

**GANDHI INSTITUTE OF TECHNOLOGY AND MANAGEMENT (GITAM)
(Deemed to be University)
VISAKHAPATNAM * HYDERABAD * BENGALURU**

Accredited by NAAC with A⁺ Grade



REGULATIONS AND SYLLABUS

OF

M.Sc. Nursing (Nurse Practitioner in Critical Care)

(w.e.f. 2020-21 admitted batch)

ADMISSION REQUIREMENTS:

Application & Registration

- i. All applicants are advised to read the prospectus before starting online registration.
- ii. While filling the online application, ensure that no column is left blank.

Eligibility for Admission

- Applicants must possess a registered B.Sc. nurse with a minimum of one year clinical experience, preferably in any critical care setting prior to enrollment.
- Must have undergone the BSC in an institution recognized by the Indian Nursing Council.
- Must have scored not less than 55% aggregate marks in the B.Sc. program
- Selection must be based on the merit of an entrance examination and interview held by the competent authority.
- Number of candidates: 1 candidate for 4-5 ICU beds, Salary:
 1. In-service candidates will get regular salary
 2. Salary for the other candidates as per the salary structure of the hospital where the course is conducted
- Eligibility for appearing for the examination
- Attendance: Theory, practical and Clinical – 100%

Duration of the Course

The duration of certified study for the NPCC M.Sc nursing postgraduate course shall extend over a period of two academic years including integrated practice.

MEDIUM OF INSTRUCTION

English shall be the medium of instruction for all the subjects of study and for examination.

ATTENDANCE REQUIRED FOR ADMISSION TO EXAMINATION

Eligibility for appearing for the examination

Attendance: Theory, practical and clinical-100%

CLINICAL PRACTICE

- A. Clinical Residency experience (A minimum of 48 hrs/ week is prescribed, however, it is flexible with different shifts and OFF followed by on call duty)
- B. 8 hours duty with one day Off in a week and on call duty one per week

INTERNAL ASSESSMENT MARKS

The internal assessment should consist of the following points for evaluation:

- Theory
 - Practical & Oral
- a. A minimum of 50% of marks is mandatory in theory and practical separately in each subject / practical for permitting the candidates to university examinations.
 - b. Three internal tests will be conducted by the concerned medical college departments and two assignments will be conducted by Nursing Departments. Three internals and two assignments will be averaged and considered as internal examination final marks.
 - c. The internal assessment marks should be submitted to the Principal by the respective Head of the Department/ Teacher concerned at least Four weeks before the commencement of the theory examinations. The Principal has to forward the copy of the same to the Registrar or an Officer authorized by him to receive the same, at least Three weeks before the commencement of the theory examinations.
 - d. The same shall be displayed in the college notice board, before sending to the Examination Board.

SUBMISSION OF PRACTICAL RECORD BOOKS

1. The concerned Head of the Department shall evaluate the Practical Cumulative Record (Internal Evaluation) and the same shall be submitted to the Principal 15 days prior to the commencement of the theory examination.
2. At the time of practical examination, each candidate shall submit to the Examiners his / her Practical Cumulative Record Book duly certified by the Head of the Department as a Bonafide record of the work done by the candidate.

Examination Scheme:

Pass: 50% pass in theory and Clinical Practicum

≥ 75% - Distinction

≥ 60% - First class

≥ 50% - Second class

< 50% - Fail

For declaring the rank, aggregate of two years marks will be considered

If a candidate fails in theory or practical, he/she has to reappear for the paper in which he/she has failed.

Maximum number of attempts = 2, Maximum period to complete the program = 4 years

Practicum: 6 hours of examination per student

Maximum number of students per day = 5 students

Examination should be held in clinical area only

Examined by one internal and one external examiner

The examiner should be M.Sc. faculty teaching the NP program with minimum two years of experience.

