



**RAMAIAH
UNIVERSITY**
OF APPLIED SCIENCES

M.S. Ramaiah University of Applied Sciences
Programme Structure and Course Details
Of
DM Medical Oncology 2022 onwards

M.S. Ramaiah University of Applied Sciences
Ramaiah Medical College

Gu

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

Shalini

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M.S. Ramaiah University of Applied Sciences

Programme Specifications

DM Medical Oncology Programme 2022

onwards

Programme Code: DM155

M.S. Ramaiah University of Applied Sciences

Ramaiah Medical College

Shalini



Yashwanth
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Approved by the Academic Council at its 27th meeting held on 27 September 2022

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 Medical Oncology

Faculty	Ramaiah Medical College
Department	Medical Oncology
Program	DM Medical Oncology
Program Code	DM155
Dean of Faculty	Dr Shalini C Nooyi
Head of the Department	Dr Vinayak. V. Maka

1. Title of the Award: DM in Medical Oncology
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 Program Specifications: September 2022
7. Date of Programme approval by the academic Council of MSRUAS : 27th September 2022
8. Program Approving Regulating Body and Date of Approval: National Medical Council of India
9. Rationale for the Programme:

The super-specialty course in Medical Oncology is intended to produce a well-informed, well-trained cancer specialist who can take care of patients, attempt and perform diagnostics and curative therapies when applicable and understands the needs of a terminally ill patient while maintaining an acceptable standard of care in the said discipline. He/ She should be academically strong, keep up with the rapid advances in the field and apply a thoughtful approach to problem solving he or she learned as an internist to a body of knowledge that includes patients with cancer. Besides imparting the knowledge on individual cancers and their treatments, the training program also intends to provide a reasonable familiarity with the origins, status, and fruits of cancer research at clinical and pre-clinical levels. The program also facilitates inter-disciplinary interactions with sister-specialties surgical oncology, radiation oncology, pathology, radiology, pharmacology, psycho-oncology, neuro-oncology, gynaec-oncology, rehabilitation medicine, and microbiology/ infectious diseases.

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Programme objectives (PO) for DM Medical Oncology students

PO1: Provide an all-rounded experience in medical oncology to prepare each student for either a private or an academic career in the speciality and to provide the best care for patients.

PO2: Provide opportunities to involve in teaching, clinical research and to publish medical literature.

PO3: Become champions of patient safety, quality improvement and patient counselling.

DEPARTMENT OF DM MEDICAL ONCOLOGY PROGRAM SPECIFIC OUTCOMES (PSO) FOR POST GRADUATE STUDENTS

At the end of the Program, the students should be able to:

Knowledge

PSO1: Describe etiology, patho-physiology, principles of diagnosis and management of malignancies including emergencies, in adults and children.

PSO2: Demonstrate understanding of basic sciences relevant to this specialty

PSO3: Describe indications and methods for blood transfusion and pheresis.

PSO4: Update oneself by self-study and by attending courses, conferences and seminars relevant to the specialty.

PSO5: Use information technology tools and carry out research, both basic and clinical, with the aim of presenting or publishing his/her work in various scientific forum or journals.

Skills

PSO6: Take a proper clinical history, examine the patient, perform essential diagnostic procedures and order relevant tests and interpret them to come to a reasonable diagnosis & staging of disease.

PSO7: Perform common procedures relevant to the specialty.

Attitude and Communication Abilities

PSO8: Adopt ethical principles in all aspects of his/her practice. Professional honesty and integrity are to be fostered. Care is to be delivered irrespective of the social status, caste, creed or religion of the patient. Apply high moral and ethical standards while carrying out human or animal research.

PSO9: Develop communication skills, in particular the skill to explain various options available in management and to obtain a true informed consent from the patient & breaking of bad news.

PSO10: Respect patient's rights and privileges including patient's right to information and right to seek a second opinion.

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Course-PO-PSO Mapping

Course Code and name	Program Outcomes			Program Specific Outcomes									
	PO 1	PO2	PO3	PS O1	PS O2	PS O3	PS O4	PS O5	PS O6	PS O7	PS O8	PS O9	PS O10
DMC521A Molecular oncology & basic cancer therapeutics	3	2	3	3	3	3	2	2	3	2	2	3	3
DMC522A Clinical Oncology of Childhood & Haemato Oncology	3	2	3	3	3	3	2	2	3	2	2	3	3
DMC523A Clinical Oncology of Adult Solid tumors	3	2	3	3	3	3	2	2	3	2	2	3	3
DMC524A Recent advances, Palliative care, Oncology emergencies, Supportive care.	3	2	3	3	3	3	2	2	3	2	2	3	3
3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution													



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10. Regulations:**(A) Attendance, Progress and Conduct****ATTENDANCE AND LEAVES POLICY**

a. All residents should do Biometrics scanning in the morning and evening and should sign in the resident register EVERY DAY.

b. Sunday is not a regular holiday if not otherwise specified; so, the residents should be available for rounds and patient care.

c. Residents are eligible for one casual leave per 30 working days/ 1 month. That gives a total of 12 CLs per year which is not carried forward to the next year.

d. The cumulative duration of the leave should not be more than 5 days including Sundays.

r. There should be a fully completed and signed leave application that is submitted for any leaves that are taken by the resident along with a document of proof for the reason for leave.

Leave application must be taken in written form with signatures of Replacement Residents before approaching Academic coordinator, Clinical Coordinator, research coordinator and then to Head of Department for final clearance. The filled form should be handed over to Mr Manjunath at earliest by hard copy/soft copy before going to leave.

s. The routine Academic semester starts from 1 August to 31 January and 1 February to 31 July every year. So, attendance in wards will be counted as practical attendance for university examination eligibility which is mandatory 80% for each semester. The course is planned and executed for 3 calendar years or 36 months.

