilitation programs in patients with cardiovascular disease (C1) |

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| | **CLO7:**Students are able to independently carry out clinical procedures for cardiac training rehabilitation programs in normal patients and patients with cardiovascular risk (C4) |
| **Content** | At this stage students carry out assessments, risk stratification, and supervise patient direct cardiac training activities to take part in pre and post operative cardiac rehabilitation programs as well as cases related to other cardiovascular fields and master cardiac rehabilitation phases I, II, III.<br>In addition, students can also carry out primary and secondary prevention of cardiovascular disease and control of cardiovascular-related risk factors. |
| **Forms of Assessment** | • MSF 5%<br>• Oral Presentation 10%<br>• Portfolio (log-book) 15 %<br>• DOPS 30%<br>• Written examination 40% |
| **Study and examination requirements and form of examination** | **Study and examination requirements:**<br>• Students must attend all courses activity<br>• Students should be present 30 minutes before examination start<br>• Students must switch off all electronic devices (for offline class)<br>• Students must inform the lecturer if they will not attend the class due to sickness, etc.<br>• Students must submit all assignments before the deadline<br>• Students must attend the exam to get the final grade<br>**For examination:**<br>DOPS and Written Examination : Students describe the clinical procedure of a cardiac exercise test on a treadmill and its intended use in clinical practice and answer theoretical questions around cardiovascular prevention and rehabilitation |
| **Media Employed** | Power Point Presentations |
| **Reading List** | 1. Antonio Pelliccia, Hein Heidbuchel, Domenico Corrado, Mats Borjesson, and Sanjay Sharma. 2019. Oxford University Press<br>2. Gregory S. Thomas, Samuel Wann, Myrvin H. Ellestad, James R. Adams, Adel HA Allam, Brandy Hattendorf, Ijeom. 2018. Ellestad's Stress Testing. Oxford UniversityPress<br>3. Armin, et. all. Correlation between Cardiovascular Event Risk Stratification Based on Interheart Score and Electrocardiogram Based on the Minnesota Code in Prolanis Participants in Makassar City: A Telemedicine Study. 2023. Hasanuddin University |

## Module Description: Pediatric I

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| **Module name** | Pediatric I |
| **Module level, if applicable** | Intermediate |
| **Code, if applicable** | 20C16530403 |
| **Subtitles, if applicable** | - |
| **Course, if applicable** | Pediatric I |
| **Semester(s) in which the module is taught** | V |
| **Person responsible for the module** | dr. Yulius Patimang, SpA, SpJP(K)dr. Andi Alief Utama Armyn, MKes, SpJP(K) |
| **Lecturer** | dr. Yulius Patimang, SpA, SpJP(K)<br>dr. Andi Alief Utama Armyn, MKes, SpJP(K) |
| **language** | Indonesian Language [Indonesian] |
| **Relations to Curriculum** | This course is a compulsory subject in the eighth semester and must be passed by students before completing the Academic Phase |
| **Type of teaching, contact hours** | Learning methods in this course<br>1. Small group discussions<br>2. Morning Reports<br>3. Journal Discussions<br>4. Literature Review<br>5. Bedside Teaching |
| **Workloads** | For this course, students are required to meet a minimum of 144 hours in one semester which consists of:<br>• 90.6 hours for Theory.<br>• 53.33 hours for Fieldwork |
| **credit points** | 3 credit points (equivalent to 7.93 ECTS) |
| **Requirements according to the examination Regulations** | Students must have attended all classes and submitted all assignments that are scheduled before the final test. |
| **Recommended prerequisites** | - |
| **Module objective / intended learning outcomes** | After taking this course, students are expected to :<br><br>**Attitudes:**<br>**CLO1**: Students have the ability to comprehend and apply knowledge in the field of Pediatric Cardiology in accordance with medical ethics principles within the community. (A1)<br><br>**Knowledge:**<br>**CLOS 2**: Students have the ability to understand and apply basic knowledge (Biomedical) in the field of Pediatric Cardiology (K1).<br>**CLOS 3**: Students are capable of understanding and applying Clinical Pediatric Cardiology knowledge through establishing diagnoses, therapeutics, prevention, and rehabilitation in the field of Pediatric Cardiology (K1)<br>**CLOS 4:**Students are able to comprehend and analyze the theoretical relationship between clinical research, organizational services, and educational aspects as they retain to the field of Pediatric Cardiology (K2)<br><br>**Skills**<br>**CLOS 5**: Students are capable of systematically applying and creating scientific works in accordance with scientific principles, procedures, and ethics in the form of Scientific Case Reports and the creation of Literature Reviews in the field of Pediatric Cardiology (S1).<br>**CLOS 6**Students are able to apply scientific ideas, thoughts and arguments in the field of Pediatric Cardiology and develop them |

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| | in the community through social service activities and workshops in the field of Pediatric Cardiology (S2).<br>**CLOS 7:**Students are capable of applying skills to manage, develop, and maintain cooperative relationships with colleagues, institutions, and coworkers in the care of patients with congenital heart disease. (S3)<br><br>**Competence**<br>**CLOS 8**: Students are able to apply their intellectual abilities in the field of Pediatric Cardiology and analyze clinical problems in Pediatric Cardiology through the skills of history-taking, physical examination, and diagnosis. (C1).<br>**CLOS 9**: Students are capable of analyzing, applying, and evaluating therapeutic and rehabilitation plans for patients with congenital heart disease C1)<br>**CLOS 10:**Students are able to comprehend and apply skills to conduct diagnostic examinations in the field of Pediatric Cardiology (C2)<br>**CLOS 11:**Students are able to apply and interpret the results of diagnostic examinations in the field of Pediatric Cardiology (C2)<br>**CLOS 12:**Students are capable of understanding the procedures of invasive interventions for congenital heart disease in catheterization laboratories, emergency units, and intensive care units. This includes procedural strategies, patient safety, preparation, and post-procedural care. (C3)<br>**CLOS 13:**Students are able to apply preventive and rehabilitative strategies both within and outside the hospital setting to individuals, families, and communities dealing with health issues in the field of pediatric cardiology comprehensively, integratively, and sustainably." (C4)<br>**CLOS 14:**Students are capable of evaluating the success of preventive and rehabilitative strategies both within and outside the hospital setting for individuals, families, and communities dealing with health issues in the field of pediatric cardiology comprehensively, integratively, and sustainably (C4) |
| **Content** | Students will learn about:<br>Knowledge of the basic information, preparation and performing skills of Pediatric Cardiology and Congenital |
| **Forms of Assessment** | • Multi source- feedback (5%)<br>• Oral Examination (40%)<br>• Direct Observational Performing Skills (DOPS) (5%)<br>• Oral Presentation (5%)<br>• Journal reading, literature review (5%)<br>• Mini Clinical Examination (Mini CEX) (40 %) |
| **Study and examination requirements and form of examination** | **Study and examination requirements:**<br>• Students must attend all courses activity<br>• Students should be present 30 minutes before examination start<br>• Students must switch off all electronic devices (for offline class)<br>• Students must inform the lecturer if they will not attend the class due to sickness, etc.<br>• Students must submit all assignments before the deadline<br>• Students must attend the exam to get the final grade<br><br>**For examination:**<br>DOPS and Oral examination Students are capable of understanding and applying Clinical Pediatric Cardiology and congenital knowledge through establishing diagnoses, |

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| | therapeutics, prevention, and rehabilitation in the field of Pediatric Cardiology and Congenital Real practical case and written panel examination for theory. |
| **Media Employed** | Power Point Presentations |
| **Reading List** | 1. Park's Pediatric Cardiology for Practitioners, 7th Edition. 2020. Park's Pediatric Cardiology for Practitioners. Elsevier<br>2. Thorne, Sarah; Bowater, Sarah(ed.). Adult congenital heart disease. Oxford University Press, 2017. |

## Module Description: Electrophysiology & Arrhythmia

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| **Module name** | Electrophysiology & Arrhythmia |
| **Module level, if applicable** | Cardiology and Vascular Medicine Specialist Program |
| **Code, if applicable** | 20C16530503 |
| **Subtitles, if applicable** | - |
| **Course, if applicable** | Electrophysiology & Arrhythmia |
| **Semester(s) in which the module is taught** | 6 |
| **Person responsible for the module** | Dr. dr. Muzakkir Amir, Sp. JP(K) |
| **Lecturer** | Dr. dr. Muzakkir Amir, Sp. JP(K) |
| **language** | Indonesian Language [Indonesian] |
| **Relations to Curriculum** | This course is a compulsory subject in the sixth semester and must be passed by the students |
| **Type of teaching, contact hours** | Learning methods in this course<br>1. Focused Group Discussion (FGD)<br>2. morning reports<br>3. Journal discussions<br>4. Bedside teaching<br>5. Practicum |
| **Workloads** | For this course, students are required to meet a minimum of 144 hours in one semester, which consists of:<br>• 90 hours for self-directed learning and discussions<br>• 54 hours for fieldwork and practicum |
| **credit points** | 3 credit points (equivalent to 5.8 ECTS) |
| **Requirements according to the examination Regulations** | Students must have completed all student assessment before the final test. |
| **Recommended prerequisites** | - |
| **Module objective / intended learning outcomes** | After taking this course, students are expected to :<br><br>**Attitudes:**<br>**CLOS 1**: Demonstrate good attitude and ethics towards electrophysiology and arrhythmia patients. (A1)<br><br>**Knowledge:**<br>**CLOS 2:**Comprehensively analyze electrophysiology and arrhythmia cases and be able to apply basic science and clinical science to identify diagnoses, therapeutic management and pay for preventive and rehabilitative strategies. (K1)<br>**CLOS 3:**Able to interpret the results of electrophysiological investigations and arrhythmias in a clinical context by integrating other clinical data in order to diagnose and manage arrhythmias. (K2)<br><br>**Skills**<br>**CLOS 4:**<br>Analyze, assess and compare specific scientific theories and findings reported in scientific journals, book guidelines and research reports in the field of electrophysiology and arrhythmias. (S1)<br>**CLOS 5:**Compile a literature review and formulate scientific-based thoughts or ideas in the field of electrophysiology and arrhythmias. (S2)<br>**CLOS 6:**Manage patient care together with a multidisciplinary care team that contributes to improving electrophysiology and arrhythmia patient outcomes. (S3)<br><br>**Competence** |

