COURSE STRUCTURE AND SYLLABI

Certificate School of Paramedics and Allied HealthSciences

2024-25 Batch

Centurion UNIVERSITY

Shaping Lives...
Empowering Communities...

SCHOOL OF PARAMEDICS AND ALLIED HEALTH SCIENCES
CENTURION UNIVERSITY OF TECHNOLOGY & MANAGEMENT
Odisha-752050, India

Web Site: - www.cutm.ac.in

CENTURION UNIVERSITY OF TECHNOLOGY AND MANAGEMENT, ODISHA

CERTIFICATE

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This is to certify that the syllabus of Certificate Programmes of the School of Paramedics and Allied Health Sciences is approved in the 14th Academic CouncilMeeting held on 22nd November 2024.

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School of Paramedics and Allied Health Sciences
CUTM, Odisha

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SCHOOL OF PARAMEDICS & ALLIED HEALTH SCIENCES

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Shaping Lives...
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CERTIFICATE OPTHALMIC ASSISTANT (COA)

(2 YEARS)

2024

SYLLABUS

PREFACE:

Certified Ophthalmic Assistant aid in providing comprehensive care to patients. They often interact directly with patients, assisting in pre-screening, taking medical histories, and preparing them for examinations or procedures. Their supportive role helps patients feel more comfortable and informed during their eye care journey. Ophthalmic assistants are trained to assist ophthalmologists during various eye examinations, surgeries, and treatments.

Their expertise in handling equipment, sterilization procedures, and patient preparation ensures the smooth execution of procedures, contributing to the overall efficiency of the practice. These professionals are skilled in performing diagnostic tests, such as measuring intraocular pressure, visual acuity testing, and administering eye drops for dilation. Their accurate and precise execution of these tests assists ophthalmologists in diagnosing eye conditions and diseases.

After the completion of the course, the trainees will be able to

- History taking from all patients
- Measure visual acuity of patients of all ages
- Read and understand ophthalmic medical records
- Perform examination of the various structures of the eye
- Do objective refraction and subjective refraction
- Assessment of binocular single vision
- Assess muscle balance
- Squint evaluation
- Able to use various diagnostic ophthalmic instruments
- Interpret ophthalmic prescriptions
- Counseling for spectacles
- Check order form and prescription for spectacles
- Check the power of lens
- Make face measurements using optician's ruler
- Do quality checking of spectacles
- Check frame alignment
- Optical dispensing and trouble shooting

- Do clinical assessment of low vision
- Provide patients with advice on low vision devices and vision enhancementprocedures
- Able to fit and dispense contact lenses

Programme: CERTIFIED OPHTHALMIC ASSISTANT (COA)

Duration: Two Year (Including 3 months internship)

Eligibility: Intermediate Science with Physics, Chemistry & Biology/ Mathematics, or equivalent degree

Examination: Examination rules will be as per guideline of CUTM Examination hand book.

I**nternship**

After completion of 2 years of academic curriculum, the candidate will have to undergo internship for a period of 3 calendar months in a hospital (100 bedded) equipped with modern laboratory facility, which fulfills the norms decided by the University.

Project Work

Each student will carry out project work under the supervision of a faculty member (as a primary guide). The progress of project work will be monitored regularlyby the Guide.

Sl. No.	CODE	SUBJECT	SUBJECT TYPE (T+P+Pj)	CREDITS
1	CUTM2981	Paper I (First Year)	30+20+10	60
2	CUTM2982	Paper II (First Year)	30+30+20	80
3	CUTM2984	Paper I (Second Year)	40+40+0	80
4	CUTM2985	Paper II (Second Year)	40+40+0	80

FIRST YEAR

PAPER 1

Subject Name	Code	Type	T + P + Pj	Credits
Paper I	CUTM2981	Theory+Practice+ Project	30+20+10	60

Course Objective:

The anatomy of the different parts of the eye and the diseases affecting them. The physiological activities of the different parts of the eye and how to assess them. Identify the different ocular medicines and understand their uses and method of application. Know the various microorganisms causing infection and the types of infection caused. The different infection control methods and principles of asepsis sterilization.

Course Outcome:

After complication of this course the students will be able to:

CO 1: Identify and recall the structures of the eye, physiological processes, Ocular medications, common ocular pathogens, their characteristics, and associated ocular infections.

CO 2: Explain the relationships between different ocular structures and their functions**.**

CO 3: Apply knowledge of ocular anatomy to describe the impact of specific eye conditions on various eye structures.

CO 4: Compare and contrast the mechanisms of action of different classes of ocular drugs.

CO 5: Design a protocol for the safe and effective use of ocular medications in a clinical setting.

Course Outline

Module – I

Ocular anatomy I

Gross anatomy of the eyeball – the conjunctiva, the cornea, the sclera, the limbus – chambers of eye - angle of

the anterior chamber – the iris and pupil – the ciliary body – the choroid – the crystalline lens.

Module- II

Ocular anatomy II

The retina – Vitreous - Optic Nerve – Visual pathway - the extra ocular muscles – the eyelids – the lacrimal apparatus – the bony orbit – blood supply of the eye – nerve supply of the eye

Module III

Ocular physiology:

The cornea – the lens – tears –the Schirmer's test- the aqueous humor – measurement of IOP – assessment of visual acuity - visual perceptions –colour vision – the visual pathway – pupillary pathways and reflexes -accommodation - ocular movements - binocular single vision

Module IV:

Ocular pharmacology Specific objectives:

Drug delivery system – astringents and decongestants – antibiotics – antivirals – antifungal – autonomic drugs – mydriatics and cycloplegics – local anesthetics – ocular hypotensives – corticosteroids – non steroidal anti- inflammatory drugs – viscoelastic substances – ocular reactions to systemic medications –preservatives in eye drops

Unit V:

Microbiology & Clinical pathology Specific objectives:

Bacteria- classification of bacteria- Gram positive and negative cocci- Gram positive and negative bacilli –fungi – viruses – parasites - smear preparation – gram- staining procedure – sterilization, disinfection and antisepsis - dry heat – moist heat – autoclave- gas sterilization - chemical sterilization – important principles of asepsis. Blood and its components, Estimation of blood sugar/ Albumin, Examination of Urine.

Practice:

- Eye dissection of bull's eye
- Slit lamp examination

Suggested Reading:

AK Khurana, Indu Khurana: Anatomy and Physiology of Eye, Second edition, CBS Publishers, New Delhi, 2006

Paper II

Subject Name	Code	Type	T + P + Pj	Credits
Paper II	CUTM 2982	Theory+Practice+ Project	30+30+20	80

Course Objective:

The objectives aim to equip learners with a broad understanding of ocular diseases, procedural skills, optics principles, community engagement, and efficient medical records management, fostering a holistic approach to eye care within ethical and professional frameworks.

Course Outcome:

CO 1: Evaluate and differentiate various ocular diseases and their manifestations, applying critical thinking to determine appropriate outpatient and in-patient procedures for diagnosis and treatment, while considering the principles of visual optics and refractive errors.

CO 2: Demonstrate the application of knowledge in performing outpatient and in-patient procedures related to ocular diseases, utilizing visual optics principles to address refractive errors and facilitate accurate diagnoses and treatments**.**

CO 3: Comprehend the importance of community ophthalmology in promoting eye health, understanding its role in preventive care, community outreach programs, and public health initiatives aimed at reducing visual impairments and diseases**.**

CO 4: Develop efficient systems for maintaining accurate medical records related to ocular diseases, outpatient and in-patient procedures, ensuring proper documentation and compliance with regulatory standards in the field of ophthalmology

CO 5: Assess the impact of different treatment modalities, both outpatient and in-patient, on patient

outcomes and community eye health, utilizing medical records and community ophthalmology initiatives to evaluate the efficacy and efficiency of interventions.

Module I:

Diseases of the eyelid, conjunctiva, and diseases of the lacrimal apparatus

Lids: Entropion– ectropion – trichiasis – ptosis – blepharitis –hordeolum – chalazion – important tumors

Lacrimal apparatus: Diseases of the lacrimal gland – the dry eye syndrome – watering from the eye – dacryocystitis

Conjunctiva: Different types of conjunctivitis – trachoma – Pterygium – Pingaecula – Bitot's spots

Module II:

Cornea :

Inflammation of the cornea – bacterial keratitis – mycotic keratitis – fungal keratitis - viral keratitis – peripheral keratitis – interstitial keratitis – corneal dystrophies- scleritis–Episcleritis

Lens: Cataract – subluxation of the lens – dislocation of the lens – Management of cataract – Intraocular lenses – Posterior capsular opacification

Module III

Outpatient Procedures I

Orientation to out-patient services: patient reception – instrument, equipment and supplies - communication with patients – departmental structure and function

Fundamentals of outpatient services: History taking – external examination of the eye – visual acuity– measuring intraocular pressure – evaluation of the patency of lacrimal drainage apparatus

Management strategies in out-patient services: public relations- Patient care and patient satisfaction – patient counselling

Preoperative Ophthalmic Care: Preoperative evaluation – preoperative preparation and instructions – day care surgery procedure- biometry

Postoperative ophthalmic care: Preparation of dressing – identification and management of post operative complications –post operative patient counselling

Module IV:

Visual Optics

Light and electromagnetic spectrum – basic optical principles of human eye - properties of light – regular and diffuse reflection- interference- diffraction – laws of reflection and refraction,- refractive index - refractive index of different media – variation of refractive index with wavelength - spherical lenses – different types - identification – refraction of light through a lens - power of a lens – formation of images using a lens (convex and concave) – characteristics of images – real, virtual – magnification- image formation by a prism – power of prism- types of prisms and their uses

Module V.

Refractive errors and their management

Myopia – hypermetropia – astigmatism – presbyopia – anisometropia – aniseikonia – amblyopia - asthenopia – anomalies of accommodation and convergence

Module VI

Community ophthalmology and medical records

Blindness – categories of visual impairment –Magnitude – Various diseases causing blindness - methods of intervention –nutritional blindness - National program for control of blindness - vision 2020 – the right to sight initiative – human resource development – role of camps in blindness prevention- role of eye banks in blindness prevention.

Planning and organisation of School sight programme and community eye care programmes

Module VII Medical records:

Introduction to Medical Records; - use and value of for medical record - content of medical records- out patient record, inpatient admission record- filing methods– preservation of medical records- medical record retention policy

Module VIII Communication skills

Essentials of good communication– barriers of communication – overcoming communication barriers – principles of communication -7cs- types of communication

Oral communication

Importance of speaking efficiently –voice culture - preparation of speech - secrets of good delivery – audience psychology – presentation skills –non-verbal communication – interview techniques –

skill in arguing

Spoken English & reading

The phonetic symbols- using the dictionary for learning to pronounce – explaining clearly, defining and giving reasons, explaining differences – efficient and fast reading – reading purposefully – understanding what is read – drawing conclusion – improving speed – improving concentration Written communication

Rules for effective writing – précis writing - letter writing – writing curriculum vitae – placing an order – preparing a good report – note taking – reporting what happened from notes

Practice:

- Slit lamp Examination
- Dry Eye evaluation

Reference book:

- Samar K. Basak, Essentials of ophthalmology, Current Books International,5th edition
- A.K. Khurana, Theory and practice of Optics and refraction, Elsevier, 2nd edition
- A text book on optics and refraction, Aravind eye care system

SECOND YEAR

Paper 1

Subject Name	Code	Type	T + P + Pj	Credits
Paper I	CUTM2983	Theory + Practice	40+40+0	80

Course Objectives

The objective of the course is to master the knowledge of refractive techniques with application of contact lens and low vision. Acquire the knowledge of new developed technologies and applicationof them professionally.

Course Outcome:

At the end of the course the student will be able to,

CO 1: Assess and differentiate various refractive techniques, contact lens modalities, low vision devices, and optical dispensing methods, analyzing their respective applications, benefits, and limitations for different ocular conditions and patient needs.

CO 2: Develop personalized solutions for individuals with visual impairments by integrating knowledge of refractive techniques, contact lenses, low vision devices, and optical dispensing, tailoring comprehensive vision care plans that address unique patient requirements.

CO 3: Apply advanced techniques in refractive correction, contact lens fitting, selection of low vision aids, and optical dispensing, ensuring precision and customization according to patients' refractive errors, ocular conditions, and visual needs.

CO 4: Critically evaluate the effectiveness of various refractive techniques, contact lens designs, low vision devices, and optical dispensing strategies in meeting patient visual needs, considering factors such as comfort, visual acuity, and overall satisfaction.

CO 5: Explain the principles underlying refractive correction methods, contact lens designs, low vision aids, and optical dispensing procedures, demonstrating a deep understanding of the technical aspects and theoretical foundations of these vision correction modalities.

