



**RAMAIAH
UNIVERSITY**
OF APPLIED SCIENCES

M.S. Ramaiah University of Applied Sciences

Programme Structure and Course Details

Of

DM Cardiology 2022 onwards



M.S. Ramaiah University of Applied Sciences

Registrar
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

Ramaiah Medical College

Principal and Dean
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Bangalore-560054

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M.S. Ramaiah University of Applied Sciences

Programme Specifications

DM Cardiology Programme 2022 onwards

Programme Code: MD153



M.S. Ramaiah University of Applied Sciences

Ramaiah Medical College

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University's Vision, Mission and Objectives

The M. S. Ramaiah University of Applied Sciences (MSRUAS) will focus on student-centric professional education and motivates its staff and students to contribute significantly to the growth of technology, science, economy and society through their imaginative, creative and innovative pursuits. Hence, the University has articulated the following vision and objectives.

Vision

MSRUAS aspires to be the premier university of choice in Asia for student centric professional education and services with a strong focus on applied research whilst maintaining the highest academic and ethical standards in a creative and innovative environment

Mission

Our purpose is the creation and dissemination of knowledge. We are committed to creativity, innovation and excellence in our teaching and research. We value integrity, quality and teamwork in all our endeavors. We inspire critical thinking, personal development and a passion for lifelong learning. We serve the technical, scientific and economic needs of our Society.

Objectives

1. To disseminate knowledge and skills through instructions, teaching, training, seminars, workshops and symposia in Engineering and Technology, Art and Design, Management and Commerce, Health and Allied Sciences, Physical and Life Sciences, Arts, Humanities and Social Sciences to equip students and scholars to meet the needs of industries, business and society
2. To generate knowledge through research in Engineering and Technology, Art and Design, Management and Commerce, Health and Allied Sciences, Physical and Life Sciences, Arts, Humanities and Social Sciences to meet the challenges that arise in industry, business and society
3. To promote health, human well-being and provide holistic healthcare
4. To provide technical and scientific solutions to real life problems posed by industry, business and society in Engineering and Technology, Art and Design, Management and Commerce, Health and Allied Sciences, Physical and Life Sciences, Arts, Humanities and Social Sciences
5. To instill the spirit of entrepreneurship in our youth to help create more career opportunities in the society by incubating and nurturing technology product ideas and supporting technology backed business
6. To identify and nurture leadership skills in students and help in the development of our future leaders to enrich the society we live in
7. To develop partnership with universities, industries, businesses, research establishments, NGOs, international organizations, governmental organizations in India and abroad to enrich the experiences of faculties and students through research and developmental programme



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Programme Specifications: DM Cardiology

Faculty	Ramaiah Medical College
Department	Cardiology
Programme	DM Cardiology
Programme Code	DMC153
Dean of Faculty	Dr. Shalini C. Nooyi
Head of Department	Dr. V S Prakash

1. Title of the Award: DM in Cardiology
2. Mode of Study: Full-Time
3. Awarding Institution /Body: M. S. Ramaiah University of Applied Sciences, Bengaluru
4. Joint Award: Not Applicable
5. Teaching Institution: Ramaiah Medical College
6. Date of Programme Specifications: September 2022
7. Date of Programme approval by the academic Council of MSRUAS : 27th September 2022
8. Programme Approving Regulating Body and Date of Approval: National Medical Council of India
9. Rationale for the Programme

The purpose of PG education is to create specialists who would provide high quality healthcare and advance the cause of science of Cardiology through research & training. Cardiology is a highly specialized and technical discipline in clinical medicine comprising of Non interventional and interventional cardiology. With a view to update, by inclusion of newer topics, and to provide a uniform syllabus and course contents in Indian universities and teaching medical institutions, the proposed guidelines provide course outlines based on recent developments in clinical medicine and other disciplines related to Cardiology.