Assessment (Formative and Summative)

- Seminar
- Written assignments/Term papers
- Case/Clinical presentation
- Nursing process report/Care study report
- Clinical performance evaluation
- Log book - (Competency list and clinical requirements) counter signed by the medical / nursing faculty preceptor
- Objective Structured Clinical Examination (OSCE)/OSPE
- Test papers
- Final examination

Dissertation

Submission of the research proposal: By 6 months in first year

Submission of the dissertation final: 6 months before completion of second year

Research guides: Main guide – Nursing faculty (3years experience) teaching NP program,

Co guide: Medical preceptor

Guide student ratio- 1:5

There should be a separate research committee in the college/hospital to guide and oversee the progress of the research (minimum of 5 members with principal or CNO-M.Sc.N)

Ethical clearance should be obtained by the hospital ethics committee

EXAMINERS:

One **internal** and one **external** examiner should jointly conduct practical/oral examination for each student.

REVALUATION / RETOTALLING OF ANSWER PAPERS

Revaluation of answer papers is not permitted. Only re-totalling of theory answer papers is allowed in the failed subjects and should be applied through the institution.

AWARD OF MEDALS AND PRIZES:

The University shall award at its Convocation Medals and Prizes to outstanding candidates as and when instituted by the donors as per the prescribed terms and condition for the award of the same.

AUTHORITY TO ISSUE TRANSCRIPT OF MARKS:

The University shall be the Authority for issuing Transcript after remitting the prescribed fee.

PROGRAMME EDUCATIONAL OBJECTIVES: (PEOs)

PEO 1	Independent Nurse practitioner and Nurse specialist in Critical care who can provide Emergency and advanced care to critically ill patients in various settings.
PEO 2	Educator and leader of health care team who provides care with accountability and responsibility in critical care setting.
PEO 3	Lifelong learner and Nurse researcher who utilize the recent advancement and evidence-based practices in critical care.
PEO 4	Decision maker who can advocate and communicate to health care team and patient relatives related to patient end of life care issues in critical care setting involving ethical decisions.
PEO 5	Professional who can contribute the role in education, Administration and practice maintaining the professional integrity.
PEO 6	Applies sound research knowledge and skills in conducting independent research in critical care setting

PROGRAM OUTCOMES (POs)

PO 1	The critical care NP program prepares registered BSc nurses for advanced practice roles
PO 2	Practices independently where authorized and the regulatory framework allows in the interest of the patients, families, and communities
PO 3	As clinical experts
PO 4	As clinical managers
PO 5	As clinical educators
PO6	consultants leading to M.Sc. degree in critical care NP
PO7	Documents assessment, diagnosis, management and monitors treatment and follow-up care in partnership with the patient
PO8	Consults with and is consulted by other health care professionals and others
PO9	Creates and maintains a safe therapeutic environment using risk management strategies and quality improvement
PO10	Acts as an advocate for patients in the health care systems and the development of health policies
PO11	Works in collaboration with health team members
PO12	Engages in ethical practice in all aspects of the APN role responsibility

PROGRAM SPECIFIC OUTCOMES:(PSOs)

PSO1	Assume responsibility and accountability to provide competent care to critically ill patients and appropriate family care in tertiary care centers
PSO2	Demonstrate clinical competence / expertise in providing critical care which includes diagnostic reasoning, complex monitoring, and therapies
PSO3	Apply theoretical, patho-physiological, and pharmacological principles and evidence base in implementing therapies / interventions in critical care
PSO4	Identify the critical conditions using differential diagnosis and carry out treatment/interventions
PSO5	stabilize and restore patient's health and minimize or manage complications independently or collaboratively as a part of critical care team.