Course Outline:

Module I:

Refractive techniques- I

Visual acuity – different charts - Objective refraction – retinoscope – plane mirror and streak - their description and use -use of retinoscope in refraction - in myopic, hyperopic, astigmatic eyes - explanation of ‘ with ‘ and ‘ against' motions in retinoscopy - plane and concave mirror - spherical aberration- chromatic aberration- cylindrical lens – power - crossed cylinder – spherical equivalent – notation of spherical lens- sphero cylindrical lens – strums conoid

Module II

Refractive techniques II

Subjective refraction –cycloplegic refraction – PMT – duochrome – JCC – presbyopia correction - prescription of glasses - writing down prescription -spherical equivalent - transposition - specification of axis – determination of muscle balance – vision testing in children -Keratometry - A scan –- visual fields- corneal topography - intraocular lenses – different types

Module III:

Contact lens

Indications - advantages over spectacles - optics of contact lenses – corneal contact lens – fitting procedures

– contact lens related terminologies –indications and contraindications- maintenance.

Assessment of soft contact lens fitting - determination of contact lens power -contact lens solutions - complications of using CL -Toric, cosmetic, and therapeutic lenses. Contact lens care – Instructions to patients

Module IV:

Low Vision Aids

Definition of blindness and low vision- legal blindness-low vision devices and aids- types of charts- principle and use - optical, non-optical low vision aids and their principles- artificial eye- special techniques for problems of low vision – rehabilitation measures

Module V:

Optical

Lens types: single vision lens. Bi-focal lenses, multifocal -trifocal, progressive lenses- lens materials-glass, plastic, polycarbonate- lens surfacing - ophthalmic lens coating,- absorptive lenses,-impact resistant lenses- lenses for the aphakic patient- aspheric lenses -inspection of lens quality - spectacle frame: materials (plastics, metals) ,types -frame measurements- the boxing system- the datum system -facial measurement: the IPD,-visual axes,-measuring heights: Single vision, bi -focal, progressive- trouble

Practice:

- Subjective Refraction
- Objective refraction
- Contact lens practice
- Low vision practice

Reference Book:

- A.K. Khurana, Theory and practice of Optics and refraction, Elsevier, 2nd edition
- A text book on optics and refraction, Aravind eye care system

Paper II

Subject Name	Code	Type	T + P + Pj	Credits
Paper II	CUTM2984	Theory + Practice	40+40+0	80

Course Objective:

These objectives aim to cover a wide spectrum of knowledge, skills, and competencies required for professionals in the field of optometry or ophthalmology dealing with ocular diseases, instruments,procedures, investigations, surgeries, and emergency care.

The various ocular diseases and disorder, understanding the various refractive errors Various treatment modalities are learnt. The basics of medical records and community ophthalmology.

Course Outcome:

At the end of the course the student will be able to,

CO 1: Demonstrate the ability to differentiate between various ocular diseases, utilizing diagnostic techniques and clinical assessments to identify specific pathologies and their implications for treatment.

CO 2: Critically evaluate the selection and application of optical instruments in diagnosing and managing ocular conditions, weighing their effectiveness and limitations in different

clinical scenarios.

CO 3; Develop comprehensive outpatient protocols integrating procedures, investigations, and surgical interventions for ocular disorders, considering patient-specific needs and ethical considerations.

CO 4: Apply theoretical knowledge and practical skills to perform outpatient investigations, refractive surgeries, and emergency interventions, ensuring precision and safety in clinical settings.

CO 5: Explain the mechanisms and immediate management strategies for ocular injuries and emergencies, demonstrating a deep comprehension of emergency protocols and their relevance in safeguarding ocular health.

Course Outline:

Module I:

Diseases of the uvea and various glaucoma, ocular motility and strabismus Specific objectives: Uvea: Anterior uveitis – parsplanitis – posterior uveitis – AIDS – endophthalmitis, Panophthalmitis Glaucoma: Intraocular pressure – congenital glaucoma – primary angle closure glaucoma – primary open-angle glaucoma – secondary glaucoma

Ocular motility and strabismus

Module II:

Diseases of the retina, vitreous & optic nerve, Intraocular tumours, diseases of the orbit

Retina: Vascular disorders – age-related macular degeneration – retinitis pigmentosa – retinal detachment – hypertensive retinopathy – diabetic retinopathy

Vitreous: vitreous opacities – vitreous hemorrhage – vitrectomy

Optic nerve: Developmental abnormalities – optic neuritis – Papilledema – optic atrophy

Tumours: Leukocoria in children – retinoblastoma- melanoma of the choroid Orbit: Proptosis - orbital inflammation – thyroid ophthalmopathy – optic nerve tumours – Injuries

Module III:

Optical instruments

Snellen's Charts - Distant vision charts, near vision chart - Lensometer – Retinoscope-

Autorefractometer -Slit lamp biomicroscope–Ophthalmoscope (direct & indirect)-Keratometry -Biometry Instruments- Prism bar - RAF ruler

Module IV:

Outpatient Procedures II

Out-patient services

Laser in ophthalmology – fundus fluorescein angiography - ultrasonography in ophthalmology – ultrasound bio microscopy - corneal topography – optical coherence tomography Assisting in special procedures: corneal scraping – fundus fluorescein angiography – ultrasonography –corneal topography - assisting in incision and drainage of abscesses - assisting infitting a prosthetic eye – laser capsulotomy – NdYag peripheral iridotomy

Module V:

OP investigations &Refractive surgeries

Laser in ophthalmology – fundus fluorescein angiography - ultrasonography in ophthalmology – ultrasound bio microscopy - corneal topography – optical coherence tomography - – laser capsulotomy – NdYag peripheral iridotomy (only principle and procedure)- Preoperative evaluation of the patient – refractive surgeries for myopia, hypermetropia, astigmatism (only principle and procedure)

Module - VI

Ocular injuries and ocular emergencies

Ocular injuries: Chemical injuries (Acid, Alkali) -Penetrating injury / perforating injury,- foreignbody - blunt injuries-

Ocular emergencies: Corneal emergencies - postoperative emergencies – Endophthalmitis- retinal emergencies – traumatic optic neuropathy-acute congestive glaucoma – immediate treatment measures-

Practice:

- Lensometer
- Autorefractometer

- Ophthalmoscope (direct & indirect)
- Keratometry
- RAF rule
- Fundus fluorescein angiography

Reference Book:

- A text book on optics and refraction, Aravind eye care system
- Optical sales and dispensing – a practical guide, Aravind
- Ophthalmic Assistants (Series) – Prof L.P. Agarwal
- Ophthalmic Assistants – Prof P.K. Mukherjee

CENTURION UNIVERSITY OF TECHNOLOGY AND MANAGEMENT, ODISHA

SCHOOL OF PARAMEDICS & ALLIED HEALTH SCIENCES

CERTIFIED OPTHALMIC SURGICAL ASSISTANT (CSA)

(TWO YEARS PROGRAMME)

2024

SYLLABUS

CERTIFIED OPTHALMIC SURGICAL ASSISTANT (COSA)

Preface: This comprehensive program is designed to equip aspiring ophthalmic professionals with the knowledge, skills, and competencies necessary to excel in the field of ophthalmic surgery. As a Certified Ophthalmic Surgical Assistant, you will play a crucial role in supporting ophthalmic surgeons, ensuring optimal patient care, and contributing to the success of eye surgeries.

Course Overview:

The CSA course is structured to provide a balanced blend of theoretical knowledge and practical hands-on experience. Participants will delve into the intricacies of ophthalmic surgical procedures, gain proficiency in surgical assisting techniques, and develop a deep understanding of the ethical and professional standards inherent in the field.

Key Features:

Comprehensive Curriculum: Our curriculum is carefully crafted to cover a wide spectrum of topics, including anatomy and physiology of the eye, ophthalmic diseases, preoperative and postoperativecare, surgical instrumentation, and sterile technique.

Hands-On Training: Practical sessions are an integral part of the course. Participants will have the opportunity to apply theoretical concepts in simulated surgical environments, enhancing their skillsunder the guidance of experienced instructors.

Certification:

Successful completion of the CSA course, including both theoretical and practical components, will qualify participants for certification as Ophthalmic Surgical Assistants. This certification is a testament to your dedication to excellence in ophthalmic surgical assistance.

Programme: CERTIFIED OPTHALMIC SURGICAL ASSISTANT (COSA)

Duration: Two Year

Eligibility: Intermediate degree with Science in Physics, Chemistry & Biology/

Mathematics, or equivalent degree.

Examination: Examination rules will be as per guideline of CUTM Examination hand book.

Internship:

After completion of 2 years of academic curriculum, the candidate will have to undergo internship for a period of 3 calendar months in a hospital (100 bedded) equipped with modern laboratory facility, which fulfills the norms decided by the University.

BASKET I

School Core Courses

Sl. No.	CODE	SUBJECT	SUBJECT TYPE (T+P+Pj)	CREDITS
1	CUTM2985	Paper I (First Year)	30+20+10	60
2	CUTM2986	Paper II (First Year)	30+30+20	80
3	CUTM2987	Paper I (Second Year)	40+40+0	80
4	CUTM2988	Paper II (Second Year)	40+40+0	80

PAPER I (FIRST YEAR)

Subject Name	Code	Type	T + P + Pj	Credits
Paper I (First Year)	CUTM2985	Theory+ Practice+Project	30+20+10	60

Course Objective:

- To have a knowledge of ocular anatomy and physiology.
- To know about the ophthalmic medications and the actions and adverse effects of drugs.
- To discuss the characteristics of microorganisms including bacterial, viral and fungal infectionsand the measures to control the spread of micro organisms

Course Outcome:

After complication of this course the students will be able to,

CO1: Identify and recall the structures of the eye, physiological processes, Ocular medications, common ocular pathogens, their characteristics, and associated ocular infections.

CO2: Explain the relationships between different ocular structures and their functions**.**

CO3: Apply knowledge of ocular anatomy to describe the impact of specific eye conditions on various eye structures.

CO4: Compare and contrast the mechanisms of action of different classes of ocular drugs.

CO5: Design a protocol for the safe and effective use of ocular medications in a clinical setting.

Course Outline

Module I:

Ocular anatomy I: Gross anatomy of the eyeball – the bony orbit- the conjunctiva, —- the extra ocular muscles – the eyelids – the lacrimal apparatus — blood supply of the eye – nerve supply of the eye.

Module II:

Ocular anatomy II: The sclera -the cornea- the limbus – chambers of the eye - angle of the anterior chamber – the iris and pupil- the crystalline lens - Ciliary body – the choroid -Vitreous - the retina - Optic Nerve – Visual pathway

Module III:

Ocular Physiology: General Physiology of eye - visual perceptions -assessment of visual acuity- The cornea – the lens – tears –the Schirmer's test- the aqueous humor – measurement of IOP –-–colour vision – the visual pathway – pupillary pathways and reflexes -accommodation - ocular movements - binocular single vision

Module IV:

Ocular Pharmacology: Drug delivery system – astringents and decongestants – antibiotics – antivirals – antifungals – autonomic drugs – mydriatics and cycloplegics – local anesthetics – ocular hypotensives – corticosteroids – non steroidal anti- inflammatory drugs – viscoelastic substances – ocular reactions to systemic medications –preservatives in eye drops – systemic drugs used in Ophthalmology.

Module V:

Occular Microbiology & Clinical pathology: Bacteria- classification of bacteria- Gram positive and negative cocci- Gram positive and negative bacilli –fungi – viruses – parasites - smear preparation – gram- staining procedure – sterilization, disinfection and antisepsis - dry heat – moist heat – autoclave - gas sterilization - chemical sterilization – important principles of asepsis. Blood and its components,Estimation of blood sugar/ Albumin, Examination of Urine

Suggested Reading

1. Samar K. Basak, Essentials of ophthalmology , Current Books International,5th edition
2. A. Samuel Gnanadoss, Ophthalmic Nursing, JAYPEE,
3. Handbook for clinical ophthalmic assistants,Aravind eye care system
4. Hand book for surgical ophthalmic assistant, Aravind eye care system
5. Introduction to basics in ophthalmic assisting, Aravind eye care system
6. Ophthalmic Nursing Manual, Aravind eye care system

PAPER II (FIRST YEAR)

Subject Name	Code	Type	T + P + Pj	Credits
Paper II (First Year)	CUTM2986	Theory+ Practice+Project	30+30+20	80

Course Objective:

- To discuss the various diseases and disorders of the lid and conjunctiva
- To know about the signs and symptoms of various diseases and disorders of the cornea andlens
- To know the basic functions of outpatient department and the preliminary examinations donein OPD
- To discuss pre and post-operative care given to the respective patients

Course Outcome:

After complication of this course the students will be able to,

CO1: Demonstrate a comprehensive understanding of various diseases affecting the eyelid, conjunctiva, and lacrimal apparatus.