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Program Outcomes

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- PO1-** Offer to the community, the current quality of 'standard of care' in Cardiology diagnosis as well as therapeutics.
- PO2-** Utilize the knowledge and skills acquired in allied specialties such as Anatomy, Physiology, Biochemistry, Pharmacology, Pathology, Microbiology and General Medicine.
- PO3-** Competency in diagnosis and management processes
- PO4-** Keeping abreast of all recent developments and emerging trends in the field of Cardiology
- PO5-** Evaluate own professional activities, educational needs and select appropriate learning resources periodically.
- PO6-** Contribute as an individual/ or in a group or institution towards the fulfillment of national objectives concerning diseases.
- PO7-** Effectively communicate with patients or relatives so as to educate them sufficiently and give them the full benefit of informed consent to treatment and ensure compliance.
- PO8 -** Effectively communicate with colleagues.

Program Specific Outcomes

- PSO1** -Ability to manage common emergencies at primary level.
- PSO2-** Perform out-patient services including patient screening and disease determination.
- PSO3-** Participate in community out-reach activities like camps, school screening and public education.
- PSO4 -** Prescribe medications for various ailments and follow up patients to understand outcomes.
- PSO5 -** Present academic papers in State/National conference.
- PSO6 -** To participate in department research activities and clinical audit.

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Course-PO-PSO Mapping

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Course Code and name	Program Outcomes								Program Specific Outcomes					
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PS O3	PSO 4	PS O5	PSO 6
DMC513A Principles and practice of cardiology	2	1			2		4	1	1		2	3	1	3
DMC514A Coronary artery diseases	3	3	2	3		3			3	3	3			2
DMC515A Congenital and Rheumatic heart diseases.		3	2				2		3	3	3			
DMC516A Other cardiovascular diseases	2	2	3	2				1	1		3	2	2	3



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10. Regulations:

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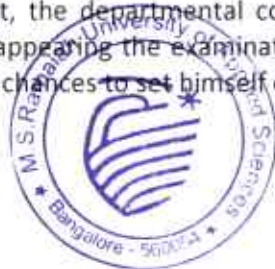
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(A) Attendance, Progress and Conduct

1. A candidate pursuing degree course should work in the concerned department of the institution for the full period as a full time student. No candidate is permitted to run or work in clinic/laboratory/nursing home while studying postgraduate course. No candidate shall join any other course of study or appear for any other examination conducted by this university or any other university in India or abroad during the period of study.
2. Each term shall be taken as a unit for the purpose of calculating attendance. Attendance of 80% every term is mandatory for appearing in the final university examination.
3. Every student shall attend symposia, seminars, conferences, journal review meetings, grand rounds, CPC, case presentation, clinics and lectures during each year as prescribed by the department and not absent himself / herself from work without valid reasons.
4. Every candidate is required to attend a minimum of 80% of the training during each academic term of the post graduate course. Provided further, leave of any kind shall not be counted as part of academic term without prejudice to minimum 80% attendance of training period every term.
5. Any student who fails to complete the course in the manner stated above shall not be permitted to appear for the University Examinations.

(B) Monitoring of progress of Studies

1. Work diary / Log Book - Every candidate shall maintain a work diary and record of his/her participation in the training programmes conducted by the department such as journal reviews, seminars, etc. as per the model checklists and logbook specimen copy.
2. Special mention may be made of the presentations by the candidate as well as details of clinical or planning procedures, if any conducted by the candidate. The work diary shall be scrutinized and certified by the Head of the Department and Head of the Institution, and presented in the university practical/clinical examination.
3. Procedure for defaulters: There will be a committee constituted by all teachers to review such situations. The defaulting candidate is counselled by the guide and head of the department. In extreme cases of default, the departmental committee may recommend that defaulting candidate will be withheld from appearing the examination, if she/he fails to fulfil the requirements in spite of being given adequate chances to set himself or herself right.



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11. Teaching Learning Methods:

A candidate pursuing the course should work in the institution as a full time student. No candidate should be permitted to run a clinic / laboratory / nursing home while studying postgraduate course. Each year should be taken as a unit for the purpose of calculating attendance.

Every student shall attend teaching and learning activities during each year as prescribed by the department and not absent himself/herself from work without valid reasons.

2

A list of teaching and learning activities designed to facilitate students acquire essential knowledge and skills outlined is given below. Depending on the facilities available, any or all of these methods may be employed.