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| | **CLO7:**Apply critical thinking to solve problems based on scientifically based literature and be able to make decisions in the management of electrophysiology and arrhythmia patients. (C1)<br>**CLOS 8:**Apply good and effective interpersonal communication skills in the treatment of electrophysiology and arrhythmia patients. (C2)<br>**CLO 9:**Independently perform non-invasive procedures in the field of electrophysiology and arrhythmias. (C2)<br>**CLOS 10:**Independently perform invasive procedures in the field of electrophysiology and arrhythmias. (C3)<br>**CLOS 11:**Planning for pharmacological and interventional management of arrhythmias based on the examinations that have been carried out. (C4)<br>**CLOS 12:**Evaluate the rationale for further management both in terms of curative and rehabilitative in accordance with available resources and technology. (C4) |
| **Content** | • Students will be able to perform diagnostic and therapeutic skills associated with cardiac devices and cardiac electrophysiology procedures under supervision. |
| **Forms of Assessment** | • Multisource Feedback 7.5%<br>• Oral presentations 15%<br>• Mini-CEX 10%<br>• DOPS 7.5%<br>• Case-based discussion (CBD) 20%<br>• Literature reviews 10%<br>• Journal reading 5%<br>• Portfolio (log-book) 10%<br>• Oral/written examination 15% |
| **Study and examination requirements and form of examination** | **Study and examination requirements:**<br>• Students must submit all assignments before the deadline<br>• Students must attend the exam to get the final grade<br><br>**For examination:**<br>Oral/written examination |
| **Media Employed** | Module Electrophysiology & Arrhythmia Cardiology and Vascular Medicine Specialist Program 2021 |
| **Reading List** | 1. Haran Burri, Jens Brock Johansen, Nicholas Linker, and Dominic AMJ Theuns. 2022. The EHRA Book of Pacemaker, ICD and CRT Troubleshooting Vol. 2.Oxford University Press<br>2. Charles J. Love, M.D. 2006. Cardiac Pacemakers and Defibrillators Second Edition. Landes Bioscience<br>3. Jalife J, Delmar M, Davidenko, Anumonwo J, Berenfeld O, Anumonwo KJ. 2009. Basic cardiac electrophysiology for the clinician. 2nd ed. New Jersey: Wiley-Blackwell |

## Module Description: Cardiovascular Imaging

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| **Module name** | Cardiovascular Imaging |
| **Module level, if applicable** | Cardiology And Vascular Medicine Specialist Programme |
| **Code, if applicable** | 20C16530603 |
| **Subtitles, if applicable** | - |
| **Course, if applicable** | Cardiovascular Imaging |
| **Semester(s) in which the module is taught** | 6 |
| **Responsible person for the module** | Prof. dr. Muh Ilyas, SpRad(K) |
| **Lecturer** | 1. Prof. dr. Muh Ilyas, SpRad(K)<br>2. dr. Aussie Fitriani Ghaznawie, SpJP(K) |
| **language** | Indonesian Language [Indonesian] |
| **Relations to Curriculum** | This course is a compulsory subject in the sixth semester and must be passed by students before completing the Academic Phase |
| **Type of teaching, contact hours** | Learning methods in this course<br>1. Small-group discussion<br>2. OralCase<br>3. Bedside teaching |
| **Workloads** | For this course, students are required to meet a minimum of 152 hours in one semester, which consist of:<br>• 45.33 hours for Theory<br>• 106.67 hours for Fieldwork |
| **credit points** | 3 credit points (equivalent to 6.08 ECTS) |
| **Requirements according to the examination Regulations** | Students must have attended all classes and submitted all assignments that are scheduled before the final test. |
| **Recommended prerequisites** | - |
| **Module objective / intended learning outcomes** | After taking this course, students are expected to :<br><br>**Attitudes:**<br>**CLO1**: Students have knowledge (cognitive), professional skills (psychomotor), and have attitudes and behaviors in recognizing and deciding what imaging modality to choose, perform, and interpret. (A 1)<br><br>**Knowledge:**<br>**CLO2:**Students are able to identify normal radioanatomy of all organs, especially cardiac and vascular in both adults and children (K 1)<br>**CLO3:**Students are able to determine indications, contraindications, positioning of CT examination according to working diagnosis and differential diagnosis according to theoretical concepts related to clinical research, organizational services and educational aspects (K 2)<br><br>**Skills**<br>**CLO4:**Students are able to explain and explain scientific work in the field of cardiovascular imaging by applying logical, critical, systematic, and analytic thinking through scientific research (S 1)<br>**CLO5:**Students are able to interpret cardiovascular imaging based on evidence-based clinical practice, in a good and correct manner and can be accounted for in the interests of the profession (S 2) |

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| | **Competence**<br>**CLO6:**Students are able to determine indications, perform, and correctly interpret Cardiac Computed Tomography (CT) with various techniques (bolus acquisition and bolus chasing tests, prospective mode, ECG-triggered axial and retrospectively gated ECG spiral scans, cardiac X-ray CT without contrast enhancement, cardiac X-ray CT with contrast enhancement, and angiography of the great arteries and veins) (C 1)<br>**CLO7:**Students are able to interpret case pictures, explain differential diagnoses and working diagnoses in normal and abnormal cases, including cardiac and vascular pathology imaging, both in adults and children (C 2) |
| **Content** | At this stage students learn knowledge about cardiac and vascular imaging, in order to be able to choose imaging techniques, modalities and protocols that are clinically useful and cost-effective, and to be able to correctly interpret the results of various types of imaging, namely : Cardiac Computed Tomography (CT), Cardiovascular Magnetic Resonance (CMR), and cardiac nuclear. |
| **Forms of Assessment** | • Multi-Source Feedback 10%<br>• Written Examination 30%<br>• Oral Presentation 15%<br>• Case Based Discussion (CbD) 45% |
| **Study and examination requirements and form of examination** | **Study and examination requirements:**<br>• Students must attend all courses activity<br>• Students should be present 30 minutes before examination start<br>• Students must switch off all electronic devices (for offline class)<br>• Students must inform the lecturer if they will not attend the class due to sickness, etc.<br>• Students must submit all assignments before the deadline<br>• Students must attend the exam to get the final grade<br><br>**For examination:**<br>CbD and Written Examination : Students interpret case pictures, explain differential diagnoses and working diagnoses in normal and abnormal cases, including cardiac and vascular pathology imaging, both in adults and children |
| **Media Employed** | Power Point Presentations |
| **Reading List** | 1. Jose Luis Zamorano, Jeroen Bax, Juhani Knuuti, Patrizio Lancellotti, Fausto Pinto, Bogdan A. Popescu, and Udo Sechtem. 2021. The ESC Textbook of Cardiovascular Imaging, Third Edition<br>2. Massimo Lombardi, Sven Plein, Steffen Petersen, Chiara Bucciarelli-Ducci, Emanuela Valsangiacomo Buechel, Cristina Basso, and Victor Ferrari. 2018. The EACVI Textbook of Cardiovascular Magnetic Resonance |

## Module Description: Vascular

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| **Module name** | Vascular |
| **Module level, if applicable** | Cardiology And Vascular Medicine Specialist Programme |
| **Code, if applicable** | 20C16530703 |
| **Subtitles, if applicable** | - |
| **Course, if applicable** | Vascular |
| **Semester(s) in which the module is taught** | VI |
| **Person responsible for the module** | Dr. dr. Idar Mappangara, Sp.PD, Sp.JP(K) |
| **Lecturer** | 1. Dr. dr. Idar Mappangara, Sp.PD, Sp.JP(K)<br>2. dr. Amelia Arindanie, Sp.JP |
| **language** | Indonesian Language [Indonesian] |
| **Relations to Curriculum** | This course is a compulsory subject in the sixth semester and must be passed by students before completing the Academic Phase |
| **Type of teaching, contact hours** | Learning methods in this course<br>1. Small-group discussion<br>2. morning reports<br>3. Journal discussions<br>4. Bedside teaching<br>5. Practicum<br>6. Self-directed learning |
| **Workloads** | For this course, students are required to follow the 6 weeks course of vascular division. |
| **credit points** | 3 credit points |
| **Requirements according to the examination Regulations** | Students must have attended all classes and submitted all assignments that are scheduled before the final test. |
| **Recommended prerequisites** | - |
| **Module objective / intended learning outcomes** | After taking this course, students are expected to :<br><br>**Attitudes:**<br>**CLO1**: Students are able to demonstrate good attitudes and ethics in the treatment of patients in vascular division. (A1)<br><br>**Knowledge:**<br>**CLO2:**Students are able to demonstrate knowledge abd independently apply the principles of diagnosis and therapeutic management in vascular division. (K1)<br>**CLO3:**Students are able to demonstrate management principles and preventive education independently based on theory and clinical research in the vascular division. (K2)<br><br>**Skills**<br>**CLO4:**Students are able to analyze, explain and compare specific scientific theories and findings which are found in scientific journals , manuals and research independently in vascular divisions. (GS1)<br>**CLO5:**Students are able to compile literature reviews and express scientific-based ideas and ideas independently based on evidence-based medicine related to vascular division. (GS2)<br><br>**Competence**<br>**CLO6:**Students are able to make a diagnosis through physical and supporting examination and are able to make decisions in patient management independently in vascular divisions. (SS1)<br>**CLO7:**Students are able to do an effective history taking, education and communication in the treatment of patients in vascular division. (SS2) |

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| | **CLO8:**Students are able to perform education on risk factor control and rehabilitative strategy independently for patients and families related to vascular division. (SS3) |
| **Content** | Students will learn about:<br>• Aortic Disease and Aortic Trauma<br>• Peripheral Artery Disease<br>• Peripheral Vein Disease<br>• Lymph Disease<br>• Venous Thromboembolic Disease<br>• Non surgical Procedures for Aortic Disease<br>• Understanding of Non-Invasive Vascular Diagnostic Procedures<br>• Understanding of Invasive Diagnostic Procedures and Non-surgical intervention |
| **Forms of Assessment** | • MSF (5%)<br>• Oral Presentation (10%)<br>• Written Examination (25%)<br>• Case-Based Discussion (15%)<br>• Direct Observational Performing Skills (20%)<br>• Mini-CEX (25%) |
| **Study and examination requirements and form of examination** | **Study and examination requirements:**<br>• Students must attend all courses activity<br>• Students should be present 30 minutes before examination start<br>• Students must switch off all electronic devices (for offline class)<br>• Students must inform the lecturer if they will not attend the class due to sickness, etc.<br>• Students must submit all assignments before the deadline<br>• Students must attend the exam to get the final grade<br><br>**examination form:**<br>DOPS and Oral examination : Real case practical vascular examination and oral panel examination for theory. |
| **Media Employed** | Power Point Presentations<br>Echo Doppler tools<br>ABI tools |
| **Reading List** | 1. Koelemay M, Legemate D. in: Branchereau A, Jacobs M. (Eds). 2003. Vascular Emergencies. Blackwell Publishing, New York<br>2. Creager MA, Libby P. in: Mann DL, Zipes DP, Libby P, et al. 2015. Braunwald's heart disease, Tenth Edition. Elsevier Saunders, Philadelphia<br>3. Wilbur J, Shian B. 2012. Diagnosis of deep vein thrombosis and pulmonary embolism. Am Fam Physician. |