CO2: Exhibit a thorough knowledge of diseases affecting the cornea and lens

CO3: Acquire the essential skills for providing outpatient services

CO4: Demonstrate competence in in-patient services

CO5: comprehend the broader aspects of community ophthalmology

Course Outline

Module I:

Diseases of the eyelid, conjunctiva and diseases of the lacrimal apparatus: Lids: Entropion– ectropion – trichiasis – ptosis – blepharitis –hordeolum – chalazion – important tumors **Lacrimal**

apparatus: Diseases of the lacrimal gland – the dry eye syndrome – watering from the eye – dacryocystitis **Conjunctiva**: Different types of conjunctivitis – trachoma – Pterygium – Pingaecula – Bitot's spots

Module II:

Diseases of the cornea and lens: Cornea : Inflammation of the cornea – bacterial keratitis – mycotic keratitis – fungal keratitis - viral keratitis – peripheral keratitis – interstitial keratitis – corneal dystrophies- scleritis–Episcleritis **Lens**: Cataract – subluxation of the lens – dislocation of the lens – Management of cataract – Intraocular lenses – Posterior capsular opacification

Module III:

Out-patient procedures I:

Orientation to out-patient services: patient reception – instrument, equipment and supplies - communication with patients – departmental structure and function **Fundamentals of outpatient services:** History taking – external examination of the eye –visual acuity– measuring intraocular pressure – evaluation of the patency of lacrimal drainage apparatus **Management strategies in out-patient services:** public relations- Patient care and patient satisfaction – patient counselling

Module IV:

In-patient procedures I: In patient services: Differences between eye-ward and general ward – location and working environment in ward – instruments and equipments in ward 8

Admission and Discharge of Patients: Admission procedure- arrangement of patient's room, bed making, housekeeping- discharge procedure **Preoperative Ophthalmic Care:** Preoperative evaluation preoperative preparation and instructions – day care surgery procedure- biometry- Postoperative ophthalmic care: Preparation of dressing – assisting doctors in ward rounds –identification and management of post-operative complications – night duty- post operative patient counselling

Module V:

Community ophthalmology and medical records: Blindness – categories of visual impairment – Magnitude – Various diseases causing blindness - methods of intervention –nutritional blindness - National program for control of blindness - vision 2020 – the right to sight initiative – human resource development – role of camps in blindness prevention- role of eye banks in blindness prevention. Planning and organisation of School sight programme and community eye care programmes

Medical records: Introduction to Medical Records; - use and value of for medical record - content of

medical records-out patient record, inpatient admission record- filing methods– preservation of medical records- medical record retention policy

Suggested Reading

1. Samar K. Basak, Essentials of ophthalmology , Current Books International,5th edition
2. A. Samuel Gnanadoss, Ophthalmic Nursing, JAYPEE,
3. Handbook for clinical ophthalmic assistants,Aravind eye care system
4. Hand book for surgical ophthalmic assistant, Aravind eye care system
5. Introduction to basics in ophthalmic assisting, Aravind eye care system
6. Ophthalmic Nursing Manual, Aravind eye care system

PAPER I (SECOND YEAR)

Subject Name	Code	Type	T + P + Pj	Credits
Paper I (SecondYear)	CUTM2987	Theory+ Practice	40+40+0	80

Course Objective:

- Knowledge of the various ocular diseases and disorders affecting the posterior segment,glaucoma, visual pathway, orbit and the various nerves supplying the ocular structures.
- To know about the signs and symptoms of various ocular diseases.
- To know the various treatment modalities
- To understand management of inpatients and related problems

Course Outcome:

After complication of this course the students will be able to,

CO1: Demonstrate a comprehensive understanding of diseases affecting the uvea, including anteriorand posterior uveitis, as well as glaucomas

CO2: Exhibit proficiency in diagnosing and treating diseases of the retina and vitreous.

CO3: Expertise in neuro-ophthalmology, intraocular tumors, and diseases of the orbit.
CO4: Master basic nursing care principles in the context of ophthalmic in-patient services.
CO5: Proficient in preparing dressings, assisting doctors in ward rounds, and identifying and managing postoperative complications

Course Outline

Module I:

Diseases of the uvea and various glaucomas: Uvea: Anterior uveitis – parsplanitis – posterior uveitis

– AIDS – endophthalmitis- panophthalmitis **Glaucoma**: Intraocular pressure – congenital glaucoma –

primary angle closure glaucoma – primary open-angle glaucoma – lens induced glaucomas – secondary glaucomas

Module II:

Diseases of retina & vitreous: Retina: Vascular disorders – age-related macular degeneration – retinitis pigmentosa – retinal detachment – hypertensive retinopathy – diabetic retinopathy - treatment **Vitreous:** vitreous opacities – vitreous haemorrhage – vitrectomy

Module III:

Neuro ophthalmology, intraocular tumors, diseases of the orbit: Tumours: Leucocoria in children

- retinoblastoma- melanoma of the choroid **Orbit: P**roptosis - orbital inflammation – thyroid ophthalmopathy – optic nerve tumours - Injuries **Neuro ophthalmology**: optic neuritis – Papilloedema

– optic atrophy – common diseases affecting chiasma – visual pathway - Occipital cortex – common diseases affecting oculomotor nerve, Trochlear nerve, Trigeminal nerve, Abducent nerve and facialnerve

Module IV:

Basic Nursing Care: In patient services: Differences between eye-ward and general ward –

location and working environment in ward – instruments and equipments in ward. **Needs of patients and principles of nursing care**: Basic nursing principles- safe and healthy environment - care of equipment

— personal care of the patient – nutrition needs of the patient – assessment of general condition –

recording of pulse – Blood pressure – Respiration rate – ECG - height – weight etc.

Module V:

In-patient Procedures II: Postoperative ophthalmic nursing care: Preparation of dressing – assisting doctors in ward rounds – Identification and management of postoperative complications – night duty

– postoperative patient counselling

Ophthalmic sub specialty nursing care – glaucoma – retina, cornea- orbit – paediatric cases

Managing systemic conditions: asthma- diabetes mellitus - hypertension – Ischaemic cardiac ailments

– shock **Management of systemic emergencies**: Equipments and structure of ICU - acute myocardial infarction – cardiac arrest – Status asthmaticus - hypoglycemia – seizures – acute pulmonary edema –shock

SUGGESTED READING

1. Samar K. Basak, Essentials of ophthalmology , Current Books International,5th edition
2. A. Samuel Gnanadoss, Ophthalmic Nursing, JAYPEE,
3. Handbook for clinical ophthalmic assistants,Aravind eye care system
4. Hand book for surgical ophthalmic assistant, Aravind eye care system
5. Introduction to basics in ophthalmic assisting, Aravind eye care system
6. Ophthalmic Nursing Manual, Aravind eye care system

PAPER II (SECOND YEAR)

Subject Name	Code	Type	T + P + Pj	Credits
Paper II (SecondYear)	CUTM2988	Theory+ Practice	40+40+0	80

Course Objective:

- To understand the various ocular surgeries and related complications
- To understand the various OP procedures
- To learn how to assist the surgeons in the operating room and in OP procedures.

Course Outcome:

After complication of this course the students will be able to,

CO1: Demonstrate mastery in operation theatre protocols

CO2: Exhibit competence in maintaining surgical instruments and equipment, including electrical connections, microscopes, and phaco machines.

CO3: Expertise in assisting cataract surgery, including pre-operative evaluation, understanding surgical steps, and handling instruments.

CO4: Master in outpatient services and special procedures.

CO5: Proficient in assess and provide immediate in managing ocular injuries and emergencies.

Course Outline

Module I:

Surgical procedures I: Orientation to Operation Theatre: To understand – orientation to septic operation theatre location– dress code – operation theatre discipline- aseptic theatre **Disinfection and sterilization procedures :** instrument cleaning and packing for sterilization– methods of sterilization – sterilization of phaco emulsification instruments – maintenance of sterility – control of air-borne infection – decontamination process –scrubbing, gowning and gloving methods – operation theatre cleaning – infection control: sources of infection- infection - control programme–segregation and methods of waste disposal– bio-waste management

Module II:

Surgical procedures II: Instrument and equipment maintenance: Electrical connections – microscopes – phaco machine – surgical instruments

Role of Scrub Nurse: Setting up of trolley for various surgeries,-Identification of the Instruments and its use -draping the patient -handling of instruments, management of intra operative complication, Anterior vitrectomy, management of infected cases, Instruments for different surgeries **Ocular anesthesia** – drugs, purpose, procedure, contra indications-complications of retro bulbar anesthesia – facial nerve block - topical anesthesia,-general emergency in operation theatre **General anesthesia** - Introduction about general anesthesia -purpose of general anesthesia, indication of general anesthesia , pre-operative preparation- history ,investigation- equipment used for general anesthesia-patient counseling, pre-operative case sheet checking -assisting doctors **Basic knowledge of sutures, needles and lenses**: - sutures and needles – intraocular lenses

Module III:

Surgical procedures III: Role of ophthalmic assistant in cataract surgery: Cataract – pre-operative evaluation – types of surgery – steps of surgery – assisting - instrument s required – cataract surgery complications **Role of ophthalmic assistant in assisting specialty surgeries**: Lacrimal sac surgeries – (DCR, DCT) – Glaucoma surgeries, Trabeculectomy, Trabeculectomy with ECCE), Keratoplasty,Orbital surgeries – assisting

Module IV:

Outpatient Procedures II: Out-patient services Laser in ophthalmology – fundus fluorescein angiography - ultrasonography in ophthalmology – ultrasound bio microscopy - corneal topography – optical coherence tomography **Assisting in special procedures:** corneal scraping – fundus fluorescein angiography – ultrasonography –corneal topography - assisting in incision and drainage of abscesses - assisting in fitting a prosthetic eye – laser capsulotomy – NdYag peripheral iridotomy

Module V:

Ocular injuries and ocular emergencies: Ocular injuries: Chemical injuries (Acid, Alkali) - Penetrating injury / perforating injury,-foreign body - blunt injuries- **Ocular emergencies**: Corneal emergencies - postoperative emergencies – Endophthalmitis- retinal emergencies – traumatic optic neuropathy-acute congestive glaucoma – immediate treatment measures-

Suggested Reading

1. Samar K. Basak, Essentials of ophthalmology , Current Books International,5th edition
2. A. Samuel Gnanadoss, Ophthalmic Nursing, JAYPEE,
3. Handbook for clinical ophthalmic assistants,Aravind eye care system
4. Hand book for surgical ophthalmic assistant, Aravind eye care system
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CENTURION UNIVERSITY OF TECHNOLOGY AND MANAGEMENT, ODISHA

SCHOOL OF PARAMEDICS AND ALLIED HEALTH SCIENCES

CERTIFIED OT TECHNICIAN (COTT)

(ONE YEAR PROGRAMME)

2024

SYLLABUS

Program objective(s):

As a professional in *Operation Theatre Technology*, the candidates will be trained qualitatively, has to be motivated and attitudinally prepared to work at any hospital to discharge the highest quality of professional services. He/she forms an intrinsic part of any hospital with responsibility for facilitating surgical procedures both emergency and planned by preparing and maintaining in advance the Operation Theatre. He/she also looks after all the work and management of the operation theatre with good knowledge on anaesthesia techniques for different type of patients and different types of surgical procedures to assist Anaesthesia and Surgery teams during pre-operative, per-operative andpost- operative periods in the recovery room and wards.

Learning Objectives:

At the completion of this course, the student should be -

Able to help anesthesiologist in administering anesthesia, assist in various procedures and also help in continuous monitoring of patients during surgery, in developing and plummeting patient anesthesia care plans, including pre-operative, surgical theater, recovery room, and postoperative intensive careprocedures.

Able to assist and develop an individual to independently handle the latest technology and high-end biomedical equipment in Operation Theatre, manage medical gases and pipeline system.

Able to perform patient data collection, catheter insertion, airway management , assisting the administration and monitoring of regional and peripheral nerve blockades, support therapy, adjusting anesthetic levels during surgery, inter-operative monitoring, postoperative procedures, pain clinics and patient education, and administrative tasks.

Able to assist in Intensive care unit, Central Sterile Supply Dept. and during disaster and emergency situations.

Eligibility criteria for admission:

Class XII Sc. With Physics, Chemistry, Biology English or any equivalent examination recognized by any Indian University or a duly constituted board with at least 50% aggregate marks.

Internship: After completion of 1 year of academic curriculum, the candidate will have to undergo internship for a period of 1 calendar month in a hospital (100 bedded) equipped with modern laboratoryfacility, which fulfills the norms decided by the University.

PAPER-I

Subject Name	Code	Type of course	LTP	Credits
Paper-I	CUTM2973	Theory	12+0+0	12

Course Objectives:

The objective of the course will be as Support and work as a link between OT Sisters and Doctor in OT. Assistant the Anesthetist in delivering General Anesthesia and Regional Anesthesia. Assist in common Surgeries as first assistant in emergency. Perform basic nursing procedures like IV Catheterization, RT insertion, Nebulization, Oxygen therapy, Injections. Monitor the patient in pre-operative and post- operative room. Assist in Blood transfusion therapy. Provide psychological support to the patient & Counsel patients' relatives.

Course Outcomes:

After completion of this course the students will be able to,

CO1: Understand: Explain the significance of record-keeping in hospital management**. CO2:** Demonstrate the correct usage and handling of operation theatre equipment.

CO3: Analyse the correct techniques for recording and responding to changes in pulse, blood pressure, and respiration in postoperative patients.