Each resident needs a replacement signature from fellow residents and the consultant in charge. The leave application is void if the replacement resident himself /herself is on leave.

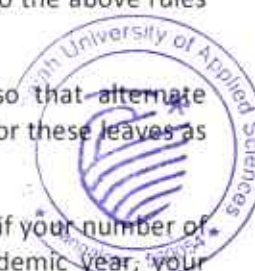
g. On a working day, i.e Monday to Saturday, 80 percent of the residents should be in the department.

h. On holidays and Sundays, not more than 2 people should be on leave.

i. For conference attendance, arrangements should be made according to the above rules and prior permission of the HOD is a must.

j. Maternity and marriage leaves should be informed early enough so that alternate arrangements can be made. The minimum attendance clause will apply for these leaves as well.

k. The minimum attendance required for each academic year is 80%. So, if your number of days of leave are less than 20% (i.e., less than 72 days) in each academic year, your examination term is not altered.



Handwritten signature: H. W. L. Rao

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Handwritten signature: Shalini

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- l. If your absence for an academic year is more than 72 days and less than 6 months, then your examination is postponed by one term (i.e., 6 months).
- m. If your absence for an academic year is more than 6 months and less than 1 year, then your examination is postponed by 2 terms. (i.e., 1 year).
- n. Exam going students will get one month off from their clinical work for studies. They will also be off during the month of examinations (both written and practical exams). This leave of absence will be considered for the total attendance for the year and should not be more than 72 days.

PROGRESS:

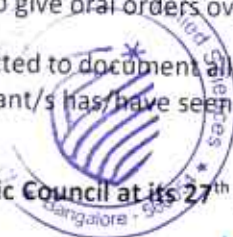
This is discussed under the headings: (1) Service, (2) Education and, (3) Research.

(1) Service

- a. Patient care is the most important part of any postgraduate curriculum.
- b. There are many workstations being run by the department - which include MTH oncology OPD, MTH oncology ward, MTH Haematology Ward, HCG MSR Oncology OPD and wards, HCG MSR Bone marrow transplant unit. Occasionally patients are also admitted in the RMH also.
- c. DM residents are expected to be completely involved in care (which includes counseling, assessing/history taking, chemotherapy ordering/mixing, supportive care) of both in-patients and outpatients (both at teaching hospital and the corporate hospital).
- d. DM residents are expected to be aware of the full history and daily ongoing progress, (events) of the patients who are admitted in the wards and being seen in OPD.
- e. Twice a day rounds must be made, and notes must be put in the in-patient file.
- f. In the morning residents are expected to be early, see all the in-patients and make sure that the notes are put before consultant rounds.
- g. Rounds must be presented to the rounding consultant by the in-charge resident in the morning service rounds. In the evening after their rounds, residents are expected to inform the designated consultant regarding the patients.
- h. Residents are expected to see the references that are sent by other departments and show the patient to concerned consultants on the same day or the next day.
- i. Residents are expected to take calls from the emergency department and inform the concerned consultant and do the needful as required.
- j. If on duty the residents are expected to stay inside the campus and attend calls from the wards/BMT unit/OPD/emergency. If on call, the residents are expected to see the patient and are advised not to give oral orders over the phone.
- k. Residents are expected to document all patient related matters diligently and write in the file which the consultant/s has/have seen the patient and made decisions for the patient.

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l. All procedures must be done after receiving informed consent and procedure notes must be written in the patient file after the procedure.

m. The behavior of the residents with patients must be respectful. Residents are expected to deal with and counsel suffering patients and patient relatives with love and affection. We must always remember that we are here because of them and not vice versa.

n. The utmost attention must be given to accurate and detailed documentation and all efforts should be made to make sure that there are no errors in the discharge summary.

o. All efforts should be made to make sure that all critical documents pertaining to diagnosis, protocol, consent, and check lists are in the outpatient file.

p. The outpatient department must be started at the latest by 09:30 AM in MTH by the MTH OPD PG.

q. All blood investigations and imaging should be sent in the consultant's name and PG's must sign for the consultant if need be.

(2) RESEARCH

a. Research is an important part of the training curriculum, for any student.

b. Residents are expected to conduct publishable research during their tenure.

c. As per university rules students should have done at least two research projects, one oral paper and two posters.

d. Residents must complete an online course, "Basic Course in Biomedical Research", offered by ICMR-National Institute of Epidemiology (ICMR-NIE), Chennai by 6 months into the course.

e. Research projects can be either prospective or retrospective, as per guidance from the head of the department and other consultants in the department.

f. Research projects need mandatory approval from the ethical committee, scientific committee, and head of the department before initiation and on completion for publication.

g. Review of the research projects is done every month on the first Wednesday.

h. Registration database is departmental asset which needs to enter in regular basis as per assigned station and role.

i. Explicit written permission is required from the Head of Department for publishing any patient data or utilizing Database sheets.

j. Tumor Board meeting is an opportunity to learn multidisciplinary treatment protocols. students are expected to prepare cases for discussion and enter in tumor board.

(3) EDUCATION

a. The DM curriculum involves regular seminars, journal clubs, CPCs, and case presentations.

b. DM residents should adequately prepare and actively participate in the teaching programme.

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- c. Classes which will be counted as theory attendance for university, mandatory attendance is 80 percent for each semester.
- d. They should also be involved in guiding their juniors, medicine and radiation oncology residents posted in the department from time to time.
- e. The students are expected to maintain a logbook which details the teaching program, procedures carried out, conferences attended etc.
- f. All the presentation PPT slides should be uploaded to the common drive.