## Module Description: Cardiothoracic Surgery

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| **Module name** | Cardiothoracic Surgery |
| **Module level, if applicable** | Cardiology and Vascular Medicine Specialist Program |
| **Code, if applicable** | 20C16530803 |
| **Subtitles, if applicable** | - |
| **Course, if applicable** | Cardiothoracic Surgery |
| **Semester(s) in which the module is taught** | 4 |
| **Person responsible for the module** | dr. Muhammad Nuralim Mallapasi, SpB, SpBTKV |
| **Lecturer** | dr. Muhammad Nuralim Mallapasi, SpB, SpBTKV(K)dr. Jayarasti Kusumanegara, Sp.BTKV(K)VEdr. Aussie Fitriani Ghaznawie Sp.JP(K)Prof. Dr. dr. Syafri K. Arif, Sp.An, KIC-KAKVDr. dr. Hizbullah, Sp.An, KIC-KAKVdr. Andi Adil Sp.An- KAKV |
| **language** | Indonesian Language [Indonesian] |
| **Relations to Curriculum** | This course is a compulsory subject in the fourth semester and must be passed by the students |
| **Type of teaching, contact hours** | Learning methods in this course<br>1. Focused Group Discussion (FGD)<br>2. Journal discussions<br>3. Bedside teaching<br>4. Self-directed learning |
| **Workloads** | For this course, students are required to meet a minimum of 144 hours in one semester, which consists of:<br>• 90 hours for theory<br>• 54 hours for fieldwork |
| **credit points** | 3 credit points (equivalent to 5.8 ECTS) |
| **Requirements according to the examination Regulations** | Students must have completed all student assessment before the final test. |
| **Recommended prerequisites** | - |
| **Module objective / intended learning outcomes** | After taking this course, students are expected to :<br>**attitude:**<br>• CLO 1: Able to apply knowledge (cognitive), professional skills (psychomotor) and have attitudes and behaviors in caring for cardiovascular surgery patients (A1)<br><br>**Knowledge:**<br>• CLO 2: Able to explain the skill theory of using a bypass machine and its side effects (K1)<br>• CLO 3: Able to diagnose, independently select patients for coronary bypass surgery (K2)<br>• CLO 4: Able to analyze Clinical Reasoning & Problem Solving Heart Valve Surgery (K2)<br><br>**Skills:**<br>• CLO 5: Able to analyze and explain research or journals related to cardiac surgery (S1)<br>• CLO 6: Able to independently diagnose, carry out postoperative valve management and determine anticoagulant therapy (S2)<br><br>**Competence:**<br>• CLO 7: Able to independently monitor hemodynamics, bleeding, hemostasis, and selection of operating valves (C1)<br>• CLO 8: Able to independently diagnose and treat pulmonary hypertension (C2)<br>• CLO 9: Able to independently determine and give electric shock therapy for rhythm and electrical disturbances in the heart after |

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| | surgery (C3)<br>• CLO 10: Able to conduct detailed education on prevention of heart disease and determine rehabilitation programs after cardiac surgery (C4) |
| **Content** | Students will learn about:<br>• *Knowledge*related to the cardiothoracic surgery (the use of bypass machine and side effect, valve selection)<br>• *diagnostic examination*of the cardiothoracic surgery (patient selection undergoing cardiothoracic surgery eq: CABG, valves disease and congenital heart disease), haemodynamic monitoring, bleeding monitoring, hemostatic monitoring), pulmonary hypertension diagnosis<br>• Diseases / disorders of the cardiothoracic surgery (Coronary artery disease, valve surgery and congenital heart disease)<br>• Management of disease / disorders related to the cardiothoracic surgery (post operative management, anticoagulant therapy, pulmonary hypertension management, defibrillator and electrical management of pre, intra and post operative patients)<br>• Promotion, prevention and management of diseases/disorders of the cardiothoracic surgery (preventive and rehabilitative program post cardiothoracic surgery) |
| **Forms of Assessment** | • Oral Presentation: 10%<br>• CBD: 10%<br>• Written and oral examination: 20 %<br>• DOPS: 60% |
| **Study and examination requirements and form of examination** | **Study and examination requirements:**<br>• Students must attend 15 minutes before the class starts, and 30 minutes before the examination starts<br>• Students must switch off all electronic devices<br>• Students must submit all class assignments before the deadline<br>• Students must attend the exam to get the final grade<br>**For examination:**<br>Oral and Essay Examination: Multiple Choice Questions using vignette (for theory) |
| **Media Employed** | Videos and Power Point Presentations |
| **Reading List** | 1. David Daiho Yuh, Luca A. Vricella, Stephen Yang, John R. Doty · 2014. Johns Hopkins Textbook of Cardiothoracic Surgery, Second Edition<br>2. Shahzad G. Raja. 2020. Cardiac Surgery A Complete Guide. Springer International Publishing |

## Module Description: Research Proposal

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| **Module name** | Research Proposal |
| **Module level, if applicable** | Cardiology And Vascular Medicine Specialist Programme |
| **Code, if applicable** | 20C16550503 |
| **Subtitles, if applicable** | - |
| **Course, if applicable** | Research Proposals Seminars |
| **Semester(s) in which the module is taught** | VI |
| **Person responsible for the module** | Prof. dr. Peter Kabo, PhD, SpFK, SpJP(K) |
| **Lecturer** | Prof. dr. Junus Alkatiri, SpPD, SpJP(K)<br>Prof. Dr. dr. Ali Aspar Mappahya, SpPD, SpJP(K)<br>Prof. dr. Peter Kabo, PhD, SpFK, SpJP(K)<br>Dr. dr. Idar Mappangara, SpPD, SpJP(K)<br>Dr. dr. Muzakkir Amir, SpJP(K)<br>Dr. dr. Abdul Hakim Alkatiri, SpJP(K)<br>dr. Pendrik Tandean, SpPD-KKV<br>Dr. dr. Khalid Saleh, SpPD-KKV<br>dr. Almudai, SpPD, SpJP<br>dr. Akhtar Fajar Muzakkir, SpJP(K)<br>dr. Zaenab Djafar,Mkes, SpPD, SpJP(K)<br>dr. Aussie Fitriani Ghaznawie, Sp.JP(K)<br>dr. Fadillah Maricar, Sp.JP(K)<br>dr. Andi Alief Utama Armyn, MKes, SpJP(K)<br>dr. Yulius Patimang, SpA, SpJP(K)<br>dr. Az Hafid Nashar, Sp. JP(K) |
| **language** | Indonesian Language [Indonesian] |
| **Relations to Curriculum** | This course is a compulsory subject in the sixth semester and must be passed by students before completing the Academic Phase |
| **Type of teaching, contact hours** | Learning methods in this course<br>1. Lectures<br>2. Self-directed learning<br>3. Project Research |
| **Workloads** | For this course, students are required to compile a thesis proposal and make an oral presentation |
| **credit points** | 3 credit points |
| **Requirements according to the examination Regulations** | Students must have submitted all assignments that are scheduled before the final test and present it in front of the examiner |
| **Recommended prerequisites** | - |

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| **Module objective / intended learning outcomes** | After taking this course, students are expected to :<br><br>**Attitudes:**<br>**CLO1**: Prepare a research proposal in accordance with research ethical standards and obtain approval from the research ethics commission.(A1)<br><br>**Knowledge:**<br>**CLO2:**Collecting, interpreting and presenting research data based on evidence based medicine. (K1)<br>**CLO3:**Determine the research concept based on science in the field of cardiology and vascular medicine. (K2)<br><br>**Skills**<br>**CLO4:**<br>Analyzing research data and compiling research proposal reports according to accountable scientific writing principles. (GS1) |

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| | **CLO5:**<br>Develop research proposal ideas that are in accordance with scientific arguments and professional intellectuals that are be eficial to society. (GS2)<br>**CLO6 :**<br>Conduct and develop collaborations with colleagues, institutions and other specialist areas regarding research ideas to be carried out on a national and international scale. (GS3)<br><br>**Competence**<br>**CLO7:**<br>Identify problems and make clinical decisions and present innovative ideas in Cardiology and vascular medicine. (SS1) |
| **Content** | Students will learn about:<br>Steps to make a Research Proposal.<br>• Literature search<br>• Selection of statistical tests and determination of sample size<br>• Critical appraisal journal<br>• Scientific paper writing techniques<br>• Publication of research results |
| **Forms of Assessment** | • Multisource Feedback (50%)<br>• Oral Presentation (50%) |
| **Study and examination requirements and form of examination** | **Study and examination requirements:**<br>• Students must attend all courses activity<br>• Students should be present 30 minutes before examination start<br>• Students must switch off all electronic devices (for offline class)<br>• Students must inform the lecturer if they will not attend the class due to sickness, etc.<br>• Students must submit all assignments before the deadline<br>• Students must present the thesis proposal report to get the final grade<br><br>**For examination:**<br>• Oral Presentation : Students must present the thesis proposal report to get final grade |
| **Media employed** | Power Point Presentations<br>Thesis Proposal Report |
| **Reading List** | 1. Howick J. Introduction to Study Design. Lancet [Internet]. 2002 [cited 2018 Mar 3];359:57–61<br>2. Du Prei JB, Hommel G, Rohrig B, Blettner M. Confidence interval or p value. Dtsch Ärzteblatt Int Dtsch Arztebl Int [Internet]. 2009<br>3. Du Prel JB, Röhrig B, Hommel G, Blettner M. Choosing Statistical Tests Part 12 of a Series on Evaluation of Scientific Publications<br>4. K. Research Methodology. SAGE Publications Inc. 2011.<br>5. Valunaite Oleskeviciene G, Sliogeriene J. Research methodology. In: Numanities - Arts and Humanities in Progress. 2020<br>6. University L professional. RESEARCH METHODOLOGY e-book. LOVELY Prof Univ. 2012<br>7. Inyder H. Literature review as a research methodology: An overview and guidelines. J Bus Res. 2019; |

## Module Description: Advanced Cardiology A

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| **Module name** | Advanced Cardiology A |
| **Module level, if Applicable** | Senior |
| **Code, if applicable** | **20C16540103** |
| **Subtitles, if applicable** | - |
| **Course, if applicable** | Advanced Cardiology A |
| **Semester(s) in which the module is taught** | VII |
| **Person responsible for the module** | Dr. dr. Idar Mappangara, Sp.PD, Sp.JP(K) |
| **Lecturer** | 1. Prof. dr. Peter Kabo, PhD, Sp.FK, Sp.JP(K)<br>2. Prof. Dr. dr. Ali Aspar Mappahya, Sp.PD, Sp.JP(K)<br>3. dr. Pendrik Tandean, Sp.PD-KKV<br>4. Dr. dr. Khalid Saleh, Sp.PD-KKV<br>5. Dr. Zaenab Djafar, MKes, Sp.PD, Sp.JP(K) |
| **language** | IndonesianLanguage [Indonesian] |
| **Relations to Curriculum** | This course is a compulsory subject in the third semester and must be passed by students before completing the Academic Phase |
| **Type of teaching, contact hours** | Learning methods in this course<br>1. morning reports<br>2. Journal discussions<br>3. Bedside teaching |
| **Workloads** | For this course, students are required to meet a minimum of 160 hours in one semester, which all consist of fieldwork |
| **credit points** | 3 credit points |
| **Requirements according to the examination Regulations** | Students must have attended all classes and submitted all assignments that are scheduled before the final test. |
| **Recommended Prerequisites** | - |
| **Module objective / intended learning outcomes** | After taking this course, students are expected to :<br>**CLO1**: Students have knowledge (cognitive), professional skills (psychomotor), and have an attitude, professional ethics and behavior in recognizing and comprehensively managing cardiovascular disease (S1)<br>**CLO2:**Students are able to interpret ECG results, chest x-rays, laboratory results, echocardiography, cardiac catheterization, as well as nuclear cardiology, CT cardio, and CMR in a clinical context by integrating other clinical data in order clinical data in order to diagnose and manage heart disease (P1)<br>**CLO3:**Students are able to interpret the results of clinical examination of CVD risk factors, diabetes and CVD complications, as well as the results of the cardiopulmonary exercise test and integrate the data in order to determine the risk status of patients and able to carry out Medical Check Up examinations (P2)<br>**CLO4:**Students are able to collet, interpret and analyze medical data that has been collected and presented in the form of scientific works such as case presentations and references (KUI)<br>**CLO5:**Students are able to write patient medical records including the results of examinations, diagnosis and therapy properties and correctly and can be accounted for in the interests of the profession (KU2)<br>**CLO6:**Students are able to perform patient examinations and interpret the results to make a diagnosis of cardiovascular disease, perform patient management and strive for the best clinical outcome (KK1) |