CO4: Evaluate the significance of monitoring patient vital signs in the recovery period

CO5: Develop the skills required to assist surgeons and maintain a sterile environment during surgical procedures.

Course Outlines:

Module -I: Introduction to human body as a whole Must know: gross Anatomy of Human body and part names and list of systems. Applied Anatomy & Physiology of CVS, Respiratory system, Applied aspect of Autonomous nervous system. Study of cell, its functions , study of tissues. Blood cells, groups, transfusion reactions. Blood Group: Type, Rh typing, Rh incompatilibility. Joints and their types, names (eg. Elbow, hip etc.). Muscles- Identification of major groups related to applied anatomy, Pulse- rate, rhythm, volume. Blood pressure- how to measure, normal and abnormal. GIT (oesophagus, stomach, small and large intestines, liver, gall bladder, pancreas)and functions. Sense organs (Brief anatomy of eye, nose, ear, skin related to sensations).Respiratory system- nose, pharynx, trachea, bronchi lungs. Cardio vascular system- heart (chambers, valves, aorta, vena cava), artery and veins identification. Kidney- ureter, bladder, urethra.

Module -II: Common types of bacteria, their characteristics, Bacteria- Mode of spread and effects. Principles of asepsis, disinfection and prevention of cross infection. Common antiseptics used in operation theatre. Preparation of antiseptic solution in common use in operation theatre. Sterilizers- Must know Component parts, names, care, What are the thing that are sterilized in it? Sterilizers. Methods of sterilization of operation theatre, Procedure of collection of swabs in OT after fumigation. Sterilization of blunt and sharp instruments, rubber material, gloves, polythene tubes, dressings, gum elastic equipment, sutures, ligatures, surgical cautery and other electric instruments and linen used in operation theatre Principal of cleaning of Instruments Gen/Lap/cable's/monitors/Endoscopes. Sterilization of endoscopic/laparoscopic instruments. Procedure of sterility test. Collection and dispatch of samples for sterility. Running of Central sterile supply room (Autoclave, flash, ETO). Bio medical waste- colour code, needle destruction, personnel care, Biosafety.

Module -III: Introduction to OT. Identification and demonstration of various equipments in OT. Pre procedure protocols (Check list). Consent & its Medico legal aspects. Cleanliness and sterilization of operation theatre. Procedure for sending specimen for biopsy, and aspirated fluid for culture. Operative and nursing procedures connected with common surgical operations such as assisting for biopsies, debridement of bedsores, incision of abscess, carbuncles, excision of sebaceous cyst, corns, warts, ulcers, in growing nails, foreign body, rectal operations like piles, fistula, fissure, ischiorectal abscess, Disposal of Biomedical waste

Module -IV: Introduction to anaesthesia. Pre procedure protocols. Identification and use of anaesthesia resuscitation equipments available on trolley. (Ambu bag, endotracheal tubes size, tracheostomy tray). Description and working of machines and appliances used for anaesthesia like Boyle's machine, airway, endotracheal tubes, laryngoscopes etc. Their component parts, cleaning, sterilization, care, maintenance, assembly and dismantling. Their component parts, cleaning, sterilization, care, maintenance, assembly and dismantling. Drugs in anaesthesia-premedication (oxygen, Glycopyrrolate, atropine, ondansetron, ranitidine, midazolam, pentazocine, fentanyl, diclofenac) Basic Pharmacolos. Brief awareness about special anaesthesia like paediatric and geriatric anaesthesia. Types of anaesthesia. (Local, sedation, spinal, epidural, general, regional blocks). Local anaesthetics (Lignocaine, Bupivacaine). Pre anesthetic evaluation, consent for surgery anaesthesia. Local and sedation- Preparation, position of patient, required drugs, doses, side effects. Spinal anaesthesia- Preparation, position of patient, required drugs, doses, side effects. Epidural anaesthesia- Preparation, position of patient, required drugs, doses, side effects. Preparation of patient for general anaesthesia. Lay out of trolley for all types of anaesthesia Safety Mechanisms of life saving equipments check list. Various types of gas cylinders- types, care and identification. (Oxygen, N2O, CO2). Central gas pipeline, Manifold system, Liquid O2, • Teach about location and general arrangement of central gas pipelines. • Show the locations of outlets at number of places as in wards, ICUs, Recovery rooms and Labor rooms. Information about need for regular checking from company personnel. • Regular checking of supply to OT. Checking of integrity of alarms and pressures. Central suction, electrical, foot suction. Explosion risks. Fire-fighting. Assembly and use of Oxygen therapy units, anaesthesia equipments. Maintenance of anaesthesia equipments, records and charts. Role of OT technician in Post anaesthesia care.

Module -V: Temperature, pulse, respiration recording. Blood pressure recording. Care of mouth and skin. Giving bedpan and urinals. Oxygen cylinders. Administration of oxygen. Care & preparation of an unconscious patient, Catheterization, Lumbar puncture, aspiration of abdominal cavity and chest. Passage of gastric tube. Giving fluids by mouth, Ryles tube. Enema. Injections by various routes. Administration of medicine by oral and other routes. Nursing care during convulsions, poisoning, asphyxia and anaphylactic shock. Nursing care during infectious diseases like chicken pox, small pox, typhoid, pulmonary tuberculosis and other infectious diseases. Nursing care during common diseases like myocardial infarction, congestive cardiac

failure, infective hepatitis, peptic ulcer, pneumonia etc. immunization. Intake output chart. Study of various blood groups, Method of Blood transfusion, Indication, hazards of blood transfusion. Diabetes- Blood collection for blood sugar measurement, use of glucometer. Diet sheets/Chart. Communication Skills & other soft Skills.

Module -VI: Maintaining record and arranging & labeling drugs as per order. Record of disposables & inventory management. Disposal of expired drugs. Information about registers related to drugs, record of equipments , working or not, AMC/CMC,daily maintenance. Maintaining records of consumables related to equipments. Receiving & Identification of patient in OT. With Records & Investigations. O.T environment control & Lighting system.

Module -VII: Hypovolemic or haemmorrhapic Shock. Thoracic Surgery. Cardiac Surgery. Obstetrics & gynecology. Oncosurgery. Classification and application of splints, Common causes and first aid of unconsciousness, Heat stroke and exhaustion, First aid in case of drowning. Transport of accident casualties. Basic Life Support.

Module -VIII: Signs, symptoms of haemorrhage and shock, cardiac arrest. Preparation of intravenous therapy, blood and platelet, FFP, albumin transfusion.Infusion fluids in common use. Maintenance Care & Utility of High end equipment's, Modular theatre functioning.

PAPER-II

Subject Name	Code	Type of course	LTP	Credits
Paper-II	CUTM2974	Practical	0+8+0	08

Course Objectives:

These objectives aim to provide a comprehensive foundation in operation theatre technology, covering technical skills, critical thinking, and ethical considerations in the healthcare environment.

Course Outcomes:

After completion of this course the students will be able to,

CO1: Describe the key components and layout of an operation theatre.

CO2: Demonstrate the steps to be taken during emergencies, including first aid and resuscitation techniques.

CO3: Differentiate the principles of aseptic techniques and infection control

CO4: Support Foster effective communication and collaboration within the operation theatre team

CO5: Develop knowledge of postoperative care protocols, including wound care and patient monitoring.

Module I:

- Gross Anatomy of Human body and part names and list of systems.
- Detailed cell structure, type of cells, characteristic of cells, names of tissues & functions.
- Types of blood cells , their functions, their total count in blood, blood composition details, their measurements. Blood Group: Type, Rh typing, Rh incompatilibility. How to check Blood pint on arrived before transfusion? Transfusion reactions Monitoring during B.T Identification of transfusion reaction and immediate measures.
- Only identification of major groups, Importance in applied Anatomy (IM injection).
- Normal Pulse , characteristics of pulse Abnormal Pules Rhythm - Identification All peripheral sites for pulse palpation.

- What is normal range ? What is abnormal ? How to measure BP, which are sites for it ?
- Parts of each GIT organ, functions of each organ.
- Sense organs (Brief anatomy of eye, nose, ear, skin related to sensations). Anatomy andfunction of each.
- Respiratory system Detail structure of parts , function
- Name of parts, names of major arteries and veins with respect to clinical application. Whatis ABG, From where sample taken for ABG, Care during ABG
- Kidney- ureter, bladder, urethra, Name/structure, function.

Module -II:

- What are the common bacteria causing diseases in human being?
- Bacteria: Routes of transmission, diseases caused, prevention.
- What is decontamination/disinfection/fumigation? Methods of preventing cross infection.
- What is sprit / betadine / ethanol / Lysol / savlon / Cidex / Na Hypochlorite solution? How to use ? How to Prepare? Where to use ? After how many days to change the solution. %of solution
- How to prepare each solution for specific use in OT eg. scopes cleaning? tubes? instruments? Mask?
- Component parts, names, care, What are the thing that are sterilized in it?
- Principles of working,care and maintenance - How do Sterilizers work- time / temp /pressure; Procedure before sterilization ; Care after sterilization ; Maintenance of sterilizer
- Fumigation procedure, Fogger methodology – time, checking of sterilization, recordkeeping, lysolying.
- How to collect swab, how to transport, labeling, record keeping, informing to OT people,which all sites are for sample collection? How many samples ?How frequently done ?
- How to collect, from which sites, how to dispatch samples for sterility.
- What is CSSD/ ETO / Flash? What is detailed technology ? Record keeping. Pre procedure, post procedure protocol . How to confirm test for sterilization ? .Temp, pressure, time ? CSSD .ETO- Care during use.

Module -III:

- What are various zones /areas / layout in OT ? What is importance of each zone ?
- Definition , Types Contents – Surgery / Blood transfusion / Anaesthesia Importance When RMO / Superintendent / parents consent needed ? What about minor / unconscious / MLCcases ?
- Helping surgeons and others to wash up and drape for operation.
- Handling of sterilized articles.
- Washing, cleaning, testing and repairing of gloves and preparing them for sterilization andpacking.
- Preparation of dressings, swabs and packs.
- Packing of drums for sterilisation.
- Use, care, maintenance and sterilisation of common types of instruments, needles, suturesand ligatures used in operation theatres.
- Identification of instruments, Lay out of instruments trolley,
- Application of bandages, dressings, tourniquets.
- Reception and preparation of patients for surgery,
- Observation of patients during operation, post operative period.
- Methods of application and uses of different types of splints.
- Plaster of Paris techniques, preparation, application and removal.
- Universal safety precautions
- X ray shooting, basic views (PA view and Lateral chest,), Operating C-arm.
- Preparation of Electronic gadgets for Run. (Laparoscope, Cautery work station, cableconnections).

Module -IV:

- Lay out of OT e.g. sterile and unsterile zones, pre and post-operative rooms, autoclave room, washing area, dirty area and area for setting up of trolleys. Importance of monitoring central supply of Oxygen, N2O, air compressor and suction machine . Knowledge of portable cylinders
- Checking that OT lists are available or not. Record keeping of OT list, helping

the OT staff to set up preoperative room with beds, mattresses, linen, Oxygen source, suction machine, IV stands, Anesthesia machine, emergency drugs, IV fluids and airway trolley. Check the correctness of patients' names, age, address, type of surgery and consent for surgery.

- Identification of Ambu bag, endotracheal tubes of various types and sizes, tracheostomy tubes and tray, nasal and oropharyngeal airways and their sizes, laryngoscopes with different types of blades, stylets, connectors, bougies and supraglottic airway devices. Proper cleaning and storage of the above.
- Setting a difficult airway cart, crash cart, spinal and epidural tray. • Daily checking of anesthesia workstations, monitors, defibrillators, ventilators and suction machines. • Complete knowledge of Alarms and an essential practice to respond immediately to low saturation, low pressure, high pressure alarms and disconnection alarms is a must.
- Fiber-optic bronchoscope, sharps, rubber items, PVC items, metallic and hollow items to clean in the specified manner • Similarly, electrical items, disposables, bougies andmonitor cables be handled in the prescribed manner. • Practice of enlisting the components on the box or container during storage.
- Salient features like class of the drug and uses Inducing drugs- (Propofol, Thiopentone Na, Ketamine) Muscle relaxants- identification, use, contra indication .
- Special requirements for anesthesia in above cases. • Warm OT, small size splints for IV, IVlines, boulsters of proper size, proper size head rings and pillows for Pediatric cases; • Careful and gradual positioning of Obstetric and Geriatric patients with wedges and paddings at pressure points.
- Names of cases which require various types of anesthesia. • Importance of preparation of OT in a complete sense even for minor cases to avoid mishaps. • Preparation of OT according to specific case wise requirement in Major cases .
- Various types of Lignocaine and Bupivacaine marketed as 1%, 2%, 4%, 5%, 10% etc. • Various dilutions and percentages. • Importance of reading labels and preparing drugs after proper and correct labelling methods as adopted by the treating Anesthesiologist. • Knowledge of operating syringe pumps.
- Any patient coming to OT for elective procedure should be entered on OT list. Such cases need to be previously evaluated by the Anesthesiologists. • Practice to check pre-

anesthesia notes are attached to the case paper. • Check the correctness of patients' names, age, address, type of surgery and consent for surgery. Check preoperative blood investigations are available, check entry of figures in the computer. • Check entry of anesthesia and surgeons' names in computer. • Check availability of all concerned forms to case paper like registration number, MRD number, Rajeev Gandhi scheme entry criteria. • Check MLC number, Consent from Medical Superintendent of Mental Hospital in case mental patient is operated. Also consent from jail authority if a prisoner is gettingoperated.