CONDUCT:

- a. Within one month of joining, the students must finish RGUHS and KMC obligations and will be liable for medico legal risks in case of non-completion.
- b. They must write name, date, time, and KMC numbers in all clinical notes.
- c. All investigations forms like blood testing, pathological investigations and radiological forms will have the name of consultant who oversees ward or organ specific DMG instead of the resident's name.
- d. Department source documents (Google drive docs, CHBMT docs, NAAC and NABL documents) should be handled with care and due diligence. A unique new Gmail id should be created for access of the documents.
- e. Students are not expected to sign letters sent to government authorities, reimbursement forms, LIC insurance papers, or certification for cancer patients. In case of urgency and immediate need for patient care, clearance from faculty is obtained after sharing a snapshot of certificate.
- f. The DM postgraduates of all years are expected to behave as colleagues with no hierarchy in job responsibilities and even in personal interactions including addressing each other. They are not expected to use terms like 'sir' or 'madam' to address each other and use their first names instead.

(B) Monitoring of progress of Studies

1. Work diary / Logbook - The resident must maintain a logbook which will be a formal record of the clinical, academic and research activities undertaken by the fellow during the course. It is also an important document in case you apply for higher studies subsequently abroad. The work for the logbook should begin from the first posting itself. This shall be duly attested by the program leader. The logbook should be submitted to the authorities before the final theory exit exam. The logbook should contain mentions about the following:

- Research publications and presentations in any academic forums
- Case presentations
- Academic presentations
- Departmental discussions
- Internal assessment details
- Personal profile of the candidate
- Educational qualification/Professional data
- Record of case histories
- Procedures learnt.

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Record of case Demonstration/Presentations

Every candidate, at the time of practical examination, will be required to produce a performance record (logbook) containing details of the work done by him/her during the entire period of training as per the requirements of the logbook. It should be duly certified by the supervisor as work done by the candidate and countersigned by the administrative Head of the Institution. In the absence of production of logbook, the result will not be declared.

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 despite being given adequate chances to set himself or herself right.

11. Teaching Learning Methods:

This is discussed under the following headings – (1) Directed teaching-learning sessions, (2) Interactive and self-learning sessions. While the former, including seminars, tumor boards, grand rounds, inter-departmental teaching sessions and case presentations have been a traditional and widely used teaching method, modern educational methods for adult learners also incorporates a variety of other instructional strategies, including active learning, group discussions, online resources, and hands-on experiences, to provide a well-rounded and engaging learning experience for students. These are implemented in the form of guided, semi-independent performance of patient care in various scenarios like inpatient and out-patient departments, specialized units like bone marrow transplant unit and intensive care units and in sister-specialties like surgical and radiation oncology and diagnostics.

(1) Directed teaching/ learning sessions

A. Tuesday 2.30 to 3.10 PM: Seminar in Oncology: Candidate presents a given topic and discusses it. Fellows should be able to review the topic critically and make independent observations.

B. Tuesday :3.10 PM to 4.10 pm medical chart round discussion where candidates can present new cases from OPD and ward to decide the best treatment plan for the patient.

C. Wednesday:7.30am to 9.30 AM Department grand rounds: During this session, the candidates present their logbooks. All cases admitted in the ward shall be discussed whereby the candidate presents the case history, examination, and management plan of the patient.

D. Wednesday:2.30 to 3.10 PM: Candidate must present practice changing articles which will be thoroughly discussed.

E. Wednesday:3.10 PM to 4.10 pm Hematology and BMT meet discussion where candidates can present new hematology cases from OPD and ward to decide the best treatment plan for the patient.

F. Wednesday :4.10 PM to 3.10 PM: Monthly Mortality and morbidity audit: In the mortality meeting, the treatment course and probable cause of death of the patients who expired recently in the wards is discussed.

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G. Thursday: 9 to 10 AM Multidisciplinary Tumor Board

H. Thursday: 3.30-4.30 PM Oncopath Conference: The candidates provide the clinical history of the cases, and the histopathology slides are discussed with the expert pathologists.

1. Uro-oncology
2. Thoracic oncology
3. GI oncology
4. Neuro Oncology

I. Friday: Oncology case presentation: 8:00 AM to 9:00 AM. Candidates present a clinical case, and he/she shall be assessed for their clinical skill, decision-making qualities, and knowledge of the subject.

J. Saturday: Oncology Drug Theory classes: 3 to 4 pm. Candidate presents a given drug and discusses it. Clinical oncology pharmacists will give inputs about the dispensing of drugs.

(2) Interactive and self-learning sessions.

A. Inpatient care

The candidate is allotted certain beds and he is required to work up patients admitted on those beds. He plans out a diagnostic workup and treatment plan, discusses it with the concerned consultants, presents it on the grand rounds and assumes complete responsibility of the patients during their hospital stay. He should work in harmony with the ward nurses.

B. Outpatient department (OPD)

The candidate is posted to chemotherapy OPD clinics and various specialty clinics including breast cancer, gastrointestinal, urology, lymphoma-leukemia, pain evaluation, bone and soft tissue, pediatric tumors, head and neck, gynecology oncology, pulmonary oncology. The candidates posted to these clinics work under the supervision of consultants. They are expected to see new as well as follow-up patients so as to plan out the management and assess the therapeutic responses of a particular patient.

C. Periphery consultation and Procedures Posting

During this posting a candidate is expected to learn the following skills:

1. to see all the referrals and ICU admissions for solid tumors in MH on the same day of getting the request, before 4 pm and informing the respected consultant
2. handling chemo-port and central venous catheters
3. Familiarity with different venous access devices
4. Institution of chemotherapy and supervision of side effects
5. Procedures like bone marrow biopsy, liver biopsy, tru-cut biopsy, lumbar puncture
6. Chemotherapy and aspiration of fluids.