1. **Lectures:** Lectures will be employed for teaching certain topics. Lectures may be didactic or integrated.
 - a. Didactic lectures: Recommended for selected common topics like
 - 1) Bio-statistics
 - 2) Use of library
 - 3) Research Methods
 - 4) Medical code of conduct and medical ethics
 - 5) National health and disease control programmes
 - 6) Communication skills etc.

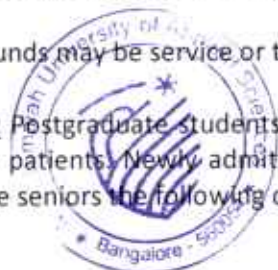
These topics may preferably take up in the first few weeks of the 1st year.

- b. Integrated Lectures: These are recommended to be taken by multidisciplinary teams for selected topics, like cardiac pathology, and cardiac radio diagnosis.
2. **Journal Club:** Will be held once a week. All the PG students are expected to attend and actively participate in discussion and enter in the Log Book relevant details. Further, every candidate must make a presentation from the allotted journal(s) of selected articles at least once a month and a total of 12 presentations per year. The presentations will be evaluated using check lists and will carry weightage for internal assessment. (See Checklist I of Internal Assessment). A time table with names of the student and the moderator shall be announced at the beginning of each month.
3. **Subject Seminar:** To be held on regular basis with each PG presenting three topics per month. All the PG students are expected to attend and actively participate in discussion and enter in the Log Book relevant details. The presentations will be evaluated using checklists and would carry weightage for internal assessment (See Check list II of Internal Assessment). A timetable for the subject with names of the student and the moderator should be scheduled at the beginning of every year.
4. **Student Symposium:** Recommended as an optional multi-disciplinary Programme. The evaluation may be similar to that described for subject seminar.
5. **Ward Rounds:** Ward rounds may be service or teaching rounds.

- a. Service Rounds: Postgraduate students and Interns should do ward rounds every day for the care of the patients. Newly admitted patients should be worked up by the PGs and presented to the seniors the following day.

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- b. Teaching Rounds: Every unit should have 'grand rounds' for teaching purpose. A diary should be maintained for day today activities by the students.

Entries of (a) and (b) should be made in the Log Book.

6. **Clinico-Pathological Conference**: Recommended once a month for all post graduate students. Presentation be done by rotation. If cases are not available due to lack of clinical postmortems, it could be supplemented by published CPCs.
7. **Inter Departmental Meetings**: Strongly recommended particularly with departments of Pathology and Radio-Diagnosis at least once a week. These meetings should be attended by postgraduate students and relevant entries must be made in the Log Book.
8. **Radio-diagnosis**: Interesting cases and the imaging modalities such as X-ray, Echocardiography, CT/MRI shall be discussed.
9. **Teaching Skills**: Postgraduate students must teach under graduate students (Eg. Medical, nursing) by taking demonstrations, bedside clinics, tutorials, lectures etc). Assessment is made using a checklist by surgery faculty as well as students. (See model checklist in Checklist). Record of their participation be kept in Log Book. Training of postgraduate students in Educational Science and Technology is recommended.
10. **Continuing Medical Education Programmes (CME)**: At least 2 state/ national level CME programs should be attended by each student in 3 years.
11. **Conferences**: Attending conferences is encouraged. The students have to present papers (minimum 2) at state and national level conference.
12. **Rotation and posting in other departments**
 1. Cardiac surgery department - 1 month
 2. Cardiac Anesthesiology department- 1 month
 3. Nuclear cardiology - 1 month
 4. Electrophysiology - 1 month
 5. Paediatric cardiology - 3 month

13. Teaching – Learning Methods

1. Skill Based Learning-

- a. Hands on Training in Echo and Diagnostic
- b. Coronary Angiography/ Right and Left Heart Cath