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| | **CLO7:**Students are able to apply hospital management by demonstrating it in activities at home hospital in managing patients (KK2)<br>**CLO8:**Students are able to apply a comprehensive manner to patients and/or patient families regarding prevention of cardiovascular disease (KK4)<br>**CLO9:** Students are able to determine cardiovascular disease conditions and determine cardiorespiratory functional capacity in patients before being discharged (KK4)<br>**CLO10:**Students are able to determine and carry out cardiac rehabilitation management in hospitalized patients before being discharged (KK4) |
| **Content** | Students will learn about:<br>1. Electrophysiology and Arrhythmia<br>2. Heart Failure<br>3. Pediatric and Congenital Heart Disease<br>4. Cardiac patients in other conditions<br>5. Cardiovascular Imaging<br>6. Valvular Heart Disease<br>7. Coronary Heart Disease<br>8. Vascular<br>9. Medical Rehabilitation and Prevention of Cardiovascular Disease |
| **Forms of Assessment** | • MSF (10%)<br>• Oral or Written Examination (20%)<br>• Journal Reading (20%)<br>• Mini Cex (10%)<br>• Direct Observational Performing Skills (40%) |
| **Study and examination requirements and form of examination** | **Study and examination requirements:**<br>• Students must attend all courses activity<br>• Students should be present 30 minutes before examination start<br>• Students must switch off all electronic devices (for offline class)<br>• Students must inform the lecturer if they will not attend the class due to sickness, etc.<br>• Students must submit all assignments before the deadline<br>• Students must attend the exam to get the final grade<br>**For examination:**<br>DOPS and Mini-Cex examination : Real case practical<br>Advanced Cardiology A examination and oral panel examination for theory. |
| **Media Employed** | Power Point Presentations |
| **Reading List** | 1. Association of Indonesian Cardiovascular Specialists<br>2. ESC Guidelines on the diagnosis and treatment of acute and chronic heart failure 2021<br>3. ESC Guidelines on cardiovascular disease prevention in clinical practice 2021<br>4. ESC/EACTS Guidelines on the management of valvular heart disease 2021<br>5. ESC Guidelines on the Adult Congenital Heart Disease 2020<br>6. ESC Guidelines on Sports Cardiology 2020<br>7. ESC Guidelines on Atrial Fibrillation 2020<br>8. ESC Guidelines on Acute Coronary Syndromes in Patients Presenting without Persistent St-Segment Elevation 2020<br>9. ESC Guidelines on Dyslipidemias 2019<br>10. ESC Guidelines on Diabetes, Prediabetes and Cardiovascular Disease 2019 |

11. ESC Guidelines on Chronic Coronary Diseases 2019
12. ESC Guidelines on Supraventricular Tachycardia 2019
13. ESC Guidelines on Acute Pulmonary Embolism 2019
14. ESC Guidelines on Myocardial Revascularization 2018
15. ESC Guidelines on the Management of Cardiovascular Disease during Pregnancy 2018
16. Guidelines on Management of Arterial Hypertension 2018
17. ESC Guidelines on the Fourth Universal Definition of Myocardial Infarction 2018
18. ESC Guidelines on the Diagnosis and Management of Syncope 2018
19. ESC Guidelines on Acute Myocardial Infarction in Patients Presenting with ST-segment Elevation 2013
20. ESC Guidelines on the 2017 Focused Update on Dual Antiplatelet Therapy 2017
21. ESC Guidelines on Peripheral Arterial Disease 2017
22. ESC Guidelines on Cancer Treatment and Cardiovascular Toxicity 2016
23. ESC Guidelines on Cardiovascular Disease Prevention in Clinical Practice 2016
24. ESC Guidelines on Pulmonary Hypertension 2015
25. ESC Guidelines on Pericardial Disease 2015
26. ESC Guidelines on Infective Endocarditis 2015
27. ESC Guidelines on Ventricular Arrhythmias and Sudden Cardiac Death 2015
28. ESC Guidelines on non-Cardiac Surgery: Cardiovascular Assessment and Management 2014
29. ESC Guidelines on Hypertrophic Cardiomyopathy 2014
30. ESC Guidelines on Aortic Disease 2014
31. ESC Guidelines on Cardiac Pacing and Cardiac Resynchronization Therapy 2013
32. ESC Guidelines on the Interpretation of the Neonatal Electrocardiogram 2004
33. PPK Hospital and Dr. Kariadi Hospital formulary
34. Mann D, zipes D, Lippy P, Bonow R. Braunwald's Heart Disease Review and Assessment, 10th ed. Philadelphia: Saunders Elsevier, 2015.
35. Lilly LS. Pathophysiology of Heart Disease: A Collaborative Project of Medical Students and Faculty, 5th ed. Philadelphia: Lippincott Williams & Wilkins, 2011.
36. Griffin BP. Manual of cardiovascular medicine, 4th ed. Philadelphia: Lippincott Williams & Wilkins, 2013.
37. Surawicz B. Chou's electrocardiography in clinical practice, 6th ed. Philadelphia: Saunders Elsevier, 2008.
38. Zipes DP, Jalife J. Cardiac electrophysiology from cell to bedside, 5th ed. Philadelphia: Saunders 2014
39. Opie LH, Gersh BJ. Drugs for the heart, 8th ed. Philadelphia: Saunders Elsevier, 2013.

## Module Description: Advanced Cardiology B

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| **Module name** | Advanced Cardiology B |
| **Module level, if applicable** | Senior |
| **Code, if applicable** | 20C16540203 |
| **Subtitles, if applicable** | - |
| **Course, if applicable** | Advanced Cardiology B |
| **Semester(s) in which the module is taught** | VIII |
| **Person responsible for the module** | dr. Pendrik Tandean, SpPD -KKV |
| **Lecturer** | Prof. dr. Junus Alkatiri, SpPD, SpJP(K)<br>Prof. dr. Peter Kabo, PhD, SpFK, SpJP(K)<br>Prof. Dr. dr. Ali Aspar Mappahya, SpPD, SpJP(K)<br>Dr. dr. Khalid Saleh, SpPD -KKV, SpJP(K)<br>dr. Pendrik Tandean, SpPD -KKV<br>dr. Zaenab Djafar,Mkes, SpPD, SpJP(K) |
| **language** | Indonesian Language [Indonesian] |
| **Relations to Curriculum** | This course is a compulsory subject in the third semester and must be passed by students before completing the Academic Phase |
| **Type of teaching, contact hours** | Learning methods in this course<br>1. Focus group discussions<br>2. morning reports<br>3. Journal discussions<br>4. Bedside teaching |
| **Workloads** | For this course, students are required to meet a minimum of 160 hours in one semester, which consists of:<br>- 160 hours for Fieldwork |
| **credit points** | 3 credit points (equivalent to 6.40 ECTS) |
| **Requirements according to the examination Regulations** | Students must have attended all classes and submitted all assignments that are scheduled before the final test. |
| **Recommended prerequisites** | - |
| **Module objective / intended learning outcomes** | After taking this course, students are expected to :<br><br>**Attitudes:**<br><br>**CLO1**: Students are able to carry out clinical cardiology services and learning in care outside the main facilities based on ethics and humanity (A1)<br><br>**Knowledge:**<br><br>**CLO2:**<br><br>Students are able to implement basic science knowledge (biomedical science) and clinical science in carrying out inter-departmental collaborative care (K1)<br>**CLO3:**<br>Students are able to use theoretical concepts from the latest clinical research, based on guidelines in carrying out inter-departmental collaborative care (K2)<br><br>**Skills**<br><br>**CLO4:**<br><br>Students are able to demonstrate skills independently in the field of clinical cardiology, provide and manage services for inpatients, especially for patients who require a multidisciplinary approach (GS1)<br>**CLO5:** |

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| | Students are able to convey ideas, thoughts, and scientific arguments based on evidence-based clinical practice through seminars or outreach in the wider community (GS2)<br><br>**Competence**<br>**CLO6:**<br>Students are able to master the management of patients with cardiac conduction system disorders, heart valve abnormalities, coronary heart disease, vascular disease, and pediatric and congenital heart disease (SS1)<br>**CLO7:**<br>Students are able to choose the safest, most accurate, efficient, and cost-effective imaging test or sequence of tests in circumstances where the test provides added value to the patient (SS1)<br>**CLO8:**<br>Students are able to implement communication skills, history taking skills, physical examination, and interpret the results of non-invasive investigations in inter-departmental collaborative care. (SS2)<br>**CLO9:**<br>Determining and evaluating and managing patients with cardiovascular risk factors as primary and secondary prevention efforts (SS4) |
| **Content** | Students will learn about:<br>- Knowledge of the basic information, preparation and performing skills of Cardiovascular examination.<br>• Comprehensive cardiovascular management<br>• management of patients after discharge from the hospital |
| **Forms of Assessment** | • Active Participation (10%)<br>• Oral/Written Examination (35%)<br>• Direct Observational Performing Skills (45%)<br>• Journal reading (10%) |
| **Study and examination requirements and form of examination** | **Study and examination requirements:**<br>• Students must attend all courses activity<br>• Students should be present 30 minutes before examination start<br>• Students must switch off all electronic devices (for offline class)<br>• Students must inform the lecturer if they will not attend the class due to sickness, etc.<br>• Students must submit all assignments before the deadline<br>• Students must attend the exam to get the final grade<br><br>**For examination:**<br>DOPS and Oral examination : Real case practical examination and oral panel examination for theory. |
| **Media Employed** | Power Point Presentations |
| **Reading List** | 1. Robert Krams, Magnus Bäck. 2017. The ESC Textbook of Vascular Biology. Oxford UniversityPress<br>2. Leonard S. Lily. 2019. Pathophysiology of Heart Disease 6th edition<br>3. Association of Indonesian Cardiovascular Specialists |