D. Bone Marrow Transplantation Unit Posting

The candidate works under the supervision of concerned consultants and assumes responsibility of

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managing the patients undergoing high dose chemotherapy. He/ She also becomes familiar with the various types of stem cell mobilization, harvesting, and cryopreservation techniques.

E. Elective Posting

As per academic needs, residents shall be sent to certain other centers with specific intention of learning special skills as the need arises. Students will have to get permission from the head of medical oncology and Principal of RMC. During the elective posting the candidate, apart from understanding the value of laboratory tests in each malignancy, must possess the basic knowledge of interpreting the laboratory data and correlating it with clinical data. For this purpose, candidates are posted in various laboratories through laboratory posting.

The candidates are posted to various laboratories, some of which are relevant to medical oncology itself, such as the cytogenetics laboratory, and the in-vitro tissue culture laboratory. In addition, candidates are posted in immunology, microbiology, HLA, and pathology laboratory.

The candidate is required to learn the basic techniques of tissue culture, cytogenetics, staining and study of peripheral/bone marrow smears, operation of blood cell counter and cell separator machine.

F. Ancillary Posting

1. Surgical oncology
2. Radiation oncology
3. Pathology
4. Nuclear medicine
5. Critical care medicine

G. Exam preparatory period

4 weeks prior to the beginning of the final exit theory exams, the residents shall be exempted from clinical work. But in case required, the HOD can call back the residents during this period.

H. Social activities

Students are encouraged to take part in the various departmental social activities, awareness campaigns, screening camps, rural clinics and so forth to increase their awareness about perceptions of the disease and its treatment in society. This will also help improve their communication and presentation skills.

12. Innovative teaching learning practices

1. Faculty lecture: Lectures by faculty members often expose students to the expertise and research of the instructor, fostering respect for academic authority and encouraging students to explore the unique perspectives and teaching styles of individual instructors, making the learning experience more personalized.

2. Participation in nursing education: DM Medical oncology residents are encouraged to participate in the nursing education activities conducted in the hospital in specialty fields like onco-nursing and BMT nursing. The residents perform as nursing instructors by encouraging questions, discussions, and participation from the learners to engage them actively in the learning process. They will learn to share their passion for their subject and

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demonstrate the real-world applications of the knowledge being presented to an audience. This will also sharpen their skills for effective communication, presentation styles, organization, and communication techniques.

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 and is discussed as (1) Formative assessment and (2) Summative assessment.

(1) FORMATIVE ASSESSMENT

A. End-of-posting evaluation.

Evaluation form sample:

End of posting evaluation		
Name of the student:	Period of assessment: ___/___/20___ to ___/___/20___	
Name of the evaluator:	Clinical posting:	
Clinical parameters:	Academic parameters	Personal parameters
<ul style="list-style-type: none"> - Arrives in time for IP and OP work. - Work quality meets expectations. - Makes accurate clinical assessments. - Takes appropriate clinical decisions. - Performs well in critical care settings. - Performs clinical procedures expertly. - Provides disease specific patient counseling. - Maintains medical records with appropriate documentation. - Answers ward calls in a timely manner during duty 	<ul style="list-style-type: none"> - Case presentation: Able to take a comprehensive clinical history and perform physical examination, summarize the case, present diagnosis and differential diagnosis, and participate in clinical discussions. - Performance in seminars and journal clubs: Able to do thorough literature search, aware of the most recent evidence and has good presentation skills. - Read medical literature and showed a definite improvement in knowledge base. - Attended national/ international conferences. Participated in inter/ intra-institutional quiz/ debate. 	<ul style="list-style-type: none"> - Worked well with the resident peers. - Was respectful towards senior staff. - Maintained a professional and cordial relationship with nurses and other hospital staff. - Has a compassionate attitude towards patients and attendants. - Has good communication skills (in English and local language) - Is willing to accept mistakes and learn from them. - Does not lie or falsify information

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	<ul style="list-style-type: none"> - Performed well in departmental evaluations. - Did data entry in department excel sheets diligently, on time and without errors. - Submitted abstracts, letter to editor, case reports (either / or) - Submitted original research papers, review articles (either / or) 	
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B. In-house examinations

Period	Exams	Topics
1 st year	Theory, Viva	Supportive care, Oncologic emergencies, Cancer Chemotherapy, Medical ethics, Molecular oncologists on clinical cases scenarios.
2 nd year	Theory, Viva	Thorax, CNS, H & N, Genetics, CUPS, Breast, GI, GU, STS & Bone, HBP, Skin tumors, BMT, Haemato-oncology, Pediatric tumors.
Pre-final exam	Exit pattern	All topics

C. Paper publication:

Two publications (any format) are mandatory during the course. As a policy the resident who does the work shall be the first author and the assisting faculty shall be the corresponding author. All publications happening from a work the fellow does during his course shall be published under the address of the department even if it is published after they leave the institute. Interdepartmental works should be acknowledged and wherever necessary co-author ships also allowed as per discussions with the program leader. The department does not provide financial assistance for publications in open access journals.