2. Problem Based Learning/Case Based Learning- Bed side Clinics

3. Small Group Discussions-

Subject seminars, presentation of interesting echoes, ECG and Cath Data

4. Integrated Teaching /Interdisciplinary

- a. Students are posted to SJIC, Sri Sathya Sai Institute,

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- b. Narayana Health City.
5. **Clinical Meetings** -Friday clinical meetings
 6. **Medical audits** –Mortality Audits
 7. **Patient centric and evidenced based learning** – Journal club
 8. **Research training**- BCBR, through MEU during PG orientation, DRP
 9. **Experiential learning**- Patient management in A & E, CCU& in Cath lab
14. **Project Based Learning** – Research projects9. A postgraduate student of a postgraduate degree course in broad specialties would be required to present one poster presentation, to read one paper at a national/state conference and to present one research paper which should be published/accepted for publication/sent for publication during the period of his postgraduate studies so as to make him eligible to appear at the postgraduate degree examination. 10. Participation in workshops, conferences and presentation of papers etc.
15. **Maintenance of records.** Log books should be maintained to record the work done which shall be checked and assessed periodically by the faculty members imparting the training.
16. Postgraduate students shall be required to participate in the teaching and training programme of undergraduate students and interns.
17. Department should encourage e-learning activities.

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12. Innovative teaching learning practices

1. Theme based teaching learning activities
2. Focused discussion during journal club inculcates culture in the areas of research and publication
4. Faculty Lecture during 4th week: Helps in bridging the gap between what is presented during the month and what is not about particular topic.
5. Training offered by the department in addition to mandatory NMC requirement.
 1. Advanced Electrophysiology
 - a) Complex arrhythmia mapping with 3 D Carto
 - b) VT ablation & Complex arrhythmia ablation
 - c) HIS bundle study, pacing & left bundle pacing.
 - d) Leadless pacemaker implantation
 2. Advanced Heart failure management & heart transplant programme.
 - a) C-PET
 - b) ECMO
 - c) LVAD & BI-VAD
 - d) Heart Transplant
 3. Miscellaneous high end Cardiac interventions
 - a) TAVR
 - b) LA appendage device closure
 - c) Imaging guided coronary intervention.

13. Assessment: It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only also helps teachers to evaluate students, but also students to evaluate themselves. The monitoring will be done by the staff of the department based on participation of students in various teaching/learning activities.

1. Formative assessment during 4th week of every month to include methods like pedagogy, chart analysis, histopathology report analysis, Viva, standardized patients, MCQs, Open book exams, OSCE will be done. Impact: SWOT analysis can be done and timely counselling can be done.
2. Theory paper covering Radiation physics and Radiobiology at the end of 1st year. FA at the end of second year will be on common cancers such as Head and neck, breast and cervical cancer. Mock SA will be conducted in the same pattern as university exams one month before the final exams.
3. Teaching skills: Candidates are encouraged to teach undergraduate medical students and paramedical students, if any. In addition, the second year student acts as a mentor for the



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immediate junior in all aspects of the course.

4. Pedagogy as a tool in formative assessment helps the student to be a better teacher.
5. Summary of Assessment

FORMATIVE ASSESSMENTS: - 4 Per Year

Students will also be assessed during their regular academic programs as well as in CCU, OPD, Wards, Cathlab and Non-invasive lab postings as per the formats provided.

MOCK SUMMATIVE ASSESSMENTS: -4 In Final Year in Accordance with university Exam Pattern

Each assessment will include theory as well as practicals

Scheme of Examination

The examination shall consist of:

- Written papers (theory),
- Clinical examination and
- Viva-voce.

1. Written Examination (Theory)

There shall be four question papers, each of three hours duration. Each paper shall consist of 10 short essay questions each carrying 10 marks. Total marks for each paper will be 100. Questions on recent advances may be asked in any or all the papers. Details of distribution of topics for each paper will be as follows:

Name of the course	Course Code	Topics	Marks
Principles and Practice of Cardiology – Basic Science bearing cardiology	DMC513A	Applied Cardiac Anatomy, Physiology, Pathology, Pharmacology and cardiac investigations.	100
Coronary Artery Diseases	DMC514A	Unstable Angina, NSTEMI/STEMI, Chronic coronary syndrome and Primary coronary and vascular interventions.	100
Congenital and Rheumatic Heart Diseases	DMC515A	Approach to congenital and Valvular heart disease including Anatomy, Pathophysiology and approach to treatment.	100
Other Cardio Vascular Diseases	DMC516A	Heart failure, Arrhythmias, cardiomyopathy, pulmonary hypertension, approach to syncope.	100

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2. Clinical Examination:

It should aim at examining clinical skills and competence of candidates for undertaking independent work as a specialist. Each candidate should examine at least one long case and two short cases. The total marks for clinical examination shall be 200.