## Module Description: Echocardiography II

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| **Module name** | Echocardiography II |
| **Module level, if applicable** | Cardiology And Vascular Medicine Specialist Programme |
| **Code, if applicable** | 20C16540403 |
| **Subtitles, if applicable** | - |
| **Course, if applicable** | Echocardiography II |
| **Semester(s) in which the module is taught** | VII |
| **Person responsible for the module** | dr. Pendrik Tandean Sp.PD-KKV |
| **Lecturer** | 1. dr. Pendrik Tandean Sp.PD-KKV<br>2. dr. Aussie Fitriani Ghaznawie, Sp.JP(K)<br>3. dr. Yulius Patimang, Sp.A, Sp.JP(K) |
| **language** | Indonesian Language [Indonesian] |
| **Relations to Curriculum** | This course is a compulsory subject in the 7th semester and must be passed by students before completing the Academic Phase |
| **Type of teaching, contact hours** | Learning methods in this course<br>1. Lectures<br>2. Small-group discussion<br>3. morning reports<br>4. Journal discussions<br>5. Bedside teaching<br>6. Practicum<br>7. Self-directed learning |
| **Workloads** | For this course, students are required to meet a minimum of 160 hours in one semester, which consists of:<br>• 160 hours for fieldwork and practicum |
| **credit points** | 3 credit points |
| **Requirements according to the examination Regulations** | Students must have attended all classes and submitted all assignments that are scheduled before the final test. |
| **Recommended prerequisites** | - |
| **Module objective / intended learning outcomes** | After taking this course, students are expected to :<br>**Attitudes:**<br>**CLO1**:<br>Students are able to demonstrate attitude, professional ethics and discipline in performing echocardiography examination.(A1)<br>**Knowledge:**<br>**CLO2:**<br>Students are able to analyze biomedical science and clinical science according to echocardiography examination. (K1)<br>**CLO3:**<br>Students are able to decide theoretical concepts related to clinical research, organizational services and education related to echocardiography. (K2)<br>**Skills**<br>**CLO4:**<br>Students are able to implement logical, critical, systematic and analytical thinking through scientific research based on scientific rules, procedures and ethics related to echocardiography. (GS1)<br>**CLO5:**<br>Students are able to formulate ideas, critical thinking and scientific arguments based on evidence based medicine related to |

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| | echocardiography. (GS2)<br><br>**Competence**<br>**CLO6:**<br>Students are able to perform intellectual skills, including analytical and problem solving through a scientific approach and able to make clinical decisions in echocardiography examination. (SS1)<br>**CLO7:**<br>Students are able to implement the interpersonal skills concept which consists of communication skills, history taking, physical examination, and echocardiography examination results interpretation. (SS2)<br>**CLO8:**<br>Students are able to perform invasive procedures in echocardiography in the catheterization lab, emergency department and intensive care department.(C3)<br>**CLO 9:**<br>Students are able to apply preventive and rehabilitative strategies to the individual, family and community in and out of the hospital regarding echocardiography examination. (C4) |
| **Content** | Students will learn about:<br>- Knowledge of the advance information, preparation and performing skills of echocardiography examination.<br>• Diagnostic approach of cardiovascular disease through echocardiography examination.<br>• Valvular diseases / disorders and congenital disease/malformations of the heart<br>• Transoesophageal echocardiography procedure<br>• Promotion, prevention and management of diseases/disorders of the valvular diseases and congenital heart diseases. |
| **Forms of Assessment** | • Oral/Written Examination (40%)<br>• Direct Observational Performing Skills (50%)<br>• Journal reading (10%) |
| **Study and examination requirements and form of examination** | **Study and examination requirements:**<br>• Students must attend all courses activity<br>• Students should be present 30 minutes before examination start<br>• Students must switch off all electronic devices (for offline class)<br>• Students must inform the lecturer if they will not attend the class due to sickness, etc.<br>• Students must submit all assignments before the deadline<br>• Students must attend the exam to get the final grade<br><br>**For examination:**<br>DOPS and Oral examination : Real case practice echocardiography examination and oral panel examination for theory. |
| **Media Employed** | Power Point Presentations<br>Echocardiography tools |
| **Reading List** | 1. Lang, R., Goldstein, S., Kronzon, I., Khandheria, BK., Saric, M., & Mor-Avi, V. (2021). ASE's Comprehensive Echocardiography Textbook 3rd Edition.<br>2. Lancellotti, P., Zamorano, JL, Habib, G., & Badano, L. (Eds.). (2016). The EACVI textbook of echocardiography. Oxford UniversityPress. |

**Module Description: Invasive Cardiology & Non Surgical Interventions II**

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| **Module name** | Invasive Cardiology & Non Surgical Interventions II |
| **Module level, if applicable** | Senior Level, Cardiology and Vascular Medicine Specialist programme |
| **Code, if applicable** | 20C16540503 |
| **Subtitles, if applicable** | - |
| **Course, if applicable** | Invasive Cardiology & Non Surgical Interventions II |
| **Semester(s) in which the module is taught** | VIII |
| **Person responsible for the module** | Prof. Dr. dr. Ali Aspar Mappahya, SpPD, SpJP(K) |
| **Lecturer** | 1. Prof. Dr. dr. Ali Aspar Mappahya, SpPD, SpJP(K)<br>2. Dr. dr. Abdul Hakim Alkatiri, SpJP(K)<br>3. dr. Az Hafid Nashar, Sp. JP(K) |
| **language** | Indonesian Language [Indonesian] |
| **Relations to Curriculum** | This course is a compulsory subject in the fourth semester and must be passed by students before completing the Academic Phase |
| **Type of teaching, contact hours** | Learning methods in this course<br>1. Lectures<br>2. Small-group discussion<br>3. morning reports<br>4. Journal discussions<br>5. literature reviews<br>6. Bedside teaching<br>7. Practicum<br>8. Self-directed learning |
| **Workloads** | For this course, students are required to meet a minimum of 160 hours in one semester, which consists of:<br>- 160 hours for fieldwork |
| **credit points** | 3 credit points (ECTS 6.4) |
| **Requirements according to the examination Regulations** | Students must have completed all student assessment before the final test. |
| **Recommended prerequisites** | - |
| **Module objective / intended learning outcomes** | After taking this course, students are expected to :<br>**Attitudes:**<br>**CLO1**:<br>Able to demonstrate responsibility in requesting, performing and interpreting invasive examinations by properly considering the risks and benefits of action (A1)<br>**CLO2**:<br>Able to collaborate with nurses, technicians and other medical personnel in a professional manner (A1)<br>**Knowledge:**<br>**CLO3:**<br>Able to apply understanding of the basic principles of invasive procedures in the catheterization laboratory regarding the selection of the appropriate treatment modality (medical, percutaneous or surgical) based on clinical data, as well as complications and management (K1)<br>**CLO4:**<br>Able to apply understanding of radiological anatomy of the |

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| | heart, aorta, great vessels and coronary arteries, as well as the femoral, radial and brachial arteries used to access blood vessels during catheterization. (K2)<br>**CLO5:**Able to apply the understanding of anatomy and physiology of coronary imaging (K2)<br><br>**Skills**<br>**CLO6:**<br>Able to analyze and explain research or journals related to invasive and interventional cardiology. (S1)<br>**CLO7:**<br>Able to use catheterization laboratory equipment to minimize radiation exposure so that patients/staff are protected, and minimize the use of nephrotoxic contrast. (S2)<br>**CLO8:**<br>Able to analyze and determine the need for cooperation with other areas of expertise. (S3)<br>**Competence**<br>**CLO9:**<br>Able to determine indications and perform temporary pacemaker and pericardiocentesis procedures (C1)<br>**CLO10:**<br>Able to evaluate the results of coronary angiography, ventriculogram, aortogram and pulmonary angiography, as well as hemodynamic data. (C2)<br>**CLO11:**<br>Able to perform left heart catheterization which includes: percutaneous arterial access, coronary angiography, ventriculography (C3)<br>**CLO12:**<br>Able to handle life-threatening arrhythmias and other emergencies in the catheterization laboratory. (C3)<br>**CLO13:**<br>Able to use drugs that correct hemodynamic disorders in a timely and safe manner (C4) |
| **Content** | Students will learn about:<br>- skills to plan and manage diagnostic and therapeutic procedures as well as to practice skills in the field of invasive cardiology under supervision. |
| **Forms of Assessment** | • Multi-Source Feedback (10%)<br>• Oral/Written Examination (20%)<br>• Direct Observational Performing Skills (60%)<br>• Journal reading (5%)<br>• Portfolio (log-book) (5%) |
| **Study and examination requirements and form of examination** | **Study and examination requirements:**<br>• Students must attend all courses activity<br>• Students should be present 30 minutes before examination start<br>• Students must switch off all electronic devices (for offline class)<br>• Students must inform the lecturer if they will not attend the class due to sickness, etc. |

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| | • Students must submit all assignments before the deadline<br>• Students must attend the exam to get the final grade<br>**For examination:**<br>Oral/written examination |
| **Media Employed** | Power Point Presentations<br>Catheterisation laboratory |
| **Reading List** | 3. Andrew Mitchell, Giovanni Luigi De Maria, Adrian Banning, Paul Leeson, Nick West, Angie Ghattas. 2020. Cardiac Catheterization and Coronary Intervention. Oxford UniversityPress. Oxford UniversityPress<br>4. Sandy Watson, Kenneth A. Gorski. 2010. Invasive Cardiology: A Manual for Cath Lab Personnel |

## Module Description: Critical Cardiology II

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| **Module name** | Critical Cardiology II |
| **Module level, if applicable** | Senior |
| **Code, if applicable** | 20C16540603 |
| **Subtitles, if applicable** | - |
| **Course, if applicable** | Cardiology and Vascular Medicine |
| **Semester(s) in which the module is taught** | 8 |
| **Person responsible for the module** | dr. Akhtar Fajar Muzakkir, SpJP(K) |
| **Lecturer** | dr. Akhtar Fajar Muzakkir, SpJP(K)<br>dr. Fadilla Maricar, SpJP(K) |
| **language** | Indonesian Language [Indonesian] |
| **Relations to Curriculum** | Critical Cardiology II course is a course presented in the third year of education, especially at the beginning of the Senior Level phase in the 8th Semester. This course aims to study the clinical theory of cardiovascular critical illness to implement a comprehensive management strategy and leadership for cardiovascular disease in the field of cardiovascular intensive care. |
| **Type of teaching, contact hours** | Learning methods in this course:<br>• Focused-Group Discussion<br>• Morning Reports<br>• Journal & Literature Review<br>• Bedside Teaching<br><br>Contact hours:<br>• Fieldwork (160 hours) |
| **Workloads** | ECTS: 6.4 ECTS<br>• Fieldwork (6.4 ECTS) |
| **credit points** | 3 credit points (equivalent to 6.4 ECTS) |
| **Requirements according to the examination Regulations** | Students must attend the learning process and submit all assignments that are scheduled before the final test. |
| **Recommended prerequisites** | - |
| **Module objective / intended learning outcomes** | After taking this course, students are expected to be :<br><br>**Attitudes:**<br>CLO 1 :<br>Able to carry out the application of knowledge (cognitive), professional skills (psychomotor), and have the same attitude<br><br>**Knowledge:**<br>CLO 2 :<br>Able to lead and direct the cardiovascular intensive care team in accordance with the division of tasks and their respective roles<br>CLOS 3 :<br>Able to independently identify and classify diseases in the cardiovascular intensive care unit |