D. Logbook:

The resident must maintain a logbook which will be a formal record of the clinical, academic and research activities undertaken by the fellow during the course. It is also an important document in case you apply for higher studies subsequently abroad. The work for the logbook should begin from the first posting itself. This shall be duly attested by the program leader. The logbook should be submitted to the authorities before the final theory exit exam. The logbook should contain mentions about the following:

- Research publications and presentations in any academic forums
- Case presentations

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- Academic presentations
- Departmental discussions
- Internal assessment details

E. Presentations In CME And Conferences

During the course the residents are allowed to attend one international conference provided there is a presentation to do. More numbers of international conferences can be considered based upon the quality of the presentations to do. Residents can attend two national conferences, preferably with presentations. They are encouraged to attend regional meetings (Karnataka and Bangalore area). Residents are advised to make maximum benefit of these meetings to increase their knowledge as well as interaction with specialists from other areas (networking practices). At present the department does not financially support the residents for attending conferences. They are advised to garner support from ethical means, either from the organizers or from authorized agencies.

II. SUMMATIVE ASSESSMENT (EXIT EXAM)

The exit exam consists of the following pattern.

A. Theory exam:

Name of the course	Course code	Topics	Marks
Molecular oncology & Basic cancer therapeutics	DMC521A	Basic sciences includes Cancer Biology, Tumor Immunology, Cancer etiology, Pharmacology, Radiation Biology, Tumor Pathology	100
Clinical Oncology of childhood and Haemato Oncology	DMC522A	Hemato-Oncology	100
Clinical Oncology of Adult Solid Tumors	DMC523A	Management of Solid tumors	100
Recent advances, Palliative care, Oncology emergencies, Supportive care	DMC524A	Cancer epidemiology, Prevention, psycho-oncology, Rehabilitation, societal Oncology	100



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PARTICULARS	Total marks
Viva	100 marks
Logbook	50 marks
Thesis	50 marks
Total	200 marks

B. Practical exam:

PARTICULARS	Numbers	Marks	Total marks
Long case	1	150 marks	150 marks
Short cases	2	75 marks each	150 marks
Spotters	4	25 marks each	100 marks
Total			400 marks



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Annexures

Annexure 1_ Competency List

Annexure 2_ Sample exam paper

Annexure 3_ model checklist for evaluation of seminar presentations

Annexure 4_ model checklist for evaluation of seminar presentations

Annexure 5_ model evaluation form for clinical presentation



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Annexure 1 (COMPETENCY LIST)

Following is our plan inclusive of teaching schedule, dynamic assessment, and documentation.
K/S/A refers to Knowledge/skill/affective domain and what is mentioned is the predominant domain to gain that competency.

Topics	Competency	Sub com pete ncy	K/S /A	Teaching method	Asse ssm ent	Remar ks	Si gn
Basic sciences and General Oncology	i. Etiology and epidemiology ii. General pathology of cancer iii. Genetics in oncology iv. Molecular oncology, v. Cancer therapeutics vi. Cancer prevention and screening. vii. Clinical trials in cancer viii. Imaging Techniques of Cancer Diagnosis & Management ix. Specialized techniques of Cancer Diagnosis and Management x. Vascular Access and Specialized Technique of drug delivery		K/S	1. Small group discussion 2. Seminars Journal clubs 3. Bed side teaching			
Clinical Oncology (Medical) & Stem Cell Transplantation	i. Cancer of Head and Neck ii. Cancer of Lung and Mediastinum iii. Cancer of Gastrointestinal Tract iv. Cancer of Genitourinary System v. Cancer of the Breast vi. Cancer of Endocrine System vii. Sarcomas of Soft Tissues & Bone viii. Benign & Malignant Mesotheliomas ix. Cancer of skin x. Malignant Melanoma xi. Neoplasms of CNS xii. Cancers of childhood xiii. Lymphomas xiv. Leukemias and other Hematological Malignancies Paraneoplastic Syndromes xv. Cancers of unknown primary site xvi. A.I.D.S – related malignancies xvii. Oncological Emergencies xviii. Treatment of Metastatic Cancers xix. Gynecological Cancers xx. High Dose Chemotherapy & Transplantation		K/S	1. Small group discussion 2. Seminars Journal clubs 3. Bed side teaching			
Recent advances, Palliative care, Oncologic emergencies,	i. Infections in cancer Patients and neutropenic patients. ii. Management of oncologic emergencies iii. Adverse effects of treatment		K/S	1. Small group discussion 2. Seminars Journal clubs			

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Supportive Care, Community oncology	iv. Supportive Care and Quality of Life v. Rehabilitation of Cancer Patient vi. Newer approaches in cancer treatment vii. Newer drugs in cancer treatment viii. Long term morbidities of cancer survivors ix. Community oncology x. Socio-economic aspects of oncology			3. Bed side teaching			
Practical skill acquirement	i. Clinical Exam skills & handling emergencies ii. Chemotherapy administration iii. Procedures (BM, LP, CVC placement etc.) iv. Transplant & related procedures v. Imaging & response assessment vi. Transfusion practices vii. Medical record maintenance and analysis viii. Biomedical statistics ix. Medical ethics		K/S /A	DOAP			



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Annexure 2 (SAMPLE EXAM PAPERS)SAMPLE MODEL PAPER - I**D.M (Medical Oncology)****Paper – I****Molecular oncology & Basic cancer therapeutics****Time: 3 Hours Max. Marks: 100 (10 X 10 =100 Marks)****Answer all the Questions. Diagrams and Tables wherever necessary****Write Short Notes:**

1. Mention the Hallmarks of Cancer and its relevant therapeutic targets.
2. Implication of Dietary factors on incidence of cancer.
3. Mechanism of action and drug targets for Immune checkpoint.
4. Role of Pharmacogenomics in Colorectal cancer.
5. Mention the mechanism of action, indications, and side effect profile of various available L-Asparaginase formulations.
6. Compare and Contrast the drugs Abiraterone and Enzalutamide in metastatic Prostate cancer.
7. A 30-year-old female diagnosed with breast cancer with one of her sisters having diagnosed with breast cancer at the age of 40 years. There are 2 other sisters aged 18 years and 25 years. How will you do genetic counseling? What are the relevant management options for her unaffected siblings?
8. Population based cancer registry with a special emphasis on Epidemiology of Lung cancer in India.
9. Indications, Principles and Complications of Radiofrequency ablation.
10. Write the salient features you need to consider while conducting a Meta Analysis.