3. Viva Voce:

Viva Voce Examination shall aim at assessing depth of knowledge, logical reasoning, confidence and oral communication skills. The total marks shall be 100.

D.M. Cardiology	Theory	Clinical/Practical	Viva-voce	Grand Total
	400	200	100	700



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Annexures

Format of Model Check Lists

Check List -1. MODEL CHECK-LIST FOR EVALUATION OF JOURNAL REVIEW PRESENTATIONS

Name of the Student:

Name of the Faculty/Observer:

Date:

Sl. No.	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Article chosen was					
2.	Extent of understanding of scope & objectives of the paper by the candidate					
3.	Whether cross references have been consulted					
4.	Whether other relevant publications consulted.					
5.	Ability to respond to questions on the paper / subject					
6.	Audio-Visual aids used					
7.	Ability to defend the paper					
8.	Clarity of presentation					
9.	Any other observation					
	Total Score					



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Check List - 2. MODEL CHECK-LIST FOR EVALUATION OF SEMINAR PRESENTATIONS

Name of the Student:

Name of the Faculty/Observer:

Date:

Sl. No.	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Completeness of Preparation					
2.	Clarity of Presentation					
3.	Understanding of subject					
4.	Whether other relevant publications consulted.					
5.	Ability to answer questions					
6.	Time scheduling					
7.	Appropriate use of Audio-Visual aids					
8.	Overall Performance					
9.	Any other observation					
10.	Total Score					



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Check List - 3**MODEL CHECK LIST FOR EVALUATION OF CLINICAL WORK IN WARD / OPD**

(To be completed once a month by respective Unit Heads including posting in other departments)

Name of the Student:

Name of the Unit Head:

Date:

Sl. No.	Points to be considered:	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Regularity of attendance					
2.	Punctuality					
3.	Interaction with colleagues and supportive staff					
4.	Maintenance of case records					
5.	Presentation of cases during rounds					
6.	Investigations work up					
7.	Beside manners					
8.	Rapport with patients					
9.	Counseling patient's relatives for blood donation or PM					
10.	Overall quality of Ward work					
11.	Total Score					



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Check List – 4 EVALUATION FORM FOR CLINICAL PRESENTATION

Name of the Student:

Name of the Faculty:

Date:

Sl. No.	Points to be considered	Poor 0	Below Average 1	Average 2	Above Average 3	Very Good 4
1.	Completeness of history					
2.	Whether all relevant points elicited					
3.	Clarity of Presentation					
4.	Logical order					
5.	Mentioned all positive and negative points of importance					
6.	Accuracy of general physical examination					
7.	Whether all physical signs elicited correctly					
8.	Whether any major signs missed or misinterpreted					
9.	Diagnosis: Whether it follows logically from history and findings					
10.	Investigations required					
	▪ Complete list					
	▪ Relevant order					
	▪ Interpretation of investigations					
11.	Ability to react to questioning Whether it follows logically from history and findings					
12.	Ability to defend diagnosis					
13.	Ability to justify differential diagnosis					
14.	Others					
	Grand Total					



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Check List - 5

MODEL CHECK LIST FOR EVALUATION OF TEACHING SKILL PRACTICE

Sl. No.		Strong Point	Weak Point
1.	Communication of the purpose of the talk		
2.	Evokes audience interest in the subject		
3.	The introduction		
4.	The sequence of ideas		
5.	The use of practical examples and/or illustrations		
6.	Speaking style (enjoyable, monotonous, etc., specify)		
7.	Attempts audience participation		
8.	Summary of the main points at the end		
9.	Asks questions		
10.	Answers questions asked by the audience		
11.	Rapport of speaker with his audience		
12.	Effectiveness of the talk		
13.	Uses AV aids appropriately		



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LOG BOOK

Table 2 : Academic presentations made by the student

Name:

Admission Year:

College:

Date	Topic	Type of Presentation Specify Seminar, Journal Club, Presentation, UG teaching etc.