- Check for OPD/IPD numbers and papers. See if surgery is advised on paper. • Check NBM status, accompanying persons present or not. • Patient positioning as per Surgeon's advice. Arrange for arm-boards, leg-boards, back rests, stirrups, eye-pads and ear plugs. • Set up monitors; ask for need for IV line. • Arrange for required drugs as desired by the anesthetists. • Monitor for vomiting, retching, flushing, rashes, itching etc.

- Confirm NBM, consent, nature of surgery, patient name and surgery on OT list, IPD number and whether patient is accompanied with relatives or not. • Position for spinal anesthesia. Make available agents used for part preparation. • Provide sterile spinal tray. Teach about disposal of used items.

- Same as above for Epidural anesthesia. • Contents of epidural set, sterilization and need to maintain epidural catheter for post-operative analgesia in recovery room. Regional blocks- Preparation, position of patient, required drugs, doses, side effects.

- Confirm NBM, consent, nature of surgery, patient name and surgery on OT list, IPD number and whether patient is accompanied with relatives or not. • Check for OPD/IPD numbers and papers. See if surgery is advised on paper. • Check NBM status. Check availability of all concerned forms to case paper like registration number, MRD number, Rajeev Gandhi scheme entry criteria. • Check MLC number, Consent from Medical Superintendent of Mental Hospital in case mental patient is operated. Also consent from jail authority if a prisoner is getting operated. • Patient positioning as per Surgeon's advice. Arrange for arm-boards, leg-boards, back rests, stirrups, eye-pads and ear plugs. • Set up monitors; ask for need for IV line. • Arrange for required drugs as desired by the anesthetists. • Teach about daily checking of anesthesia workstations, monitors, defibrillators, ventilators and suction machines. • Complete

knowledge of Alarms and an essential practice to respond immediately to low saturation, low pressure, high pressure alarms and disconnection alarms is a must.

- Lessons about preparation of spinal trays, epidural tray and tray for various regional blocks. • Knowledge of sterilization and disinfection. Information of disposal of used items.
- Color coding of various cylinders. • Coding for change of cylinders on workstations and change of cylinders for central supply.
- Clearing of airway of blood, mucus and vomitus and importance in saving life of patient.
- Importance of electrical and foot suction as alternatives to central suctioning system.
- Awareness about likelihood of fires and explosions in OT. • Preparedness for anyaccidents due electrical equipment and autoclave etc. • Assisting for CPCR
- Confirm anesthesia and surgery notes. Check if post- operative orders have been put on paper. • Monitor vomiting, rashes, pulse, B.P., respiration, consciousness, effects of analgesia and pain medications if any. • Need for oxygen supplementation if advised. Watch for blood transfusion reactions of any. Check if BT notes have been put.

- **Module -V:**

- About skin and core temperature. Methods of measuring the same over 1 minute, with hand on pulse. • Method of cleaning the thermometer and wiping, before and after use. Storing dry after wiping with cetrimide lotion. • How to palpate various superficial pulses, radial, ulnar etc. • How to record pulse rate, rhythm, volume and nature of vessel wall; • For respiration, how to record rate, depth and nature of breathing, thoracic or abdomino- thoracic, labored or quiet and level of consciousness or change in color; if any such alteration from normalcy is noted.
- How to tie the B.P. cuff, location of brachial artery on medial side of cubital fossa and that cuff should encircle the two third circumference of the arm. • Various sizes of B.P. cuff for various age groups. • How cuff should be tied only on the portion of a limb where a single artery can be compressed against a single bone to obtain correct record. • Palpatory and auscultatory methods of recording B.P. • Different types of apparatus- sphygmomanometer,

aneroid and digital B.P. records. • Normal range of B.P. and high and low values.

- Care of mouth and skin in ICU patients on prolonged ventilation. • Oral cavity as a source of organisms and a route cause of respiratory infections and generalized bacteraemia leading to increased morbidity and mortality. • How to maintain cleanliness of bedpan and urine pots to prevent ascending infections in the urinary system. • General instructions of sterile care to be followed about the storage of airways, endotracheal tubes, urinary catheters, syringes etc. • Importance of oral wash with hexidine, skin care with frequent change of position, padding of pressure points, dusting with antibacterial powders of bodyparts under creases.
- Recording the number of portable cylinders on OT and ICU. How to store cylinders in horizontal manner when not in use. • Practice of checking FULL label when receiving cylinders and putting label of EMPTY when exhausted. • Method to place large cylindersin a corner or in a transverse manner to avoid accidents in OT. • Store cylinders away from flammable things and always in a room with open windows so as to avoid casualties due to blast. • Read the name of gas in a cylinder before installing it on the machines to ensure correct placement.
- Need to supplement oxygen to patients under anesthesia or in ICU. • Equipment requirement for the same, like nasal cannula, Hudson mask, nasal prongs and catheters should be introduced. • How to read pressures in cylinders for ensuring uninterrupted flow. • How to check the integrity of tubings from cylinders up to the patients.

- Importance of oral wash with hexidine, skin care with frequent change of position, padding of pressure points, dusting with antibacterial powders of body parts under creases.
- Need of betadine, gauze, sponge holders, dry gauze pieces, sterile catheter and lignocaine jelly in a tray for catheterization. • Lumbar puncture tray should contain hole towel, gauze pieces, sponge holders, LP needle, sample bulb and syringes. Tray should be autoclaved. • Patient positioning for lumbar puncture should be learnt with pillow under the shoulders, back at right angle to the bed and hip and knee joints flexed over the abdomen with chin touching the chest. • Head low position after L.P. should be ensured to avoid PDPH. • For aspiration of abdominal and chest cavity, painting with betadine and spirit and sterile draping is necessary. Availability of intercostal drain and underwater seal is to be confirmed. • Need to

perform thorough hand washing and scrubbing before preparing the trolleys and trays is a must should also be taught. • Knowledge about disposal after use is to be given.

- Which instructions to give to patients before performing the above. • Giving fluids by mouth or RT should be written on case paper by doctors during rounds in ICU. • To check for written instructions to do so on a case paper. • To check whether volume and type to be given has been stated clearly on the paper.
- How to prepare injection trays containing autoclaved or sterile syringes, needles of 20 to 25 gauges. • Check labels to confirm names of drugs contained and recheck the market names. • Containers of spirit swabs are kept ready. • Proper disposal of used sharps, syringes, IV sets, transfusion sets and blood stained gauze pieces should be taught. • It is essential to check whether the medication has been prescribed by the doctor on the case paper. • To monitor for response of the patient after medication.
- To strictly follow the orders on case sheet. • About 12 hourly, 8 hourly, 6 hourly dosageswhere necessary. • Monitoring for response of the patient after medication.
- Apparatus to secure airway in emergency should be ready. • Suction machine, tracheostomy tray, suction catheters, endotracheal tubes, laryngoscopes, oral and nasopharyngeal airways and bite blocks should be made available immediately. • Keeping ready Intracaths , IV sets, three ways, IV fluids, and drugs to control convulsions. • To tilt the bed or table in head low position in case of vomiting due to poisoning. • To secure patient on the bed or table to prevent bony and soft tissue injuries. • Injection Adrenaline, hydrocortisone and dexamethasone should be available urgently for saving life.
- Importance and role of oxygen inhalation, propped up position, decongestants and availability of suction machine are life-saving. • Monitoring of ECG, saturation, respiration, B.P. are mandatory. • How to inform to the relatives about the seriousness of patient condition. Every day condition of the patient needs to be informed to the relatives.
- The importance of nebulization and physiotherapy if needed. • How to explain if patientneeds to be artificially ventilated.
- How to prepare an ongoing chart about intake through IV and RT on day today basis. • How to estimate output of patient from urine, stools, respiration, and sweating, pleural and

peritoneal drains daily. • How to record blood loss from pleural, peritoneal, p/v discharge, joint drains and serous discharge from burns .

- ABO blood grouping system and Rh typing of blood. • Standard universal color coding of blood groups. • Cross-matching and need to recheck and documentation on paper. • System of numbering of blood bags, registration number of patients and entry of dates of collection and supply of blood and blood product bags. • Importance of checking the date of expiry. • How to put entries on important papers during transfusion. Need to put the signature of the individual who initiates BT. • Importance of monitoring blood transfusion and how to identify reaction to incompatible blood. • Importance of reporting a transfusion reaction to concerned blood bank.

- Importance of checking previous blood sugar levels and whether patient is on oral or injectable hypoglycemic agents. • Significance of mandatory morning fasting blood sugar estimation . • To check that glucometer with its compatible glucostrips is available in OT for intermittent checking of sugar levels during surgery. • To wipe the pulp of finger tip of the hand to which no IV line has been started. Saline wipe and not spirit is used. Finger pulp is given a bold prick to obtain the sample. • To read from the screen the value and note on case paper for reference.

Module -VI:

- How to prepare separate registers for entering drugs used in OT and ICU. • Date wise entry of drugs given as per dosages has to be charted. • Monthly count of all drugs is thus obtained and recorded. • Importance of stringent record keeping to aid in accounting, calculating hospital expenses, following the course of recovery of patients, prevent malpractices. • Usefulness of record keeping of drugs for patients for future record; it has medicolegal importance for the benefit of a hospital in case of any allegations.
- Record of indenting and accounting under the head of opening balance, purchases, issue and closing balance. Record keeping is helpful for tallying of expenses. • The importance of record keeping to anticipate the requirements in case hospital has to face mass casualtysituations.

- Importance of keeping a record of disposables to know the stock as on date and thereby place requisition with suppliers. • It is the duty of every responsible citizen to properly dispose all waste created. Disposal of types of waste is different and has to be followed by rules. • Authentic record, that the rules of disposal are followed is to be maintained.
- Stock books are maintained to enlist the equipment in the department. For example, total number of monitors, ventilators, computers, printers etc. • List of equipment in working condition with all its accessories labelled, is also important. • Manufacturing companies take the responsibility of maintenance by accepting AMC or maintenance by comprehensive plan. • All such permanent record papers are to be filed sequentially.

Module -VII:

- Emergency Procedures Surgical & trauma
- First aid in case of shock Artificial respiration
- First aid of fractures, dislocations and sprains Preparation of such patients for OT
- Classification and application of splints
- Poisoning- Clinical features and first aid (Organo Phosphosphorus , snake & scorpionbites and sedative poisoning)
- Burns and scalds,rule of 9, first aid
- First aid in case of drowning.

Module -VIII:

- Daily maintenance of equipments such as operation table, suction machine, OT lights.
- Different parts, how to check machine for leakages, safety features present in Boylesmachine.
- How to connect ECG apparatus to a patient, positions of various chest leads and limbleads, how to label ECG
- Charging of defibrillator, positions of paddles, precautions to be taken while defibrillation.(shock)
- Pulse oximeter- what does it show, different types of probes.

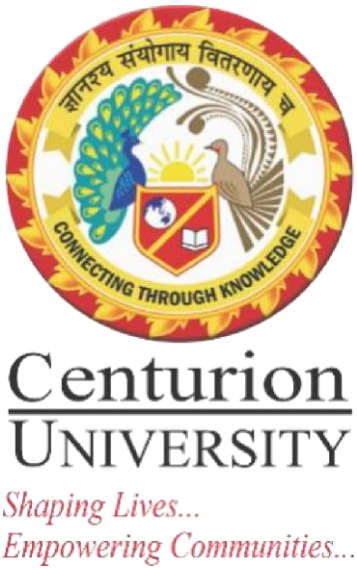
- How to take care of airway? How to clean airway? Rate of compression: Ratio ofcompression to mouth to mouth breath?
- How to start intravenous therapy? Checking of blood.
- What are the commonly use infusion fluids? Intravenous access Must know: Whatprecautions to be taken?

Suggested Reading:

- Operating room Technique, Berry & Kohris Berry & Kahn's ,Elsevier
- Manual of Operating room technique, Leena Gomez, Jaypee
- , A Complete hospital manual of Instruments & Procedure, MM Kapur ,Elsevier
- Ward Procedures, Mansukh Patel, Ward Procedures, Elsevier
- , Emergency Surgery, Adam Brook ,Wiley
- Manual of an anesthesia for operation theater technicians, A. Ahanatha Pillai, ,Jaypee
- Laboratory manual in microbiology, Mrs. Kapale Mrs. Pande
- Humans Anatomy, Human Anatomy Vol.1,2,3, BD Chaurasia's ,CBS
- Textbook of operative general surgery, Farquharson's, , CRC Press
- Adams atlas of fractures Including Joints & Injuries, Adam's, Elsevier
- Essential orthopedics, Maheshwari, Jaypee
- Textbook of Microbiology, Ananthnarayan & Panikar, Universities Press.