MODEL PAPER-II**D.M (Medical Oncology)****Paper – II****Cancers of Childhood, Haemato Oncology and transplant****Time: 3 Hours Max. Marks: 100 (10 X 10 =100 Marks)**

1. Classify bone tumors and outline the management of osteosarcoma arising from the lower end of femur in a 12 yr old child.
2. Acute leukemia in Down's syndrome patients
3. Write briefly on the clinically relevant subtypes and molecular features of neuroblastoma.
4. Briefly describe the genomic characterization and targetable kinase activating lesions in Ph like acute lymphoblastic leukemia.
5. Critically analyze the role of allogeneic stem cell transplantation in the treatment of refractory and relapsed acute myeloid leukemia.
6. Write about the risk and types of cancer in immunosuppressed organ transplant recipients.
7. Briefly outline how you will approach selecting a donor for allogeneic stem cell transplant.
8. Algorithm for treatment of hairy cell leukemia and describe the outcome with the planned treatment.*
9. Role of PET-CT scan in management of multiple myeloma.
10. Discuss the diagnosis and management of a 4-year-old child with average risk Medulloblastoma.

MODEL PAPER-III**D.M (Medical Oncology)****Paper – III****Adult Solid tumors****Time: 3 Hours Max. Marks: 100 (10 X 10 =100 Marks)****Approved by the Academic Council at its 27th meeting held on 27 September 2022 Page | 19***Shalini**MOL9/20*

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1. Evidence for neoadjuvant chemotherapy in oral cavity cancers
2. BRCA-ness
3. Platinum and Triple negative breast cancers
4. Liquid biopsies
5. Evidence for Neoadjuvant chemotherapy in bladder cancer
6. Types of surgeries in rectal cancer with indications and benefits of each
7. Approach to a pituitary microadenoma
8. Intraperitoneal chemotherapy for ovarian cancer- successes and challenges
9. Local therapies for metastatic lung cancer – options and benefits
10. Write about the role of signal transduction inhibitors in the treatment of advanced melanoma

MODEL PAPER-IV**D.M (Medical Oncology)****Paper – IV****Recent advances, Palliative care, Oncologic emergencies, Supportive care****Time: 3 Hours Max. Marks: 100 10 X 10 =100 Marks**

1. How will you manage impending paraparesis from D8 metastases from triple negative breast carcinoma in a 30 yr old female?
2. Write about the indications for prophylaxis of tumor lysis syndrome and agents used.
3. Briefly describe the structure and mechanism of action of antibody drug conjugates (ADCs) and enumerate the recently reported ADCs in the treatment of acute leukemia.
4. Rules and regulations for morphine storage and usage.
5. WHO ladder approach for cancer pain management.
6. Policy of antifungal use for hematological malignancies at your center.
7. Immune Checkpoint Blockade in treatment of solid tumors.
8. American Society of Clinical Oncology (ASCO) statement on Human Papillomavirus Vaccination for Cancer Prevention
9. Chemotherapy induced peripheral neuropathy (CIPN): causative agents, types, and assessment
10. Write a brief concept proposal on any aspect of evaluation or management of nutritional status in patients planned for palliative chemotherapy



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Annexure 3 (MODEL CHECK-LIST FOR EVALUATION OF SEMINAR PRESENTATIONS)

Name of the Student:		Date:				
Name of the Faculty/Observer:						
Sl. No	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
	Whether relevant publications consulted					
	Whether cross references have been consulted					
	Completeness of Preparation					
	Clarity of Presentation					
	Understanding of subject					
	Ability to answer questions					
	Time scheduling					
	Appropriate use of Audio-Visual aids					
	Overall Performance					
	Any other observation					
	Total Score					



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ANNEXURE 4 (MODEL CHECK-LIST FOR EVALUATION OF JOURNAL CLUB PRESENTATIONS)

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



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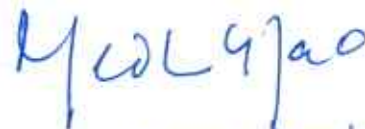
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ANNEXURE 5 (MODEL EVALUATION FORM FOR CLINICAL PRESENTATION)

Name of the Student:		Date:				
Name of the Faculty/Observer:						
Sl. No.	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
	Completeness of history					
	Whether all relevant points elicited					
	Clarity of Presentation					
	Logical order					
	Mentioned all positive and negative points of importance					
	Accuracy of general physical examination					
	Whether all physical signs elicited correctly					
	Whether any major signs missed or misinterpreted					
	Diagnosis: Whether it follows logically from history and findings					
	Investigations required Complete list					
	Relevant order					
	Interpretation of investigations					
	Ability to react to questioning					
	Ability to defend diagnosis					
	Ability to justify differential diagnosis					
	Others					
	Grand Total					


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Course Specifications DM Medical Oncology

2022 onwards

Course Code: DMC521A



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Course Specifications

Course Title	Molecular oncology & Basic cancer therapeutics
Course Code	DMC521A
Department	Medical Oncology
Faculty	Ramaiah Medical College

Course summary:

This course is designed in such a way that the student will master the basics of cancer biology, principles of oncology, application of sciences, various investigations and staging of cancer.

Course Outcomes:

CO1 : Candidate should have basic understanding about the etiopathogenesis of cancer.

CO2: Knowledge about the socio-economic aspects of cancer causation and preventive measures.