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LOG BOOK

Table 3: Diagnostic and Operative procedures performed

Name:

Admission Year:

College:

Date	Name	ID No.	Procedure	Category O, A, PA, PI*

- * Key: O - Washed up and observed
 A - Assisted a more senior Surgeon
 PA - Performed procedure under the direct supervision of a senior surgeon
 PI - performed independently



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Model Overall Assessment Sheet

Name of the College:

Academic Year:

Check List No	Particulars	Name of Student and Mean Score				
		A	B	C	D	E
1	Journal Review Presentations					
II	Seminars					
III	Clinical work in wards					
IV	Clinical presentation					
V	Teaching skill practice					
Total Score						

Note: Use separate sheet for each year.



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Course Specifications DM Cardiology

2022 onwards

Course Code: DMC513A



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Course Specifications

Course Title	Principles and practice of cardiology
Course Code	DMC513A
Department	Cardiology
Faculty	Ramaiah Medical College

Course summary:

This course is designed in such a way that the student will master the basics of Cardiology

Course Outcomes:

CO 1: Demonstrate the understanding of various concepts of Basic science bearing cardiology like cardiac anatomy, physiology, pharmacology and pathology. (C)

Course content:

1. Cardiac anatomy: applied anatomy of cardiovascular system, normal variations, embryology, and alterations in disease states.
2. Cardiac physiology: normal cardiovascular physiology including electrical activity, cardiac cycle, cardiac metabolism, and physiology of circulation. Range of normal responses, and alterations in health and disease states.
3. Cardiac pharmacology: Basic understanding of pharmacokinetics of drugs and pharmacodynamics of drugs used in cardiology. Their mechanism of action, metabolism, adverse effects, drug interactions, drug development, and practice of prescription utilising best scientific evidence.
4. Cardiac pathology: structural alterations- structural alterations - macroscopic and microscopic, due to various diseases primarily and secondarily involving the heart and the vascular system.
5. Cardiac investigations: A thorough knowledge of basic principles, indications, technique, results, strength and limitations of various diagnostic tests is essential. Proficiency in independently ordering, performing and interpreting some of these investigations is essential, and accrue from a large number of tests performed under supervision and independently as subsequently suggested. These include invasive and non-invasive investigations.

Non-invasive investigations: ECG, Echocardiogram, Chest X-ray, Cardiac CT and CT angiography, Cardiac MRI and MR angiography, Nuclear cardiac imaging, exercise stress testing and Holter monitoring.



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Invasive investigations: Cardiac hemodynamics (pressure waveforms, oximetry, cardiac output, vascular resistance, shunts, valve area), normal and abnormal angiographic anatomy of heart and blood vessels, safety precautions, complications of cardiac catheterizations and their management.

Invasive electrophysiological studies – basic understanding of electrical signals, interpretations, physics of radiofrequency and pacemaker.

6. Epidemiology and preventive cardiology: principles of epidemiology in relation to cardiac diseases. Concepts of risk factors, population approaches, prevention of diseases and health promotion.
7. Genetics and molecular cardiology;
8. Basics of statistical methods; Research methodology;
9. Biomedical engineering: Basic understanding of physical principles of various biomedical instruments and devices used in cardiac diagnosis and therapeutics with a view to optimally utilize them.



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Course Mapping (CO-PO-PSO Mapping)

Course Code and name	Course Outcomes	Program Outcomes				Program Specific Outcomes					
		PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
DMC513A Principles and practice of cardiology	CO 1	3			3				3		3
3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution											



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Course Specifications DM Cardiology

2022 onwards

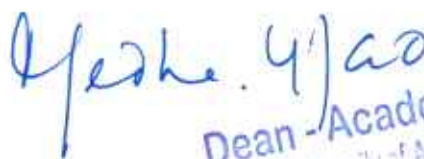
Course Code: DMC514A



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Course Specifications

Course Title	Coronary artery disease
Course Code	Code: DMC514A
Department	Cardiology
Faculty	Ramaiah Medical College

Course Summary:

This course is designed in such a way that the student will master the evidence based management of Coronary artery disease.