CENTURION UNIVERSITY OF TECHNOLOGY AND MANAGEMENT

SCHOOL OF PARAMEDICS AND ALLIED HEALTH SCIENCES



Certified Ward Technician
(Six Month Course)

2024
Syllabus

(Six months course)

Preface: This program is aimed at training candidates for the job of a "Ward Technician", in the "Healthcare" Sector/Industry and aims at building the following key competencies amongst the learner.Certified ward technician course is a certificate course with a duration of 6 months. This course provides a complete idea on the role of a basic healthcare provider, demonstrate techniques to maintain the personal hygiene needs of a patient, practice infection control measures, demonstrate the ability to perform clinical skills essential in providing basic healthcare services, promote safety, understand usage of protective devices and demonstrate precautions to be taken while usage of Oxygen, demonstrate professional behavior, personal qualities and characteristics of a Ward Technician, demonstrate right methods of bio medical waste management, Demonstrate Basic Life Support, Cardio Pulmonary Resuscitation and other actions in the event of medical and facility emergencies, Demonstrate good communication, communicate accurately and appropriately in the role ofWard Technician and demonstrate professional appearance and demeanor.

Programme: Certified ward Technician course

Duration: 6months

Eligibity: +2 Science with Physics, Chemistry & Biology or equivalent degree

Examination: Examination rules will be as per guideline of CUTM Examination hand book.

Degree: On successful completion of 6months programme, the candidate will be awarded certificate as "Certified Ward Technician" from Centurion University

Paper I

Subject Name	Subject Code	Type of Course	T-P-P	Credit
Paper I	CUTM 2975	Theory	8-0-0	8

COURSE OBJECTIVE:

- To get familiarized with hospital setup and human, medical terminology
- To understand roles and responsibilities of Ward Technician
- To know how to communicate and manage different hospital or health care facility scenarios effectively and efficiently

COURSE OUTCOME:

After completion of the course, students will be able to:

CO1: Perform good Patient Care Skills and get a good knowledge on different Medical Terminology:

CO2: Gain proficiency in basic nursing procedures such as wound care, medication administration, and the use of medical equipment under the supervision of a registered nurse or healthcare professional.

CO3: Acquire knowledge and skills related to emergency response procedures, including basic life support (BLS) techniques and understanding the role of a ward technician in emergency situations.

CO4: Cultivate a professional attitude and behavior, and importance of advocating for patients' needs and rights within the scope of the ward technician's responsibilities.

CO5: Foster a commitment to ongoing professional development and staying informed about advancements in healthcare practices and technologies.

COURSE OUTLINE:

MODULE -I

Introduction to Healthcare Systems:

- Basic understanding of Healthcare ServiceProviders (primary, secondary & tertiary)
- Basic understanding of services offered topatients in a hospital
- Basic understanding of various departments inthe hospital

Broad functions of Ward Technician (WT)

- To develop broad understanding of the functions to be performed by WT and patient comfort and safety
- Understand the functions to be performed by WT during admission and discharge of patient
- To understand the daily care need of patient
- Understand the Role of WT while transporting sample /drug of the patient
- Sensitization on importance of drug dosage

Introduction to Human Body- Structure & Function

- Understanding different parts of body
- Understanding different systems of body
- Understanding different positions of body

Patient - Basic care and needs

- Understand the difference of care provided to ill patients, terminally ill, physically challenged and handicapped personnel
- To develop an understanding to keep a record of Intake & output of patient
- Understand the importance of bathing and it's types
- To develop understanding for Identifying rashes, abrasions, Dryness, changes in colour, pressure areas, temperature, bruise and swelling of skin
- Identify pressure sores/ bed sores, understand causes for pressure sores (Bed sores)
- To understand the importance of maintaining oral care, skin and nail care

MODULE - II

Personnel Hygiene & Professional Behavior

- To develop understanding of the concept of Healthy Living
- To develop understanding & procedures of Hand Hygiene
- To be vaccinated against common infectious diseases
- How to maintain peaceful environment
- Learn General and Specific etiquettes to be observed on duty
- Describe the importance of conservation of resources in medical facility

Bio MedicalWaste Management

- To gain understanding of importance of proper and safe disposal of bio-medical waste &

treatment

- To gain understanding of categories of bio- medical waste
- To gain broad understanding of standards for bio- medical waste disposal
- Emergency Medical Response: Describe chain of survival

MODULE - III

Body Mechanics:

- Learn the kinetics of joints and movements and its effects on human body
- To understand the process and precaution to be taken care of while transferring the patient

Positioning/ Transferring /Mobility of patients

- Describe importance of positioning for a patient in treatment and recovery
- Introduction to various types of position
- Learn various kinds of means available for transferring patients
- Describe care to be taken while transferring patient
- Understand importance of physical moments for wellbeing.

Fall Prevention

- Describe standards for prevention of patient's fall
- Describe care to be taken to avoid fall in high risk patients

MODULE- IV

Elimination

- Understand the importance for excreta disposal in human body
- Understand and observation of urine and stools for routine as well as special reporting

Bed Making

- To understand various types of linen used in hospital
- To develop an understanding for the need of periodic changing of linen

Mortuary Management

- Learn Managing last offices
- Packaging dead bodies in case of non-communicable and communicable diseases

Role of Ward Technician - Sanitation, Safety& First Aid

- Describe common emergency conditions and what to do in medical emergencies
- Describe basics of first aid
- To develop understanding and precautions to ensure self-safety

Infections controland prevention

- Identification of deviation from normal health
- Explain Hospital borne infections
- Explain practices to curb the disease

Institutional Emergencies, Firesafety and & security

- Learn actions to be initiated in case of fire and method to use fire extinguisher
- Understand suspicious behavior of individuals and tracking the same.

Emergencies in health care andresponse to patient call

- Describe emergencies in Hospital and general conditions
- Describe fire emergencies and action to be initiated in fire emergencies

MODULE- V

Observing and Reporting

- Understand the importance of observing and reporting to authority for said or unsaid findings, if any
- Understanding the importance of verbally informing the person in authority

Consent, Documentation &Records

- Understand guidelines for documentation
- Learn various types of records of importance for Patient Care Assistant
- Understand use and importance of records and consent taking
- Understand abbreviations and symbols
- Enter, transcribe, record, store, or maintain information in written or electronic/magnetic form

Patient's Rights &Environment

- Describe necessary arrangements to ensure patient safety and comfort
- Understand sensitivities involved in patient's right
- Learn WT role in maintaining patient's rights

Basic ComputerKnowledge

To gain broad understanding about Application of computers in laboratory Practice

- Introduction to Computers: Block diagram, Input and Output devices, Storage devices

Introduction to operating systems**:** Need of Operating systems (OS) and function, Windows 2000 – Utilities and basic operations, Microsoft office 2000 – MS Word, MS Excel

Soft Skills and Communications

- Learn basic reading and writing skills
- Learn sentence formation, Learn grammar and composition, Learn how to enhance vocabulary
- Learn Goal setting, team building, team work, time management, thinking and reasoning &

communicating with others

- Learn problem solving and decision making ability
- Understand need for customer service and service excellence in Medical service
- Understand work ethics in hospital set up
- Learn objection handling and planning and organization of work
- Learn Telephone and Email etiquettes

CERTIFIED WARD TECHNICIAN COURSE

(Six months course)

PAPER II

Subject Name	Subject Code	Type of Course	T-P-P	Credit
Paper II	CUTM 2976	Theory	0-12-0	12

PART - II

COURSE OBJECTIVE:

- To get familiarized Hospital waste and biomedical waste management
- To perform blood drawing and patient safety techniques
- To understand roles and responsibilities of Ward Technician
- To know how to communicate and manage different hospital or health care facility scenarios effectively and efficiently

COURSE OUTCOMES:

After completion of the course, students will be able to

CO1: Demonstrate Competence in Basic Patient Care:

CO2: Follow proper infection control protocols to minimize the risk of spreading infections in healthcare settings and Perform Basic Nursing Procedures

CO3: Administer medications under supervision and effective documentation

CO4: Communicate effectively and adhere to patient privacy and confidentiality regulations.

CO5: Demonstrate professional behavior, acknowledge the importance of ongoing professional

development and advancements in healthcare practices.

COURSE OUTLINE:

MODULE -I

Broad functions of Ward Technician (WT)

- Understand the importance of cleaning/ sterilization/ disinfection of hospital premises and medical equipment's undersupervision
- Understand the need for keeping medical equipment , connections, wiring, tubing including medical gases connectors in goodcondition and ready for patient use under supervision
- Knowledge of various routes of drugadministration
- To develop broad understanding for providing support to patient while feeding normally or assisted devices (Ryle's tube)
- Demonstrate steps involved while dressingthe patients
- Describe the difference in procedure of dressing in special situations like physical disability, infant, un-conscious patients, etc.
- Provide for the patient's daily care

  Mock environment of clinic and hospital environment, home care setups with home based articles, family planning methods, emergency kitsetc, sample drug

Introduction to Human Body- Structure & Function: Mannequin, charts, demonstration kits of different body parts

Patient - Basic care and needs

- To develop knowledge for measuring height &weight of patient using instruments
- Enlist points to observe during bathing whichneed to be reported
- Understand need for care to private bodyparts of patient
- Understand the need of "after bath care"to the patient
- Identify pressure sores/ bed sores, understandcauses for pressure sores (Bed sores)
- To understand the importance of oral care incase of dentures and unconscious patients

MODULE - II

Personnel Hygiene & Professional Behavior:

Patient dailycare articles,PPE, vaccination, hand hygiene techniques

- To develop techniques of Grooming
- To be equipped with Techniques of Use of PPE
- How to maintain peaceful environment

- Learn General and Specific etiquettes to be observed on duty

Bio Medical Waste Management

- To learn about disposal of bio-medical waste – colour coding, types of containers, transportation of waste, etc.
- Visit to treatment plan of bio medical waste

MODULE - III

Body Mechanics: Mannequin, charts, demonstration kits of different body mechanics, internet use

Positioning/ Transferring /Mobility of patients

- Describe care to be taken while transferring patient
- Understand usage of Wheel chair, stretcher, shifting of patient from bed to stretcher, stretcher to Operation Theatre table Etc., and in special situations
- Describe usage of modes used for mobility and their maintenance
- Describe care while patient is walking or using assisted devices

Fall Prevention

- Describe care to be taken to avoid fall in high risk patients
- Describe measures to be taken to prevent falls Describe action in event of a fall incident

MODULE- IV

Elimination: Understand care to be provided in case of urine and bowel Incontinence or patient with urinary catheter.

Bed Making

- To understand preparation of an empty bed, occupied bed and room after discharge.
- Describe how to prepare room for admission - Linen, mannequin, gauge, identification marks, bed making techniques, modules

Mortuary Management: Packaging dead bodies in case of non-communicable and communicable diseases-Dead body kind mannequin, bed sheets, bandages, cotton, disinfectants

Role of Ward Technician - Sanitation, Safety & First Aid

- Provide care to the patients while moving.
- Demonstrate the use of protective devices (restraints, safety devices)
- Practice safe methods while using medical gases in hospital (if any)

Infections control and prevention: Explain different types of Spillages and their management - Crash cart, emergency codes, fire extinguisher

Institutional Emergencies, Fire safety and & security: Describe how to use fire extinguisher.

Understand suspicious behavior of individualsand tracking the same

MODULE- V

Observing and Reporting: Use of internet to adopt best practices across the world for professional etiquettes, Sample forms and feedback forms

Basic Computer Knowledge: To maintain and utilization of basic system application Microsoft office 2000 – MS Word, MS Excel, PowerPoint

Internet access and mail formatting

Soft Skills and Communications

- Effective Communicationwith Patients & Family
- Effective Communication with Peers/ colleagues using medical terminology in communication

References:

1. "Mosby's Textbook for Nursing Assistants" by Sheila A. Sorrentino and Leighann Remmer
2. "Ward Ethics" by Mary V. Rorty and Onora O'Neill
3. "Basic Life Support (BLS) Provider Manual" by American Heart Association (AHA)

CENTURION UNIVERSITY OF TECHNOLOGY AND MANAGEMENT, ODISHA

SCHOOL OF PARAMEDICS AND ALLIED HEALTH SCIENCES

CERTIFICATE IN BLOOD COLLECTION ASSISTANT

(SIX MONTHS PROGRAMME)

2024

SYLLABUS

CERTIFICATE IN BLOOD COLLECTION ASSISTANT

Preface: The Certificate Course in Blood Collection Assistant. This six-month program is tailor-made for individuals who have successfully completed their 10th grade, providing them with a golden opportunity to kickstart a fulfilling career as proficient blood collection assistant.