CO3: Knowledge about the basic molecular pathology in relation to cancer

Course Content:

Basic Science and General Oncology

Course content:

1. Etiology and epidemiology
2. General pathology of cancer
3. Genetic in oncology
4. Molecular oncology,
5. Cancer therapeutics
6. Cancer prevention and screening.
7. Clinical trials in cancer
8. Imaging Techniques of Cancer Diagnosis & Management
9. Specialized techniques of Cancer Diagnosis and Management
10. Vascular Access and Specialized Technique of drug delivery



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Course Mapping (CO-PO-PSO Mapping)

Course Code and name	Course Outcome	Program outcomes Pos			Program specific outcomes PSOs									
		PO 1	PO 2	PO 3	PS O 1	PS O 2	P S O 3	P S O 4	P S O 5	P S O 6	P S O 7	P S O 8	P S O 9	P S O 10
DMC521A Molecular oncology & Basic cancer therapeutics	CO 1	3	2	3	3	3	3	2	2	3	2	2	3	3
	CO 2	3	2	3	3	3	3	2	2	3	2	2	3	3
	CO 3	3	2	3	3	3	3	2	2	3	2	2	3	3

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution



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Course Specifications DM Medical Oncology

2022 onwards

Course Code: DMC522A



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Course Specifications

Course Title	Clinical Oncology of Childhood, and Haemato Oncology
Course Code	DMC522A
Department	Medical Oncology
Faculty	Ramaiah Medical College

Course Summary:

This course is designed in such a way that the student will master the evidence-based management of hematological and childhood cancers with a focus on bone marrow transplantation

Course Outcomes:

CO 1 : Basic understanding of the common pediatric malignancies in the community and the competency to manage them as per the present standards of care.

CO 2: Basic understanding of lymphoproliferative malignancies in the community and the competency to manage them as per the present standards of care.

CO 3: Basic understanding of Principles of bone marrow transplant and the competency to perform and manage patients who need Bone marrow transplant as per present standards of care.

CO 4: Basic understanding of leukaemia in the community and the competency to manage them as per the present standards of care.

Course Content:

Clinical Oncology of Childhood, Haemato Oncology & Principles of bone marrow transplant

- i. Cancers of childhood
- ii. Lymphomas
- iii. Leukemias and other Hematological Malignancies
- iv. High Dose Chemotherapy & Transplantation

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Course Mapping (CO-PO-PSO Mapping)

Course Code and name	Course Outcome	Program outcomes Pos			Program specific outcomes PSOs									
		P O 1	P O 2	P O 3	PS O 1	P S O 2	P S O 3	P S O 4	P S O 5	P S O 6	P S O 7	P S O 8	P S O 9	PS O 10
DMC522A Clinical Oncology of Childhood, Haemato Oncology	CO 1	3	2	3	3	3	3	2	2	3	2	2	3	3
	CO 2	3	2	3	3	3	3	2	2	3	2	2	3	3
	CO 3	3	2	3	3	3	3	2	2	3	2	2	3	3
	CO 4	3	2	3	3	3	3	2	2	3	2	2	3	3
3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution														



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Course Specifications DM Medical Oncology

2022 onwards

Course Code: DMC523A

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Course Specifications

Course Title	Clinical Oncology of Adult Solid tumors
Course Code	DMC523A
Department	Medical Oncology
Faculty	Ramaiah Medical College

Course Summary:

The course is designed in such a way that the student will master multidisciplinary management of Adult solid cancers in addition to palliative care.

Course Outcomes:

CO 1: Basic understanding of the common head and neck malignancies in the community and the competency to manage them as per the present standards of care.

CO 2: Basic understanding of the common thoracic malignancies in the community and the competency to manage them as per the present standards of care.

CO 3: Basic understanding of the common Gastrointestinal malignancies in the community and the competency to manage them as per the present standards of care.

CO 4: Basic understanding of the common head and neck malignancies in the community and the competency to manage them as per the present standards of care.

CO 5: Basic understanding of breast malignancies in the community and the competency to manage them as per the present standards of care.

CO 6: Basic understanding of Gynaecological malignancies in the community and the competency to manage them as per the present standards of care.

CO 7: Basic understanding of the common genitourinary malignancies in the community and the competency to manage them as per the present standards of care.

CO 8: Basic understanding of the common soft tissue malignancies in the community and the competency to manage them as per the present standards of care.

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Course Content:**Clinical Oncology of Adult Solid tumors**

- 1) Cancer of Head and Neck
- 2) Cancer of Lung and Mediastinum
- 3) Cancer of Gastrointestinal Tract
- 4) Cancer of Genitourinary System
- 5) Cancer of the Breast
- 6) Cancer of Endocrine System
- 7) Sarcomas of Soft Tissues & Bone
- 8) Benign & Malignant Mesotheliomas
- 9) Cancer of skin
- 10) Malignant Melanoma
- 11) Neoplasms of CNS
- 12) Gynecological Cancers
- 13) Treatment of Metastatic Cancers
- 14) Paraneoplastic Syndromes
- 15) Cancers of unknown primary site

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Course Mapping (CO-PO-PSO Mapping)

Course Code and name	Course Outcome	Program outcomes Pos			Program specific outcomes PSOs									
		PO 1	PO 2	PO 3	PS O 1	PSO 2	P S 3	P S 4	P S 5	P S 6	P S 7	P S 8	P S 9	P S 10
DMC523A Clinical Oncology of Adult Solid tumors	CO 1	3	2	3	3	3	3	2	2	3	2	2	3	3
	CO 2	3	2	3	3	3	3	2	2	3	2	2	3	3
	CO 3	3	2	3	3	3	3	2	2	3	2	2	3	3
	CO 4	3	2	3	3	3	3	2	2	3	2	2	3	3
	CO 5	3	2	3	3	3	3	2	2	3	2	2	3	3
	CO 6	3	2	3	3	3	3	2	2	3	2	2	3	3
	CO 7	3	2	3	3	3	3	2	2	3	2	2	3	3
	CO 8	3	2	3	3	3	3	2	2	3	2	2	3	3
3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution														