Course Outcomes:

CO 1: Demonstrate comprehensive knowledge of Coronary artery disease. (C)

CO 2: Demonstrate the understanding of Invasive procedures such as Coronary angiogram and Percutaneous Coronary intervention. (C)

Course Content:

1. Coronary Blood Flow and Myocardial Ischemia,
2. Approach to the Patient with Chest Pain,
3. ST-Elevation Myocardial Infarction: Pathology, Pathophysiology, and Clinical Features, ST-Elevation Myocardial Infarction: Management, Primary Percutaneous Coronary Intervention in the Management of Acute Myocardial Infarction, Unstable Angina and Non-ST Elevation Myocardial Infarction,
4. Chronic Coronary Artery Disease,
5. Percutaneous Coronary and Valvular Intervention,
6. Diseases of the Aorta Peripheral Arterial Diseases, Prevention and Management of Stroke,
7. Endovascular Treatment of Noncoronary Obstructive Vascular Disease, Diabetes and Heart Disease.



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Course Mapping (CO-PO-PSO Mapping)

Course Code and name	Course Outcomes	Program Outcomes				Program Specific Outcomes					
		PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
DMC514A Coronary artery disease	CO1	3	3		3	1	1			2	2
	CO 2	3	3		3	1	1			2	2
3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution											


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Course Specifications DM Cardiology

2022 onwards

Course Code: DMC515A



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Course Specifications

Course Title	Congenital and rheumatic heart disease
Course Code	DMC515A
Department	Cardiology
Faculty	Ramaiah Medical College

Course Summary:

The course is designed in such a way that the student will master multidisciplinary management of Congenital and rheumatic heart disease.

Course Outcomes:

CO1: Demonstrate comprehensive knowledge of congenital heart disease.

CO2: Demonstrate comprehensive knowledge of rheumatic heart disease.

Course Content:**VALVULAR HEART DISEASE**

1. Acute rheumatic fever
2. Aortic valve disease,
3. Mitral valve disease, Mitral valve prolapse syndrome,
4. tricuspid valve
5. pulmonic valve and multivalvular disease,
6. Clinical performance of prosthetic heart valves,
7. Antithrombotic therapy for valvular heart disease etc.

CONGENITAL HEART DISEASE

1. Cardiovascular disease due to genetic abnormalities
2. the pathology,
3. pathophysiology,
4. recognition and treatment of congenital heart diseases,
5. Congenital heart disease in adults etc.



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Course Mapping (CO-PO-PSO Mapping)

Course Code and name	Course Outcomes	Program Outcomes				Program Specific Outcomes					
		PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
DMC515A Congenital and Rheumatic heart disease	CO 1	2	3			3	3				
	CO 2		3	1			3	3			3
3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution											



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Course Specifications DM Cardiology

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Course Code: DMC516A

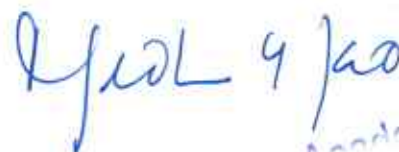


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Course Specifications

Course Title	Other cardiovascular diseases.
Course Code	DMC516A
Department	Cardiology
Faculty	Ramaiah Medical College

Course Summary:

The course is designed in such a way that the student will master recent developments in other cardiovascular diseases.

Course Outcomes:

CO1: Demonstrate comprehensive knowledge of other cardiovascular diseases.