Courses of Instruction

		Theory(Hrs)	Lab/Skill Lab (Hrs)	Clinical (Hrs)
I Year				
	Core Courses			
I	Theoretical Basis for Advanced Practice Nursing	40		
II	Research Application and Evidence Based Practice in Critical Care	56	24	336 (7 wks)
III	Advanced skills in Leadership, Management and Teaching Skills	56	24	184 (4 wks)
	Advanced Practice Courses			
IV	Advanced Pathophysiology applied to Critical Care	60		336 (7 wks)
V	Advanced Pharmacology applied to Critical Care	54		336 (7 wks)
VI	Advanced Health / physical Assessment	70	48	576 (12wks)
	Total = 2208 hrs	336 (7 wks)	96 (2 wks)	1776 (37 wks)
II Year				
	Specialty Courses			
VII	Foundations of Critical Care Nursing Practice	96	48	552 (11wks)
VIII	Critical Care Nursing I	96	48	552 (11 wks)
IX	Critical Care Nursing II	96	48	644 (13 wks)
	Total = 2208 hrs	288 (6wks)	144 (4wks)	1748 (37wks)

No of weeks available in an year = 52 -6 (Annual leave, Casual leave, sick leave = 6 weeks) = 46 weeks x 48 hrs = 2208 hrs @ each year

For total, Two Years = 4416

TOTAL= 4416 hrs

I year : Theory-336-skill lab-96-clinical-1776 hrs
[Theory + Lab=20%, Clinical=80%]

II year : Theory-288-skill lab-144-clinical-1776 hrs
[Theory + Lab=20%, Clinical=80%]

I YEAR = 46 weeks / 2208 hrs (46x48hrs) (Theory +Lab : 7.5 hrs / week
for 44wks = 336 + 96 hrs*)

***Theory + Lab** = 96 hrs can be given for 2wks in the form of introductory block classes
and workshops

II YEAR = 46 weeks / 2208 hrs (46x48hrs) (Theory +Lab: 8.5hrs/week for
45wks=384+48hrs) (1 week Block classes = 48 hrs)

Clinical placements:

I year: 44 wks (excludes 2 weeks of introductory block classes and workshop)

Medical ICU – 12 weeks

Surgical ICU – 12 weeks

Cardio/Cardio thoracic (CT) ICU – 8 weeks

Emergency Department - 6 weeks

Other ICUs (Neurology, Burns, Dialysis unit) - 6 weeks

II Year: 45wks (Excludes one week of block classes)

Medical ICU – 12 weeks

Surgical ICU – 12 weeks

Cardio/Cardio thoracic (CT) ICU – 8 weeks

Emergency Department - 8 weeks

Other ICUs (Neurology, Burns, Dialysis unit) - 6 weeks

Implementation of curriculum-A tentative plan

I yr. Courses	Introductory classes	Work shop	Theory integrated in clinical practicum	Methods of teaching (Topic can be specified)
1. Theoretical basis for Advanced practice Nursing (40)	8hrs		1x32=32hrs	<ul style="list-style-type: none"> • Seminar / Theory application • Lecture (faculty)
2. Research Application and Evidence Based Practice in Critical Care (56+24)	8 hrs	40 (5days) +6hrs	1x26=26hrs	<ul style="list-style-type: none"> • Research study analysis / • Exercise / Assignment (lab)
3. Advanced skills in leadership, Management and Teaching (56+24)	12 hrs	2hrs(Block classes)	1x26=26hrs 2.5x16=40hrs	<ul style="list-style-type: none"> • Clinical conference • Seminar Exercises/Assignment (lab)
4. Advanced Pathophysiology (60)			1.5x37=56hrs	<ul style="list-style-type: none"> • Case presentation • Seminar • Clinical conference
5. Advanced Pharmacology (54)			1x44=44hrs	<ul style="list-style-type: none"> • Nursing rounds • Drug study presentation • Standing orders / Presentation
6. Advanced Health Assessment (70+40)	6 hrs		2x26=52hrs 1.5x18=27hrs 1x12=12hrs 2x7=14hrs 2x2=4hrs	<ul style="list-style-type: none"> • Clinical demonstration (faculty) • Return demonstration • Nursing rounds • Physical assessment(all systems) • Case study