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Course Specifications DM Medical Oncology

2022 onwards

Course Code: DMC524A



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Course Specifications

Course Title	Recent advances, Palliative care, Oncologic emergencies, Supportive care.
Course Code	DMC524A
Department	Medical Oncology
Faculty	Ramaiah Medical College

Course Summary:

The course is designed in such a way that the student will master recent developments in oncology, research in oncology and cancer control programmes.

Course Outcomes:

CO 1: Competency to understand the structure of palliative care/hospice; and the ability to conceive and implement a palliative care unit.

CO 2: Competency to analyse clinical trials and derive conclusions to be put into clinical practice.

CO 3: Should be uptodate with the latest research in the field

CO 4: Knowledge of the newer chemotherapy/immunotherapy.

CO 5: Competency to understand the oncological emergencies in the practice and the competency to manage them as per the present standards of care

Course Content:

Recent advances, Palliative care, Oncologic emergencies, Supportive care.

1. Infections in cancer Patients and neutropenic patients
2. Management of oncologic emergencies
3. Adverse effects of treatment
4. Supportive Care and Quality of Life
5. Rehabilitation of Cancer Patient
6. Newer approaches in cancer treatment
7. Newer drugs in cancer treatment
8. Long term morbidities of cancer survivors
9. Community oncology
10. Socio-economic aspects of oncology



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**Programme Structure and Course Details
of
DM Medical Oncology Programme
2022 onwards**

Ramaiah Medical College



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Course Mapping (CO-PO-PSO Mapping)

Course Code and name	Course Outcome	Program outcomes Pos			Program specific outcomes PSOs									
		PO 1	PO 2	PO 3	PS O 1	P S 2	P S 3	P S 4	P S 5	PS O 6	P S 7	P S 8	P S 9	PS O 10
DMC524A Recent advances, Palliative care, Oncologic emergencies, Supportive care.	CO 1	3	2	3	3	3	3	2	2	3	2	2	3	3
	CO 2	3	2	3	3	3	3	2	2	3	2	2	3	3
	CO 3	3	2	3	3	3	3	2	2	3	2	2	3	3
	CO 4	3	2	3	3	3	3	2	2	3	2	2	3	3
	CO 5	3	2	3	3	3	3	2	2	3	2	2	3	3
3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution														



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Course Materials:

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I. RECOMMENDED BOOKS

Sl. No	TITLE	AUTHOR	YEAR
1	Concise Manual of Hematology and Oncology	Berger	2008
2	Clinical bone marrow and Blood Stem cell transplantation	Atkinson	2008
3	Hodgins's lymphoma	Hoppe	2007
4	The Chemotherapy Source Book	Perry	2007
5	Atlas of Clinical Hematology	H. Logger	2004
6	Diseases of the Breast	LWW	2010
7	Clinical Nutrition for oncology patients	J&B	2010
8	Principles and Practice of lung cancer	LWW	2010
9	Principles and Practice of Palliative care and supportive oncology	LWW	2007
10	Treatment and Management of Cancer in the elderly	Taylor	2006
11	Non Hodgins's lymphoma	LWW	2010
12	Principles and practice of gastrointestinal Oncology	LWW	2008
13	Cancer stage Manual	AJCC Springer	2010
14	Lecture Notes oncology	Bowler Blackwell	2010
15	Cancer : Principles and Practice of Oncology	Devita LWW	2011
16	Principle and Practice of Gynecologic Oncology	Barakat LWW	2009
17	Cancer : Principles and practice of Oncology, primer of the molecular Biology of Cancer	Devita LWW	2011
18	Hell and Frei Cancer Medicine	Horg PMPH	2010
19	Cancer chemotherapy and Biotherapy principles and practice	Chabner LWW	2011
20	Antibiotic and chemotherapy	Elsevier	2010
21	Comprehensive textBook of genitourinary oncology	LWW	2011

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22	Handbook of Cancer chemotherapy	LWW	2012
23	Differential Diagnosis in Orthopedic Oncology	LWW	2007
24	Principles and practice of Pediatric Oncology	LWW	2011
25	Text Book of Uncommon cancer	Wiley	2012
26	Manual of emergency medicine	LWW	2011
27	Contemporary Management of Multiple Myeloma	JP	2012
28	Clinical trials in oncology	Demos	2010
29	Principles of Molecular Diagnostics and personalities Cancer Medicine	LWW	2013

II. RECOMMENDED JOURNALS

1. Cancer Treatment Review
2. Journals of Pediatric Hematology/Oncology
3. Current Opinion in Oncology
4. The Indian Journal of Cancer
5. The Seminars in Oncology
6. Hematology/Oncology Clinics of North America
7. Medical and Pediatric Clinic of North America
8. Cancer
9. Current Problems in cancer
10. Journal of Clinical Oncology
11. Lancet
12. NEJM (New England Journal of Medicine)
13. Blood
14. British Journal of Hematology
15. Bone Marrow Transplantation
16. Seminars in Hematology
17. Annals of oncology
18. Lancet oncology
19. Nature Reviews Clinical Oncology
20. Nature Reviews Cancer
21. Clinical Cancer Research

Additional Reading

1. ICMR
2. National Cancer Grid/Registries
3. Up To Date



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