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| | **Skills:**<br>CLOS 4 :<br>Able to analyze and explain research or scientific journals in the field of cardiovascular intensive care<br><br>CLO 5 :Able to conduct scientific arguments against evidence-based scientific findings and studies in the field of cardiovascular intensive care<br><br>**Competence:**<br>CLOS 6 :<br>Able to analyze the condition and development of the disease in a comprehensive manner as well as the next management plan<br>CLO 7 :<br>Able to independently carry out diagnostic examination procedures and their interpretations in the field of inpatient care<br>CLOS 8 :<br>Able to independently perform therapeutic measures in the field of cardiovascular intensive care which includes<br>CLOS 9 :<br>Able to carry out preventive and rehabilitative management independently in the cardiovascular intensive care unit |
| **Content** | 1. Hypertensive crises<br>2. Shocks<br>3. Respiratory Failure<br>4. Disorders of electrolyte and acid-base balance<br>5. Cardiac arrest<br>6. Stop breathing<br>7. Pulmonary embolism<br>8. Acute coronary syndrome with/without complications<br>9.Ischemic heart disease<br>10. Myocardial disease (cardiomyopathy, myocarditis)<br>11. Pericardial disease (acute pericarditis, constrictive pericarditis, pericardial effusion/cardiac tamponade)<br>12. Heart tumor disease<br>13. Pregnancy with hypertension, valvular and/or congenital disease, CHD, arrhythmia, aortic disease)<br>14. Rheumatic fever and rheumatic valvular heart disease<br>15. Infective endocarditis<br>16. Heart failure<br>17. Pulmonary hypertension<br>18. Arrhythmia<br>19. Syncope<br>20. Sudden cardiac arrest and resuscitation<br>21. Aortic disease and aortic trauma<br>22. Peripheral vascular disease of arteries and veins<br>23. Congenital structural and heart disease<br>24. Cardiorenal syndrome<br>25. Low cardiac output syndrome |
| **Forms of Assessment** | • MSF 5%<br>• Oral Presentation 15%<br>• Case-Based Discussion 5% |

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| | • Mini-CEX 10%<br>• Written examination 5%<br>• DOPS 60% |
| **Study and examination requirements and form of examination** | **Study and examination requirements:**<br>• Students must have fulfilled their logbook activities<br>• Students must complete the assignment before participating in the examinations |
| **Media Employed** | Videos and Power Point Presentations |
| **Reading List** | 4. L Braunwald, E. 2002. Heart Disease, A Textbook of Cardiovascular Medicine, 6th ed. FA Davis Company, Philadelphia.<br>5. Marco Tubaro, Pascal Vranckx, Susanna Price, Christiaan Vrints, and Eric Bonnefoy. 2021. The ESC Textbook of Intensive and Acute Cardiovascular Care, Third Edition. Oxford UniversityPress<br>6. Graham Barker, Claire Colebourn, James Day, James Day, James Day. 2017. Acute and Critical Care Echocardiography. Oxford UniversityPress |

## Module Description: Cardiology Emergency II

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|---|---|
| **Module name** | Cardiology Emergency II |
| **Module level, if applicable** | Senior |
| **Code, if applicable** | 20C16540703 |
| **Subtitles, if applicable** | - |
| **Course, if applicable** | Cardiology Emergency II |
| **Semester(s) in which the module is taught** | |
| **Person responsible for the module** | dr. Akhtar Fajar Muzakkir Sp.JP(K) |
| **Lecturer** | Dr. dr. Idar Mappangara, SpPD, SpJP(K)<br>dr. Akhtar Fajar Muzakkir, SpJP(K) |
| **language** | Indonesian Language [Indonesian] |
| **Relations to Curriculum** | This course is a compulsory subject in the third semester and must be passed by students before completing the Academic Phase |
| **Type of teaching, contact hours** | Learning methods in this course<br>1. Oral Presentation<br>2. Case Based Discussion<br>3. MiniCEX<br>4. Oral Examination<br>5. DOPS<br>6. MSF |
| **Workloads** | For this course, students are required to meet a minimum of 152 hours in one semester, which consist of:<br>• 45.33 hours for Theory<br>• 106.67 hours for Fieldwork |
| **credit points** | 3 credit points (Equivalent to ECTS 6.08) |
| **Requirements according to the examination Regulations** | Students must have attended all classes and submitted all assignments that are scheduled before the final test. |
| **Recommended prerequisites** | - |
| **Module objective / intended learning outcomes** | After taking this course, students are expected to :<br><br>**Attitudes:**<br>**CLOS 1**:<br>Able to apply knowledge (cognitive), professional skills (psychomotor), and have attitudes and behaviors in caring for patients in the cardiovascular emergency room (A1)<br><br>**Knowledge:**<br>**CLOS 2**:<br>Able to apply knowledge in writing patient medical records including examination, diagnosis and therapy results (K1)<br>**CLOS 3**:<br>Able to independently identify and classify cardiovascular disease in the Emergency Room (K2)<br><br>**Skills**<br>**CLOS 4**:<br>Able to analyze and explain research or scientific journals in the field of cardiovascular emergencies (GS1)<br>**CLOS 5**:<br>Able to independently make arguments based on evidence-based scientific ideas and clinical research on diseases related to cardiovascular emergencies (GS2)<br><br>**Competence**<br>**CLOS 6:** |

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| | Able to comprehensively analyze the condition and development of the disease as well as the next management plan based on theory and related clinical research (SS1)<br>**CLOS 7:**<br>Able to independently carry out diagnostic examination procedures and their interpretation in the field of cardiovascular emergencies (SS2)<br>**CLOS 8:**<br>Able to independently carry out therapeutic actions in the field of cardiovascular emergencies which include strategy, preparation and procedure safety (SS3) |
| **Content** | Students will learn about:<br>- Knowledge of the basic information, preparation and performing skills of Emergency examination.<br>• Diagnostic approach of cardiovascular disease through a physical examination and supporting examination.<br>• Promotion, prevention and management in emergency situations. |
| **Forms of Assessment** | • Active Participation (10%)<br>• Case Based Discussion (10%)<br>• Mini CEX (10%)<br>• Oral Presentation (5%)<br>• Oral Examination (25%)<br>• Direct Observational Performing Skills (40%) |
| **Study and examination requirements and form of examination** | **Study and examination requirements:**<br>• Students must attend all courses activity<br>• Students should be present 30 minutes before examination start<br>• Students must switch off all electronic devices (for offline class)<br>• Students must inform the lecturer if they will not attend the class due to sickness, etc.<br>• Students must submit all assignments before the deadline<br>• Students must attend the exam to get the final grade<br><br>**For examination:**<br>DOPS and Oral examination : Real case practical emergency examination and oral panel examination for theory. |
| **Media Employed** | Power Point Presentations |
| **Reading List** | 1. Marco Tubaro, Pascal Vranckx, Susanna Price, Christiaan Vrints, and Eric Bonnefoy. 2021. The ESC Textbook of Intensive and Acute Cardiovascular Care, Third Edition. Oxford UniversityPress<br>2. Graham Barker, Claire Colebourn, James Day, James Day, James Day. 2017. Acute and Critical Care Echocardiography. Oxford UniversityPress |

**Module Description: Pediatric II**

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|---|---|
| **Module name** | Pediatric II |
| **Module level, if applicable** | Senior |
| **Code, if applicable** | 20C16540803 |
| **Subtitles, if applicable** | - |
| **Course, if applicable** | Pediatric II |
| **Semester(s) in which the module is taught** | VIII |
| **Person responsible for the module** | dr. Yulius Patimang, SpA, SpJP(K)dr. Andi Alief Utama Armyn, MKes, SpJP(K) |
| **Lecturer** | dr. Yulius Patimang, SpA, SpJP(K)<br>dr. Andi Alief Utama Armyn, MKes, SpJP(K) |
| **language** | Indonesian Language [Indonesian] |
| **Relations to Curriculum** | This course is a compulsory subject in the eighth semester and must be passed by students before completing the Academic Phase |
| **Type of teaching, contact hours** | Learning methods in this course<br>1. Small group discussions<br>2. Morning Reports<br>3. Journal Discussions<br>4. Literature Review<br>5. Bedside Teaching |
| **Workloads** | For this course, students are required to meet a minimum of 190 hours in one semester which consists of:<br>- 45.33 hours for Theory<br>- 45.33 hours for practice<br>- 100 hours for Fieldwork |
| **credit points** | 3 credit points (equivalent to 7.93 ECTS) |
| **Requirements according to the examination Regulations** | Students must have attended all classes and submitted all assignments that are scheduled before the final test. |
| **Recommendedprerequisites** | - |
| **Module objective / intended learning outcomes** | After taking this course, students are expected to:<br>**Attitudes:**<br>**CLO1**: The students are capable to independently and ethically apply the knowledge of pediatric cardiology and congenital in accordance with medical ethics principles. (A1)<br><br>**Knowledge:**<br>**CLOS 2**:<br>Students are capable of independently analyzing technical knowledge, including basic science (biomedical science) and clinical science such as diagnostic and therapeutic approaches, prevention and rehabilitation in Cardiology and vascular medicine (K1)<br>**CLOS 3**:<br>The students are capable of independently determining and analyzing theoretical concepts related to clinical research, organizational services, and educational aspects as they study the field of cardiology and vascular medicine (K2)<br><br>**Attitudes:**<br>**CLOS 4:**<br>The students are capable of independently analyzing |

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| | research ethics in the form of scientific works related to Cardiology Pediatric and Congenital (A1).<br>**CLOS 5:**<br>The students are capable of independently analyzing thoughts, ideas, and scientific arguments based on evidence-based clinical practice to educate healthcare professionals and the broader community in the field related to Cardiology Pediatric and Congenital (A2)<br>**CLOS 6:**<br>The students are capable of independently analyzing the development, management, and maintenance of collaborative relationships with other parties within a multidisciplinary team in the care related to Cardiology Pediatric and Congenital (A3)<br><br>**Competence:**<br>**CLOS 7:**<br>The students are able to apply intellectual skills, including analysis and problem-solving with a scientific approach, to patients with Cardiology Pediatric and Congenital. (C1)<br>**CLOS 8:**<br>The students are capable of independently analyzing communication skills in history-taking and physical examination, as well as analyzing the results of non-invasive diagnostic examinations in patients with Cardiology Pediatric and Congen<br>ital (C2)<br>**CLO 9:**<br>The students are capable of independently analyzing procedural safety, patient preparation, and post-procedural care in patients with Cardiology Pediatric and Congenital (C3)<br>**CLOS 10:**<br>The students are capable of independently analyzing preventive and rehabilitative strategies both within and outside the hospital setting for individuals, families, and communities dealing with health issues comprehensively, integratively, and sustainably in patients with Cardiology Pediatric and Congenital (C4) |
| **Content** | Students will learn about:<br>Knowledge of the basic information, preparation and performing skills of pediatric and Congenital Cardiology |
| **Forms of Assessment** | - Multi source- feedback (5%)<br>- Oral Examination (40%)<br>- Direct Observational Performing Skills (DOPS) (5%)<br>- Oral Presentation (5%)<br>- Journal reading, literature review (5%)<br>- Mini Clinical Examination (Mini CEX) (40 %) |
| **Study and examination requirements and form of examination** | **Study and examination requirements:**<br>• Students must attend all courses activity<br>• Students should be present 30 minutes before examination start<br>• Students must switch off all electronic devices (for offline class) |