This comprehensive course is meticulously designed by industry experts to offer a blend of theoretical knowledge and practical skills essential for safe and efficient blood collection procedures within a healthcare environment. As the demand for skilled healthcare professionals continues to rise, the role of a Blood Collection Assistant is pivotal in ensuring accurate and compassionate patient care. This program is aimed at training candidates for the job of a "Certified Blood Collection Assistant", in the Healthcare Sector and aims at building the following key competencies amongst the learner

Scope: After completion of the course one can opt for career in-

- Phlebotomist in Hospitals and Individual Laboratories
- Clinical Research Assistant in Research and Development Laboratories.
- In various biotechnological industries as research assistant/Fellow
- self-sufficient professional by establishing an independent practice in blood collection services, serving healthcare institutions and clinics.

Eligibility for admission: 10th (matriculation)

Examination: Examination rules will be as per guideline of CUTM Examination hand book.

On successful completion of 6 months program, with a minimum course credit of 20 credits, the candidate will be awarded with "Certified Blood Collection Assistant" from Centurion University.

BASKET I

School Core Courses

Sl.No.	CODE	SUBJECT	SUBJECT TYPE (T+P+Pj)	CREDITS
1	CUTM2971	PAPER-I	8+0+0	8
2	CUTM2972	PAPER-II	0+12+0	12

BASKET I

School Core Courses

PAPER-I

Subject Name	Code	Type	T + P + Pj	Credits
PAPER-I	CUTM2971	Theory	8+0+0	8

Course Objective:

- Discuss the role and responsibilities of a phlebotomist within the healthcare system.
- Examine the contribution of a phlebotomist to the process of quality improvement in laboratory procedures.
- Understand and discuss the laboratory maintenance needs that are the responsibility of a phlebotomist.
- Discuss the role of a phlebotomist in ensuring comfort and safety during blood drawing procedures.
- Recall and apply ethical behavior in the workplace.
- Explain the appropriate use of laboratory-related medical terminology in daily interactions.
- Describe general and specific etiquettes to be observed while on duty.
- Emphasize the importance of resource conservation in laboratory practices

Course Outcome:

After completion of the course, the students will be able to **CO1**: Perform sample collection following best practices **CO2:** Prepare the patient for special procedures

CO3: Instruct the patients in the collection of other types of samples such as urine, stool, sputum,etc.

CO4: Carry out transfer and storage of samples.

CO5: Apply the health, safety**,** and security protocols at the workplace such as effective infection control protocols to ensure the safety of self, patient and colleagues.

Course Outline:

Module-I

Introduction to healthcaresystems & Laboratory Services:

- Describe the basic structure and function of healthcare facilities available at various levels, hospice care, and clinics.
- Discuss the relevant legal responsibilities of a phlebotomist with respect to their functions in the hospital environment

Roles and responsibilities of a phlebotomist:

- Discuss the role and responsibilities of aphlebotomist.
- Discuss a phlebotomist's role in the process of quality improvement.
- Discuss the laboratory maintenance needs that need to be taken care of by the phlebotomist
- Recall ethical behavior at the workplace.
- Explain the appropriate use of laboratory-related medical terminology in daily activities with colleagues, patients, and family.

Module-II

Structure andFunction of Human Body:

- Explain the organisation of body cells, tissues,organs, organ systems, membranes and glands in the human body.
- Describe cell and various types of tissues.
- Describe different types of organ systems.
- Describe different types of body fluids,secretions and excretions.

Module-III

Basic sensitization to various departments of the medicallaboratory:

- Explain the basics of inorganic and organicchemistry.
- Describe the blood sample collection processin detail.
- Explain the basics of haematology.
- Explain the basics of coagulation mechanism and testing in brief.
- Describe the process of sampling of sputum, semen, CSF and other body fluids like pleural fluid, pericardial fluid, peritoneal fluid, synovial fluid, ascitic fluid.

- Explain the basics of histopathology.
- Explain the basics of cytology andcytopathology.
- Explain the basics of microbiology (bacteria,virus, fungus and parasites).
- Explain the basics of immunology and serology.

Module-IV

Pre-procedural activities of sample collection:

- Identify the different types of samples to betaken in the medical laboratory.
- Explain the correct process of samplehandling.
- Identify different types of useful equipment forblood sample collection.
- Explain the process of interpretation of the testrequest forms correctly.

Module-V

Procedural activities of sample collection:

- Enumerate common pre-analytical errors andcomplication of sample collection.
- Enumerate various types of blood collectiondevices and other equipment required such as syringe, evacuated tubes, different gaugedneedles etc.
- Classify different types of blood collection tubes with their additives.
- Describe the usage of tourniquet and its duration of application.
- Distinguish different types of tubes, types and co-relate with the type of sample to be collected such as serum, plasma, etc.
- Enumerate different types of needle gauges with their colour codes.
- Explain the cause of haemolysis and the process of preventing the same.

Module-VI

Post-proceduralactivities of sample collection:

- Explain various standard operating procedures for sample storage and transportation withreference to temperature, humidity, leak proofing etc.
- Describe the significance of critical alert values in laboratory reports.
- Explain the process of managing inventory through checklists and inventory registers.

Module-VII

Basic sensitization on preanalyticallaboratory errors.

- Classify preanalytical variables.
- Enumerate different physiological preanalytical variables.
- Enumerate different technical preanalyticalvariables.
- Define Turn Around Time (TAT) withreference to respective laboratories.

Basic sensitization on analyticallaboratory testing process.

- Explain the process of sample transportation.
- Explain the process of sample storage after centrifugation.
- Describe the correct process of specimen handling.
- Discuss the importance of timely maintenance of inventory of medical supplies or diagnostic kits.

Basic sensitization on post-analytical laboratory testing process

- Describe archiving protocol emphasizing onstorage of samples/ specimens.
- Describe archiving protocol emphasizing onstorage data and records.
- Describe the retrieval of samples/ specimens
- Describe the retrieval of data and records.
- Describe source of error/ interference/ quality of work and initiate corrective action as applicable.
- Explain various quality assurance activities which ensure the accuracy of working in alaboratory

Module-VIII

Sensitization on current bestpractices in laboratory:

- Describe the good clinical laboratory practices (GCLP) recommended by World Health Organisation (WHO).
- Describe the key points of Clinical Lab Standards Institute (CLSI) standard on sample collection.
- Describe the good clinical laboratory practices (GCLP) of Indian Council of Medical Research(ICMR).
- Describe the laboratory safety guidelines of OSHA (Occupational Safety and Health Administration), U.S. Department of Labor.

- Describe the laboratory safety policies andprotocols.
- Explain the key points of standard ISO 15189

Module-IX

Prepare for Hospital/ site visit. State the importance of being on time.

- Explain phone etiquettes to be followed with the patient while organizing a site visit.
- Explain the process of confirming theavailability of patient and the respective tests for sampling.
- State the importance of making the necessary preparations using checklist before a site-visit.
- Describe the process to be followed in case ofdelay in reaching patient site.
- State the importance of establishing the patient's needs and expectations to ensure good quality service at the site.
- Discuss the importance of maintaining privacy of the patient.

Follow etiquette for Hospital/ site visits

- Describe the steps to be followed before accessing and using patient facilities, resources and areas.
- State the importance of setting correct expectations of follow-up action with thepatient.
- List the steps to ensure that patient facilities are not soiled or littered, and its importance.
- Describe the procedure to follow in case there is an accident or mishap at the patient premises.
- Explain the importance of time and siteinformation with the collection centre.

Module-X

Infection control policies and procedures.:

- Describe the importance of infection controland prevention.
- Identify the factors which influence theoutcome of an exposure to infection.
- List strategies for preventing transmission ofpathogenic organisms.
- List the steps of spill management.
- List the process of hand washing.
- Enumerate various nosocomial infections
- Explain the importance of incident reporting.

Bio Medical Waste Management

- Explain the importance of proper and safe disposal of bio-medical waste and treatment.
- Explain the categories of bio-medical waste disposal.
- Discuss means of bio-medical waste treatment.

Personal Hygiene

- Explain the significance of maintainingpersonal hygiene.
- Describe the principles of prevention of cross-infection.

Module-XI

Basic ComputerKnowledge

- Discuss the application of computers.
- Differentiate between the hardware andsoftware.
- Differentiate between the input and outputdevices.
- Discuss the foundation concept of operatingsystems and their functions.

Reporting and Documentation

- Define the scope of practice for phlebotomistin reporting and documentation.
- Define reporting matrix and discuss themethods.
- Explain the importance of maintaining variousrecords.
- Explain various types of records to bemaintained by the department.

Suggested Reading:

1. Text book Anatomy & Physiology for nurses by Evelyn Pearce, Publisher Faber&Faber.

2. Nelson DL and Cox MM. (2008). Lehninger Principles of Biochemistry, 5th Ed., W.H. Freeman and Company. (e-Book link: https://www.pdfdrive.com/lehninger- principles-of-biochemistry-5th-edition- d164892141.html)

3. Medical Laboratory Technology By K.L Mukharjee, Publisher McGraw Hill education pvt limited

4. Textbook of Medical Laboratory Technology P.B Gotkar Mumbai, Bhalani Publishing House

5. Textbook of medical laboratory technology by Praful B Godkar, Publisher Bhalan

6. Textbook of Histology (color atlas) by Krishna Garg, Indira Bahl, Mohini kaul,publisher CBS ,Practical

PAPER-II

Subject Name	Code	Type	T + P + Pj	Credits
PAPER-II	CUTM2972	Theory	0+12+0	12

Course Objective:

- Discuss the role and responsibilities of a phlebotomist within the healthcare system.
- Examine the contribution of a phlebotomist to the process of quality improvement inlaboratory procedures.
- Understand and discuss the laboratory maintenance needs that are the responsibility of aphlebotomist.
- Discuss the role of a phlebotomist in ensuring comfort and safety during blood drawingprocedures.
- Recall and apply ethical behavior in the workplace.
- Explain the appropriate use of laboratory-related medical terminology in daily interactions.
- Describe general and specific etiquettes to be observed while on duty.
- Emphasize the importance of resource conservation in laboratory practice.

Course Outcome:

After completion of the course, the students will be able to **CO1**: Perform sample collection following best practices **CO2:** Prepare the patient for special procedures

CO3: Instruct the patients in the collection of other types of samples such as urine, stool, sputum,etc.

CO4: Carry out transfer and storage of samples.

CO5: Apply the health, safety**,** and security protocols at the workplace such as effective infection control protocols to ensure the safety of self, patient and colleagues.

Course Outline:

Module-I

- Discuss various types of laboratories in the hospital.
- Describe the diagnostic centres and medical lab facilities at different levels (national, stateand district).
- Discuss the role of a phlebotomist in ensuringcomfort and safety while drawing blood.
- Describe the general and specific etiquettes to beobserved on the duty.
- Explain the importance of conservation of resources in the laboratories

Module-II

- Identify different parts of the body using chartsand models.
- Explain the structure and functioning of humanbody systems using charts and models.
- Design various working models depictingfunctioning of human body systems

Module-III

- Identify instruments and standard operating procedures related to haematologylaboratory.
- Identify instruments and standard operating procedures related to biochemistrylaboratory.
- Identify instruments and standard operatingprocedures related to serology laboratory.
- Identify instruments and standard operatingprocedures related to coagulation.
- Identify instruments and standard operating procedures related to histopathology andcytology section.

Module-IV

- Describe the correct method of preparing asite for obtaining blood samples.
- Describe the correct method of assisting the patient before, during and after collection ofthe blood specimen.
- Explain the process of sampling of sputum.
- Explain the process of guiding the patient for collection of semen sample.

Module-V

- Explain the cause of haemolysis and the process of preventing the same.
- Explain the order of draw (for the tube types).
- Explain the correct method of preparing anappropriate site for obtaining blood samples.
- Explain the correct method of drawing blood specimens from patients.
- Explain the correct method of preparing and labelling the blood sample for test, procedures and identification purposes.
- Explain the correct method of assisting thepatient before, during and after collection of the blood specimen.
- Explain the correct method of collectingsamples other than blood samples.

Module-VI

- Explain the correct method of labelling andpreparing the collected sample for testing and identification purposes.
- Explain the correct method of assisting thepatient after collection of the blood specimen.
- Explain the correct method of storage of various collected samples other than blood.
- Explain the correct procedure of sampletransportation.
- Discuss the process of organizing stocks related to phlebotomy as per organizationalpractices

Module-VII

- Describe the causes of preanalytical errors.
- List the steps to reduce preanalytical errors.
- Enumerate various documents necessary forrecording preanalytical errors.
- Describe various types of blood samples collected such as venous blood, arterial blood etc.
- Define different types of blood matrix.
- Describe the process of preparation of blood serum and plasma.
- Explain the types of tests being conducted from blood sample types.
- Define the process of sample recollection in case of repeat sample requests.
- Explain the process of sample recollection.