Course Content:

1. HEART FAILURE
 - a. Pathophysiology and diagnosis of Heart Failure,
 - b. Diagnosis and management of heart failure,
 - c. Cardiac transplantation and mechanical ventricular support.
2. RHYTHM AND CONDUCTION DISTURBANCES
 - a. Mechanisms of cardiac arrhythmias and conduction disturbances,
 - b. Recognition,
 - c. clinical assesment and management of arrhythmias and conduction disturbances, antiarrhythmic drugs, etc
3. SYNCOPE, SUDDEN DEATH AND CARDIO-PULMONARY RESUSCITATION
 - a. Diagnosis and management of syncope,
 - b. sudden cardiac death,
 - c. Cardiopulmonary Resuscitation and the subsequent management of the patient etc.
4. PULMONARY HYPERTENSION AND PULMONARY DISEASE
 - a. Pulmonary hypertension,
 - b. Pulmonary embolism,
 - c. Chronic Cor pulmonale etc.
5. CARDIOMYOPATHY AND SPECIFIC HEART MUSCLE DISEASES
 - a. Classification of cardiomyopathies,
 - b. Dilated cardiomyopathy,
 - c. hypertrophic cardiomyopathy,
 - d. Restrictive, obliterative and infiltrative cardiomyopathies,
 - e. Myocarditis and specific cardiomyopathies
 - f. endocrine disease and alcohol,
 - g. AIDS and the cardiovascular system,
 - h. Effect of noncardiac drugs,
 - i. electricity, poisons and radiation and the heart etc.
6. PERICARDIAL DISEASES AND ENDOCARDITIS
 - a. Diseases of the pericardium,
 - b. Infective endocarditis



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Course Mapping (CO-PO-PSO Mapping)

Course Code and name	Course Outcomes	Program Outcomes				Program Specific Outcomes					
		PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
DMC516A Other cardiovascular disorders	CO 1	3	1		3	2					2
3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution											



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COURSE MATERIALS:

References – recommended books and journals

BOOKS**Mandatory**

1. Heart Disease – a text book of cardiovascular medicine ; Zipes DP , E. Braunwald, Philadelphia, Elsevier Saunders
2. The Heart – Fuster V , Mc Graw Hill Co.
3. Echocardiography, Feigebaum . h , William & Wilkins , Baltimore
4. Cardiac catheterization, angiogram and interventions- William Grossman, Philadelphia. Lea & Febiger
5. Heart disease in infants, children and adolescence – Moss , Adams: Baltimore, Williams & Wilkins
6. Clinical recognition of congenital heart disease – Perloff JK, Philadelphia, WB Saunders
7. Text book of interventional cardiology – Topol ; Philadelphia ' Saunders
8. Cardiac electrophysiology – Zipes ; Philadelphia, Elsevier
9. Clinical electrocardiography – Goldberger ; St.louis, Mosby/Elsevier
10. Stress testing – Principles and practice ; Ellestad MH ; New York , Oxford University
11. Cardiac electrophysiology ; - Josephson etal

Additional reference books

1. Text book of cardiovascular medicine – Topol ; Philadelphia ;Lippincott Williams & Wilkins
2. Text book of medical physiology – Guyton AC ; Philadelphia;Elsevier Saunders
3. Atlas of nuclear cardiology – Dilsizian V , Narula, Braunwald ;Philadelphia ; current medicine
4. Cardiovascular magnetic resonance – Manning WJ ; Philadelphia ;Churchill Livingston
5. Heart failure : a companion to Braunwald's Heart Disease ;Philadelphia ; Saunders
6. Cardiac surgery – Kirklin JW , Barret Boyes ; New York ,Churchill Livingston
7. Congenital Heart Disease in adults – Perloff JK , Philadelphia ,WB Saunders
8. Medical clinics of North America
9. Cardiology clinics

Journals**Indian**

1. Indian Heart Journal
2. Journal of Indian Medical Association
3. Journal of Association of Physicians of India



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Foreign

1. Circulation
2. Journal of American College of Cardiology
3. American Heart Journal
4. European Heart Journal
5. British Heart Journal
6. Circulation Research
7. Progress in cardiovascular disease
8. Heart
9. Pediatric cardiology
10. New England Journal of Medicine
11. Lancet
12. Journal of American Medical Association
13. J American Society of Echocardiography
14. Eur. J of Echocardiography
15. Hypertension
16. Hypertension research
17. J. Interventional cardiology
18. J. Cardiovascular Electrophysiology
19. J. Nuclear cardiology
20. Radiology
21. Chest
22. J. Thoracic and cardiovascular surgery


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