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| | • Students must inform the lecturer if they will not attend the class due to sickness, etc.<br>• Students must submit all assignments before the deadline<br>• Students must attend the exam to get the final grade<br><br>**For examination:**<br>DOPS and Oral examination Students are capable of understanding and applying Clinical Pediatric Cardiology and congenital knowledge through establishing diagnoses, therapeutics, prevention, and rehabilitation in the field of Pediatric Cardiology and Congenital Real practical case and written panel examination for theory. |
| **Media Employed** | Power Point Presentations |
| **Reading List** | 1. Park's Pediatric Cardiology for Practitioners, 7th Edition. 2020. Park's Pediatric Cardiology for Practitioners. Elsevier<br>2. Thorne, Sarah; Bowater, Sarah(ed.). Adult congenital heart disease. Oxford University Press, 2017. |

**Module Description: Advanced Integrated Cardiology**

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| **Module name** | Advanced Integrated Cardiology |
| **Module level, if applicable** | Senior |
| **Code, if applicable** | 20C16550202 |
| **Subtitles, if applicable** | - |
| **Course, if applicable** | Advanced Integrated Cardiology |
| **Semester(s) in which the module is taught** | IX |
| **Person responsible for the module** | Prof. Dr. dr. Ali Aspar Mappahya, Sp.PD, SpJP(K) |
| **Lecturer** | 1. Prof. Dr. dr. Ali Aspar Mappahya, Sp.PD, SpJP(K)<br>2. Prof. dr. Peter Kabo, PhD, SpFK, SpJP(K)<br>3. Dr. dr. Idar Mappangara, SpPD, SpJP(K)<br>4. dr. Zaenab Djafar, MKes, SpPD, SpJP(K) |
| **language** | Indonesian Language [Indonesian] |
| **Relations to Curriculum** | This course is a compulsory subject in the ninth semester and must be passed by students before completing the Academic Phase |
| **Type of teaching, contact hours** | Learning methods in this course<br>1. Inpatient Visits<br>2. Outpatient Clinic<br>3. Community Counseling<br>4. Case and Literature Discussion |
| **Workloads** | For this course, students are required to follow the 6 weeks course of independent work in satellite hospitals |
| **credit points** | 6 credit points |
| **Requirements according to the examination Regulations** | Students must have attended all classes and submitted all assignments that are scheduled before the final test. |
| **Recommended prerequisites** | - |
| **Module objective / intended learning outcomes** | After taking this course, students are expected to :<br><br>**Attitudes:**<br>**CLO1**: Students are able to demonstrate attitude, professional ethics and discipline in independent work. (A1)<br><br>**Knowledge:**<br>**CLO2:**Students are able to analyze and interpret all modalities and examinations such as ECG, echocardiography and integrate the data to diagnose and perform treatment. (K1)<br>**CLO3:**Students are able to perform medical record writing. (K2)<br><br>**Skills**<br>**CLO4:**<br>Students are able to implement logical, critical, systematic and analytical thinking through scientific research based on scientific rules, procedures and ethics in independent work. (S1)<br>**CLO5:**<br>Students are able to formulate ideas, critical thinking and scientific arguments based on evidence-based medicine |

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| | related to diseases and their management and planning. (S2)<br>**CLO6:**<br>Students are able to write down prescriptions according to diseases and information according to literature. (S3)<br><br>**Competence**<br>**CLO7:**<br>Students are able to diagnose and make clinical decisions in managing patients through critical thinking. (C1)<br>**CLO8:**<br>Students are able to implement the interpersonal skills concept which consists of communication skills, anamnesis, physical examination, and other modalities (C2)<br>**CLO9:**<br>Students are able to perform anamnesis, physical examinations, and other necessary examinations and perform medical check ups. (C3)<br>**CLO10:**<br>Students are able to educate the risk factors, diet, and physical activities that patients can perform by themselves. (C4) |
| **Content** | Students will learn about:<br>- Knowledge of the basic information about diseases in the community<br>- Diagnostic approach of cardiovascular disease through anamnesis, physical examinations, and additional modalities through critical thinking<br>• Intrapersonal communication and team work<br>• Promotion, prevention and management of diseases |
| **Forms of Assessment** | • Logbooks (20%)<br>• Oral Presentation (5%)<br>• Multi-Source Feedback (20%)<br>• Direct Observational Performing Skills (55%) |
| **Study and examination requirements and form of examination** | **Study and examination requirements:**<br>• Students must attend all courses activity<br>• Students should be present in inpatient visits and outpatient clinic practice<br>• Students must inform the lecturer if they will not attend the class due to sickness, etc.<br>• Students must submit all assignments before the deadline<br>• Students must attend the exam to get the final grade<br><br>**For examination:**<br>Logbook: all diseases that students encounter and practical skills students perform<br>MSF: questionnaire to all individuals concerned about student's performance<br>DOPS and Oral examination : Real case patient management examination and oral panel examination for theory. |

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| **Media Employed** | Logbooks |
| **Reading List** | 1. ESC Guidelines on the diagnosis and treatment of acute and chronic heart failure 2021<br>2. ESC/EACTS Guidelines on the management of valvular heart disease 2021<br>3. ESC Guidelines on the Adult Congenital Heart Disease 2020<br>4. ESC Guidelines on Sports Cardiology 2020<br>5. ESC Guidelines on Atrial Fibrillation 2020<br>6. ESC Guidelines on Acute Coronary Syndromes in Patients Presenting without Persistent St-Segment Elevation<br>7. ESC Guidelines on Diabetes, Prediabetes and Cardiovascular Disease 2019<br>8. ESC Guidelines on Chronic Coronary Diseases 2019<br>9. ESC Guidelines on Supraventricular Tachycardia 2019<br>10. ESC Guidelines on Myocardial Revascularization 2018 |

## Module Description: Final Thesis

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| **Module name** | Final Thesis |
| **Module level, if applicable** | Senior |
| **Code, if applicable** | 20C16550606 |
| **Subtitles, if applicable** | - |
| **Course, if applicable** | Final Thesis Defense |
| **Semester(s) in which the module is taught** | IX |
| **Person responsible for the module** | rof. dr. Junus Alkatiri, SpPD, SpJP(K) |
| **Lecturer** | 1. Dr. dr. Ali Aspar Mappahya, SpPD, SpJP(K)<br>2. Prof. dr. Peter Kabo, PhD, SpFK, SpJP(K)<br>3.Dr. dr. Idar Mappangara, SpPD, SpJP(K)<br>4.Dr. dr. Muzakkir Amir, SpJP(K)<br>5.Dr. dr. Abdul Hakim Alkatiri, SpJP(K)<br>6. dr. Pendrik Tandean, SpPD-KKV<br>7.Dr. dr. Khalid Saleh, SpPD-KKV<br>8. dr. Almudai, SpPD, SpJP(K)<br>9. dr. Akhtar Fajar Muzakkir, SpJP(K)<br>10. dr. Zaenab Djafar, MKes, SpPD, SpJP(K)<br>11. dr. Aussie Fitriani Ghaznawie, SpJP(K)<br>12. dr. Az Hafid Nashar, SpJP(K)<br>13. dr. Fadillah Maricar, SpJP(K)<br>14. dr. Andi Alief Utama Armyn, MKes, SpJP(K)<br>15. dr. Yulius Patimang, SpA, SpJP(K) |
| **language** | Indonesian Language [Indonesian] |
| **Relations to Curriculum** | This course is a compulsory subject in the ninth semester and must be passed by students before completing the Academic Phase |
| **Type of teaching, contact hours** | Learning methods in this course<br>1. Lectures<br>2. Self-directed learning<br>3. Project Research |
| **Workloads** | For this course, students are required to compile a final thesis and make an oral presentation |
| **credit points** | 6 credit points |
| **Requirements according to the examination Regulations** | Students must have submitted all assignments that are scheduled before the final test and present it in front of the examiner |
| **Recommended prerequisites** | - |
| **Module objective / intended learning outcomes** | After taking this course, students are expected to :<br><br>**Attitudes:**<br>**CLO1**: Students are able to demonstrate attitude, professional ethics and discipline in performing echocardiography examination.(A1)<br><br>**Knowledge:**<br>**CLO2:**Students are able to collect, interpret and present research data based on evidence-based medicine (K1)<br>**CLO3:**Students are able to determine the research concept based on science in the field of cardiology and vascular medicine (K2).<br><br>**Skills**<br>**CLO4:**<br>Students are able to analyze research data and compile research proposal reports according to accountable scientific writing |

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| | principles. (S1)<br>**CLO5:**<br>Students are able to develop research proposal ideas that are in accordance with scientific arguments and professional intelligence that are beneficial to society (S2)<br>**CLO6 :**<br>Students are able to conduct and develop collaborations with colleagues, institutions and other specialist areas regarding research ideas to be carried out on a national and international scale. (S3)<br><br>**Competence**<br>**CLO7:**<br>Students are able to identify problems and make clinical decisions and present innovative ideas in Cardiology and vascular medicine. (C1)<br>**CLO8 :**<br>Students are able to publish results of research aimed at developing clinical skills and knowledge in cardiology and vascular medicine. (C1) |
| **Content** | Students will learn about:<br>• Steps to make a final thesis<br>• Literature search<br>• Application of statistical tests and analyze the data<br>• Critical appraisal journal<br>• Scientific paper writing technique<br>• Publication of research results |
| **Forms of Assessment** | • Oral Presentation (50%)<br>• Multisource Feedback (50%) |
| **Study and examination requirements and form of examination** | **Study and examination requirements:**<br>• Students must attend all courses activity<br>• Students should be present 30 minutes before examination start<br>• Students must switch off all electronic devices (for offline class)<br>• Students must inform the lecturer if they will not attend the class due to sickness, etc.<br>• Students must submit all assignments before the deadline<br>• Students must attend the exam to get the final grade<br><br>**For examination:**<br>Oral Presentation : Students must present the thesis proposal report to get final grade |
| **Media Employed** | Power Point Presentations<br>Final Thesis Defense |
| **Reading List** | 1. Howick J. Introduction to Study Design. Lancet [Internet]. 2002 [cited 2018 Mar 3];359:57–61<br>2. Du Prei JB, Hommel G, Rohrig B, Blettner M. Confidence interval or p value. Dtsch Ärzteblatt Int Dtsch Arztebl Int [Internet]. 2009<br>3. Du Prel JB, Röhrig B, Hommel G, Blettner M. Choosing Statistical Tests Part 12 of a Series on Evaluation of Scientific Publications.<br>4. K. Research Methodology. SAGE Publications Inc. 2011 |

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| | 5. Valunaite Oleskeviciene G, Sliogeriene J. Research methodology. In: Numanities - Arts and Humanities in Progress. 2020.<br>6. University L professional. RESEARCH METHODOLOGY e-book. LOVELY Prof Univ. 2012;<br>7. Inyder H. Literature review as a research methodology: An overview and guidelines. J Bus Res. 2019. |