Module-VIII

- Describe the laboratory safety policies andprotocols.
- Explain the key points of standard ISO 15189
- Explain internal and external quality controldocumentation.
- Discuss the best practices to be followed whilecarrying out job specific procedures

Module-IX

- Describe the importance of carrying identification documents and introducing oneself to the patient on arrival.
- Describe common expectations while visiting patient's residential facilities.
- Plan the route for site visit and determine travel time for reaching the site on time.
- Explain the salient points of personalgrooming standards.
- Describe the correct waste disposal procedures.
- Define various best practices of site visit such as taking prior permission.
- Define the necessary adjustments required to be made to the space for carrying out required activities as per the standard.
- Describe the process and sequence of activities to be carried out to the patient.
- Discuss the process of handling queries.
- Perform billing after the procedures are carriedout.
- Explain the process of waste disposal as perwaste disposal guidelines.
- Discuss the process of addressing delays,accidents or errors to ensure patient satisfaction.

Module-X

- Develop techniques of self-grooming andmaintenance.
- Explain the concept of immunisation to reducethe health risks for self and patients.
- Explain the concept of healthy living.
- Describe the techniques of proper usage ofPPE.
- Explain the importance of PPE.
- Explain various vaccinations against commoninfectious diseases.
- Discuss about disposal of bio-medical waste – colour coding, types of containers, transportation of waste, etc.
- Explain the importance of personal protectiveequipment (PPE).
- Discuss the techniques of proper usage ofpersonal protective equipment (PPE).

Module-XI

- Discuss the latest non- pirated version of software such as Windows 2010, its utilities and basicoperations of Microsoft office 2000– MS Word, MS Excel, PowerPointPresentation.
- Discuss essential components of varioustypes of records.
- Explain the method of documentation andretrieval of documents.
- Discuss the importance of reporting andrecording patient information.
- Discuss the importance of confidentiality inpatient report information.

SUGGESTED READING:

1. Text book Anatomy & Physiology for nurses by Evelyn Pearce, Publisher Faber&Faber.
2. Nelson DL and Cox MM. (2008). Lehninger Principles of Biochemistry, 5th Ed., W.H. Freeman and Company. (e-Book link: https://www.pdfdrive.com/lehninger- principles-of-biochemistry-5th-edition- d164892141.html)
3. Medical Laboratory Technology By K.L Mukharjee, Publisher McGraw Hill education pvt limited
4. Textbook of Medical Laboratory Technology P.B Gotkar Mumbai, Bhalani Publishing House
5. Textbook of medical laboratory technology by Praful B Godkar, Publisher Bhalan
6. Textbook of Histology (color atlas) by Krishna Garg, Indira Bahl, Mohini kaul,publisher CBS
7. Practical Pathology by Harsh Mohan

CENTURION UNIVERSITY OF TECHNOLOGY AND MANAGEMENT, ODISHA

SCHOOL OF PARAMEDICS AND ALLIED HEALTHSCIENCES

CERTIFIED COURSE IN FIRST AID

(SIX MONTHS COURSE)

2024

SYLLABUS

CERTIFIED COURSE IN FIRST AID(SIX MONTHS COURSE)

Preface: First aid is the provision of initial care for an illness or injury, usually performed by a non-expert person to a sick or injured person until definitive medical treatment can be accessed by a professional.

This course on first aid should provide you with the basic knowledge to help someone in an emergency.

The aim of first aid is to reduce the effects of injury or illness suffered at work. It does not include giving tablets or medicines. The course makes you aware as to how important it is for your employees to know that, how emergencies can be handled until medical aid arrives.

It's important to learn first aid so you can be prepared to help save lives in unexpected situations. Whether you are thinking about going into a career in the medical field or not, first aid will give you a basic understanding of what to do if someone is injured and needs help. What you learn can be taken into a medical, psychological, or self-care practice to mitigate stressful situations. Learning first aid can also guide you into a specific medical area of interest. As you learn more you may discover new skills and other areas to explore that you can later go further into.

Duration: 6 months

Eligibility: 10^{th} pass

Examination: Examination rules will be as per guideline of CUTM Examination hand book.

PROGRAMME: CERTIFIED COURSE IN FIRST AID

Sl.No.	**CODE**	**SUBJECT**	**SUBJECTTYPE**	**CREDITS**
			(T+P+Pj)	
SC-1	CUTM2977	Paper I	8+0+0	8
SC-2	CUTM2978	Paper II	0+12+0	12

PAPER I

Subject Name	Code	Type	T + P + Pj	Credits
Paper I	CUTM2977	Theory	8+0+0	8

Course Objective:

- To preserve life
- To prevent the worsening of a patient's medical condition.
- To promote recovery
- To help for ensuring safe transportation to the nearest healthcare facility
- To provide psychological first & infection

Course Outcome:

At the end of the course the students will be able to

CO1: Gain knowledge about the first-aid sector & emergency situations .

CO2: Know about CPR & artificial respiration .

CO3: Know about dressing & bandages & management of fracture.

CO4: Know about first – aid to victims of road accidents.

CO5: Know about transportation of casualties and demonstrate recovery position.

Course Outline:

Module 1: Principles & practice of first aid. DRABC rule & how to help in life saving procedures. CPR [cardio pulmonary resuscitation], Dressing & bandages.

Module 2: Injuries to bones, Shock, Unconsciousness & nervous system Burns & scalds

Module 3: Transportation of casualties

References:

1. First Aid Manual by the American Red Cross
2. First Aid Fast for Babies and Children: Emergency Procedures for All Parents and Caregivers-DK Publishing
3. First Aid, CPR and AED Standard - American Academy of Orthopaedic Surgeons (AAOS)
4. Emergency Care and Transportation of the Sick and Injured"- American Academy of Orthopaedic Surgeons (AAOS)

PAPER II

Subject Name	Code	Type	T + P + Pj	Credits
Paper II	CUTM2978	Practice	0+12+0	12

Course Objective:

- Management of bleeding & infection
- Management, Reassurance & monitoring of the patient admitted to casuality.
- Management of CPR
- Management safety of first- aider

Course Outcomes:

At the end of the course the students will be able to

CO1: Demonstrate CPR and first – aid to victims of road accidents.

CO2: Demonstrate emergency aid in schools & colleges **CO3:** Demonstrate injuries likely to be incurred in factories **CO4:** Demonstrate disaster management / multiple casualties **CO5:** Demonstrate transportation of casualties

Course Outline:

Module I:

DRABC, safety management of first – aider in emergency situations, How to observe responsiveness & consciousness, External chest compression, Types of dressings & application of dressings, Types of bandages & application of bandages.

Module II:

Cause, types & sign & symptoms of fracture, Management of fracture, Causes, types, sign & symptoms of shock, Management of shock, Management of head injury & skull fracture.

Module III:

Management of heart attacks, heat exhaustion, heat stroke & epilepsy, Management of snake bites , dog bites .bee bite & wasp bite , Management of poisoning by gases . Management of poisoning by swallowing, blanket lift & stretcher transportation of casualties, transporting a case of spinal injury

Suggest Reading:

1. First Aid Manual by the American Red Cross
2. First Aid Fast for Babies and Children: Emergency Procedures for All Parents and Caregivers- DK Publishing
3. First Aid, CPR and AED Standard - American Academy of Orthopaedic Surgeons (AAOS)
4. Emergency Care and Transportation of the Sick and Injured"- American Academy of Orthopaedic Surgeons (AAOS)

CENTURION UNIVERSITY OF TECHNOLOGY AND MANAGEMENT, ODISHA

SCHOOL OF PARAMEDICS & ALLIED HEALTH SCIENCES

CERTIFIED ECG TECHNICIAN

(Six months course)

2023

SYLLABUS

CERTIFIED ECG TECHNICIAN

(Six months course)

Preface: Certified ECG Technician course is a certificate course with a duration of 6 months. This course provides a complete idea on the anatomy and physiology of cardiovascular system with operative and interpretation skills of ECG machine.

Programme: Certified ECG Technician course
Duration: 6months
Eligibity: +2 Science with Physics, Chemistry & Biology or equivalent degree
Examination: Examination rules will be as per guideline of CUTM Examination hand book.

Degree: On successful completion of 6months programme, the candidate will be awarded certificate as "Certified ECG Technician" from Centurion University

CERTIFIED ECG TECHNICIAN PAPER-I

(Six months course)

Subject name	Code	Type of course	T- P- Pj	Credits
Certified ECG Technician Paper-I	CUTM2979	Theory	8-0-0	8

Objectives:

- Understanding of Cardiovascular Anatomy and Physiology
- Knowledge of ECG Equipment and Technology
- ECG Electrode Placement
- Interpretation of Normal and Abnormal ECG Patterns

Outcomes:

At the completion of the course, students will be able to:

CO1: Describe the structure and function of the cardiovascular system.

CO2: Demonstrate proper placement of ECG electrodes on the patient's body.

CO3: Compare and correct artifacts or technical errors in ECG tracings.

CO4: Select and troubleshoot ECG machines and related equipment.

CO5: Develop effective communication skills for explaining procedures to patients.

Course outline:

MODULE I

Human Anatomy and Physiology

Study of General Anatomy and Physiology of Human Body

Anatomy of circulatory system

- Size of the Heart
- Position

- Coverings
- Chambers
- BloodSupply
- Nerve Supply
- The blood Vessels
- General Plan of Circulation
- Pulmonary Circulation
- Name of the arteries& veins
- Their position with special emphasis on CoronaryCirculation
- Function of Cardiovascular system.
  - Cardiac cycle,
  - Functional tissue of heart & their function
  - Cardiac output, Blood pressure, Heart Rate
- E.C.G: Basic principle of Electrocardiogram

MODULE II

ECG(Electrocardiogram)

- History of ECG.
- Cardiac Electrical Activity
- Anatomical orientation of heart
- Cardiac cycle,
- Cardiac impulse formation & Conduction,
- Recording of long axis cardiac electrical activity
- Recording short axis cardiac electrical activity
- Recording the Electrocardiogram,
- Evolution of frontal plane leads,
- Transverse plane leads,
- Correct & Incorrect leads placement,
- Electrocardiography leads placement,
- Display of 12 standard electrocardiogram lead
- In perpetration of normal ECG,
- Electro- cardio- graphic features,

- Rate & regularity,
- P wave, PR interval, QRS complex,
- ST segment, T wave, U wave, QTC interval,
- Cardiac rhythm.
- Interval measurement,
- Horizontal measurement,
- Vertical measurement,
- ECG wave's interval & segments.
- Heart Rate
- Introduction,
- Measuring of heart rates using caliper.
- Electrical Axis
- Determining electrical axis,
- Normal axis,
- Right Axis Deviation & Left Axis Deviation ,
- Methods of electrical axis estimation
- Assessment of arrthymias,
- Supraventricular v/s ventricular rhythms,
- Rhythmic Disorders.

MODULE III

Cardiac diseases & terminology

- CAD(Coronary artery disease)
- Effects of MI injury &infraction on ECG,Manifestation of Q wave infarction,
- Manifestation of non-Q wave infarction,
- Anterior infarction
- Antero-Lateral infarction,Inferior infarction
- Enlargement of chambers & Hypertrophy, Conductiondefect,
- AV block First degree,
- AV block second degree,
- AV block third degree,
- AV block bundle,

- Branch Block,
- RBBB, LBBB
- Chamber Enlargement:
- Right Atrial Enlargement
- KKI Hypertrophy
- Right ventricular hypertrophy
- Left ventricular hypertrophy
- Biventricular hypertrophy.

CERTIFIED ECG TECHNICIAN

(Six months course)

Certified ECG Technician Paper-II

Subject name	code	Type of course	U- P- Pj	Credits
Certified ECG Technician Paper-II	CUTM2980	Practical	0-12-0	12

Objectives:

- Understanding of Cardiovascular Anatomy and Physiology
- Knowledge of ECG Equipment and Technology
- ECG Electrode Placement
- Interpretation of Normal and Abnormal ECG Patterns

Outcomes:

At the completion of the course, students will be able to:

CO1: Describe the structure and function of the cardiovascular system.

CO2: Demonstrate proper placement of ECG electrodes on the patient's body.

CO3: Compare and correct artifacts or technical errors in ECG tracings.

CO4: Select and troubleshoot ECG machines and related equipment.

CO5: Develop effective communication skills for explaining procedures to patients.

MODULE I

Clinical cardiology

- Basic Principles of instruments,
- Recording the electro cardiogram,
- Correct &incorrect lead placement.
- Chest leads, Limb leads,
- Display of 12 standard lead ECG,
- Recognition & interrelation of ECG Equipment,
- Usage (Pediatrics/Adults.)
- Indication, Contraindication,
- Repair&maintenance(operations,calibrationsservicing) ECG Monitoring in ICCU patient,
- Recording of holter/stress ECG,
- Ambulatory BP.
- Temporary- pace-maker/ permanent pace maker,
- Coronary Angiography,
- Coronary Angio Plasty,
- Balloon Plasty,
- Cardiac Resynchronisation Therapy,Cardiac Resynchronisaton Therapy with Defibrillator.

References:

1. Tortora's principles of Anatomy & Physiology,Gerald J. Tortota, Bryan Derrickson
2. Manual of practical medicine, R Alagappan for clinical cardiology
3. 12-Lead ECG: The Art of Interpretation" by Tomas B. Garcia and Neil Holtz