## BIBLIOGRAPHY


1. Law Number 20 of 2003 concerning the National Education System (State Gazette of the Republic of Indonesia of 2003 Number 78, Supplement to the State Gazette of the Republic of Indonesia Number 4301)
2. Law Number 12 of 2012 concerning Higher Education (State Gazette of the Republic of Indonesia of 2012 Number 158, Supplement to the State Gazette of the Republic of Indonesia Number 5336)
3. Law Number 20 of 2013 concerning Medical Education (State Gazette of the Republic of Indonesia of 2013 Number 132, Supplement to the State Gazette of the Republic of Indonesia Number 5434).
4. Government Regulation Number 4 of 2014 concerning Implementation of Higher Education and Management of Higher Education
5. Presidential Regulation Number 8 of 2012 concerning the Indonesian National Qualifications Framework (KKNI) (State Gazette of the Republic of Indonesia of 2012 Number 24).
6. Regulation of the Minister of Education and Culture Number 73 of 2013 concerning the Application of the Indonesian National Qualifications Framework in the Field of Higher Education
7. Regulation of the Minister of Research, Technology and Higher Education Number 44 of 2015 concerning National Higher Education Standards
8. Regulation of the Minister of Research, Technology and Higher Education of the Republic of Indonesia Number 18 of 2018 concerning National Standards for Medical Education
9. Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 3 of 2020 concerning National Higher Education Standards
10. Medical Council Regulation No. 57 of 2018
11. 2018 National Standards for Cardiology and Blood Vessel Specialist Education
12. Regulation of the Indonesian Medical Council Number 11 of 2012 concerning Competency Standards for Indonesian Doctors.
13. Hasanuddin University Rector Regulation Number 3 of 2020 concerning Hasanuddin University Standards
14. Hasanuddin University Rector Regulation Number 4 of 2020 concerning the Internal Quality Assurance System

# APPENDICES

**Appendix 1**

## Guidelines for Using Case-based Discussion (CbD) Instruments to Assess Student Clinical Competence / PPDS

CbD is a way to assess the clinical ability of students / PPDS in terms of clinical decision making, and the application / use of medical knowledge (clinical reasoning) in managing patients. The assessor takes 2-5 patient medical records that are made/managed by the student/PPDS to be tested and then selects 1-2 of the medical records to be used as material for discussion and the discussion is focused on the medical records made by the student/PPDS concerned.

Competency descriptions in case-based discussions:

1. Writing/making medical records (medical record keeping)

   Is the medical record made clear, easy to understand, signed and dated, according to the problem at hand, and made sequentially and easy to understand so that it can make it easier for other doctors who will use the medical record to provide further appropriate and effective management.
2. Clinical assessment (Clinical assessment)

   Able to collect and conclude clinical findings (history and physical examination) in accordance with clinical problems, so that the closest diagnosis is obtained for the patient
3. Investigation and referral (investigation and referral)

   Able to explain rationalization of supporting examinations and necessary referrals. Be able to explain why the diagnostic examination is needed / carried out including the risks, benefits and their relationship to rule out the differential diagnosis.
4. Treatment

   Able to explain rationally about management, including the risks and benefits
5. Monitoring and subsequent planning (Follow up and future planning)

   Able to explain the next management plan including follow-up

6. Professionalism

   Able to perform care as recorded, show respect, compassion, empathy, and build trust. Be able to explain why patients need comfort, respect, medical confidentiality. Can show that the medical record is based on an ethical medical approach, awareness of legality and self-limitations.

7. Overall assessment (Overall clinical care)

   Able to demonstrate in making decisions synthesizing, performing treatment, and work sensitivity to patients in lege artis

**Notes**

If there are items above that are not assessed (observation), please put a mark (√) in the "not observed" column (see assessment form).

# CBD

Student's Name _____ Date (dd/mm/yyyy) _____

Semester ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ ≥8

Assessor's name _____

Assessor's status Consultant ☐ Trainee ☐ Other (Specify) ☐ _____

Clinical Scenario _____

Diagnosis _____

Overall difficulty of case Simple ☐ Intermediate ☐ Difficult ☐

Course: _____

**Please grade the following areas using the scale below** (use tick or cross)

| Competence | Poor | Fair | Good | V.Good | N/A |
|---|---|---|---|---|---|
| Medical Record Keeping | | | | | |
| Clinical Assessment | | | | | |
| Investigation and Referrals | | | | | |
| Treatment | | | | | |
| Follow-up and Future Planning | | | | | |
| Professionalism | | | | | |
| Clinical Judgment | | | | | |
| Leadership/Manager Issues | | | | | |
| Overall Performance | | | | | |

**Outcome** (Delete as appropriate) **Meets Expectations/Does not meet Expectations** (for stage of training)

*Feedaback*

*What went well?*

*What Should be Improved?*

**Signature of assessor:** **Signature of student:**

## MINI-CEX

Student's Name _____ Date (dd/mm/yyyy) _____

Semester ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ ≥8

Assessor's name _____

Assessor's status Consultant ☐ Trainee ☐ Other (Specify) ☐ _____

Brief description of case _____

**Please grade the following areas (according areas that being done) using the scale below** (use tick or cross)

| Competence | Poor | Fair | Good | V.Good | N/A |
|---|---|---|---|---|---|
| History Taking | | | | | |
| Physical Examination | | | | | |
| Clinical Assessment | | | | | |
| Diagnosis | | | | | |
| Management plan | | | | | |
| Education | | | | | |
| Communication skill | | | | | |
| Professionalism | | | | | |
| Overall performance | | | | | |

**Outcome** (Delete as appropriate) **Meets Expectations/Does not meet Expectations** (for stage of training)

*Feedaback*

*What went well?*

*What should be improved?*

**Signature of assessor:** **Signature of student:**

**Guidelines for Using Direct Observation of Procedural Skill (DOPS)**

**Instruments to Assess Medical Procedure Competence**

DOPS is a student competency assessment instrument / PPDS performing medical procedures on patients

The competencies assessed include

1. Knowledge of indications, anatomic relevance and medical procedure techniques (demonstrates understanding of indications, relevant anatomy, technique of procedure) Having the ability to describe objectives, indications, contraindications, side effects, anatomical locations that need to be known, and how to perform medical procedures sequentially and clear.
2. Consent of the patient, family for medical procedures to be carried out (Obtains informed consent) Able to obtain verbal and written consent from the patient or the patient's guardian parents, who have previously been given a good explanation of the medical procedure to be performed (indications, procedures to be performed, benefits - disadvantages, possible side effects, etc.)
3. Appropriate preparation before medical procedures are carried out (Demonstrates appropriate preparation pre-procedure)
   Have the ability to prepare everything that is needed in the medical procedure to be performed, including preparations regarding the management of possible complications / failures.
4. Able to provide safe analgesia or sedation according to medical procedures to be performed (appropriate analgesia or safe sedation)
   Have knowledge of analgesic drugs to be given and be able to do it safely and according to indications
5. Technical ability to performmedical procedure to be performed (Technical ability) Able to carry out the medical procedure sequentially, skilled properly and correctly.
6. Aseptic technique
   Able to demonstrate aseptic technique both before, during and after the medical procedure.
7. Seek help when needed (Seeks help where appropriate)
   Know your capabilities and limitationsthemselves and seek help when needed either in

the form of assistance or further treatment if needed

8. Post procedure management

   Have the ability in everything that is needed after carrying out actions such as disposal of disposable needles / sharp objects correctly and safely, clear instructions for both nurses and patients or families etc.

9. Communication skills

   Able to explain to patients / parents / guardians regarding medical procedures properly, clearly, respectfully and empathetically

10. Considering the patient's condition / professionalism (Consideration of patient / *professionalism*)

    Able to perform medical procedures by showing respect, compassion, empathy, and building trust by taking into account the patient's current condition. Able to carry out medical procedures by considering ethical aspects and awareness of legality and self-limitations

11. Overall ability to perform medical procedures (Overall ability to perform procedures)

    Ability to perform medical procedures with lage artists (considering the points mentioned above)

## DOPS

Student's Name _____ Date (dd/mm/yyyy) _____

Semester ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ ≥8

Assessor's name _____

Assessor's status Consultant ☐ Trainee ☐ Other (Specify) ☐ _____

Diagnosis _____

Overall difficulty of case Simple ☐ Intermediate ☐ Difficult ☐

Course: _____

Number of times procedure performed before One ☐ Two to four ☐ Five to nine ☐ More than nine ☐

Procedure performed on Simulator ☐ Wetlab ☐ Volunteer ☐ Patient ☐

**Please grade the following areas (according areas that being done) using the scale below** (use tick or cross)

| | | Poor | Fair | Good | V Good | |
|---|---|---|---|---|---|---|
| 1 | Demonstrates understanding of indications, relevant anatomy, techniques of procedure | | | | | |
| 2 | Obtains informed consent | | | | | |
| 3 | Demonstrates appropriate preparation pre-procedure | | | | | |
| 4 | Appropriate analgesia | | | | | |
| 5 | Technical ability | | | | | |
| 6 | Aseptic technique | | | | | |
| 7 | Seeks help where appropriate | | | | | |
| 8 | Awareness of potential complications and how to avoid them | | | | | |
| 9 | Post procedure management | | | | | |
| 10 | Communication skills | | | | | |
| 11 | Consideration to patient/professionalism | | | | | |

**Outcome** (Delete as appropriate) **Meets Expectations/Does not meet Expectations** (for stage of training)

*Feedaback*

*What went well?*

*What should be improved?*

**Signature of assessor:** **Signature of Student:**

## Multi-Source Feedback (MSF)

Student name _____ Date(dd/mm/yyyy) _____

Semester 1 ☐ 2 3 4 5 6 7 ☐ ☐ ☐ ☐ ☐ ☐ ☐

Senior Appraiser Status ☐ junio ☐ Nurse Advisor/Supervi ☐ Other ☐ ministrative Staff ☐ _____

**Please tick/cross in one of the columns below according to your opinion.**

| NO | Assessment Component | Bad | Enough | Good | Very good |
|---|---|---|---|---|---|
| | **Patient Services** | | | | |
| 1 | Diagnostic Ability | | | | |
| | Therapy planning ability | | | | |
| | Awareness of limitations | | | | |
| | Ability to consider the patient's psychosocial problems | | | | |
| | Using appropriate supporting examinations | | | | |
| 2 | **Adopting Good Clinical Practice** | | | | |
| | Effective time management skills/priority scale | | | | |
| | Technical ability/clinical skills | | | | |
| 3 | **Learning process** | | | | |
| | Desire to transfer knowledge to colleagues | | | | |
| | The effectiveness of the knowledge transfer process | | | | |
| | Motivation to develop knowledge and skills | | | | |
| 4 | **Relations with Patients** | | | | |
| | Communication with patients | | | | |
| | Communication with the patient's family | | | | |
| | Respect and maintain patient confidentiality | | | | |
| 5 | **Cooperation with Colleagues** | | | | |
| | Verbal communication with colleagues | | | | |
| | Written communication with colleagues | | | | |
| | The ability to recognize and appreciate the contributions of others | | | | |
| | Ease of access | | | | |