I Year – Introductory classes = 1 week,

Workshop = 1 week , 44 weeks = 7.5 hrs/week

II year courses 1wk Block classes (48hrs)	Theory integrated into clinical practicum	Methods of teaching
1. Foundations (96+48hrs) = 144hrs	9hrs x 11 wks = 99hrs	<ul style="list-style-type: none"> • Demonstration (lab) • Return demonstration (lab) • Clinical teaching • Case study • Seminar • Clinical conference • Faculty lecture
2. Critical Care Nursing 96+48hrs) = 144hrs	9x16 = 144hrs	<ul style="list-style-type: none"> • Demonstration (lab) • Return Demonstration (lab) • Clinical conference / journal club • Seminar • Case presentation • Drug study(including drug interaction) • Nursing rounds • Faculty lecture
3. Critical Care Nursing II 96+48hrs) = 144hrs	9 x 16 = 144hrs	<ul style="list-style-type: none"> • Demonstration (lab) • Return Demonstration • Nursing rounds • Clinical conference / journal club • Seminar • Faculty lecture

COURSE STRUCTURE/SCHEME OF EXAMINATION

S.No.	Course code	Course Title	Hours	Internal	External	Total
I Year (Core Courses)						
1.	GIN 701	Theoretical Basis for Advanced Practice Nursing	3 hrs	50	-	50
2.	GIN 703	Research Application and Evidence Based Practice in Critical Care	3 hrs	30	70	100
3.	GIN 705	Advanced skills in Leadership, Management and Teaching Skills	3 hrs	30	70	100
4.	GIN 707	Advanced Pathophysiology & Advanced Pharmacology relevant to Critical Care	3 hrs	30	70	100
5.	GIN 709	Advanced Health/physical Assessment	3 hrs	30	70	100
Practical						
6.	GIN 711	Advanced Health / Physical Assessment		50	50	100
II Year (Specialty Courses)						
1	GIN 702	Foundations of Critical Care Nursing Practice	3 hrs	30	70	100
2.	GIN 704	Critical Care Nursing I	3 hrs	30	70	100
3.	GIN 706	Critical Care Nursing II	3 hrs	30	70	100
Practicals						
4	GIN 712	Foundations of Critical Care Nursing Practice		100	100	200
5.	GIN 713	Critical Care Nursing I		100	100	200
6.	GIN 714	Critical Care Nursing II		100	100	200
7.	GIN 715	Dissertation and Viva	3 hrs	50	50	100

1st Year

1. Theoretical basis for Advanced practice Nursing
2. Research Application and Evidence Based Practice in Critical Care
3. Advanced skills in leadership, Management and Teaching
- 4 Advanced Pathophysiology Applied to Critical Care Nursing
5. Advanced Pharmacology relevant to Critical Care Nursing
6. Advanced Health / Physical Assessment in Critical Care Nursing

I. Theoretical Basis for Advanced Practice Nursing

Course description:

This course provides the student with theoretical foundation for advanced nursing. The focus of the course is on the critical components of contemporary nursing knowledge; exploration of the nature of theory development in nursing; examination of relevance of concepts from basic and applied sciences; analysis and evaluation of nursing & related theories; and relevance of theory in terms of impact on professional nursing practice, and individuals, families, groups as clients in health care system.

Course Objectives:

1. Analyses the global healthcare trends and challenges
2. Analyses the impact of Healthcare and Education policies in India on nursing consulting the documents available.
3. Develops in depth understanding of the healthcare delivery system in India, and its challenges
4. Applies economic principles relevant to delivery of healthcare services in critical care
5. Manages and transforms health information to effect health outcomes such as cost, quality and satisfaction
6. Accepts the accountability and responsibility in practicing the Nurse practitioner's roles and competencies

Hours of instruction:

40hrs.

Sl. No.	Topic	Hours
1	Global Health Care Challenges and Trends (Competency-1)	2
2	Health System in India Health Care Delivery System in India – Changing Scenario(Competency-3)	2
3	National Health Planning – 5 year plans and National Health Policy (Competency-2)	2
4	Health Economics & Health Care financing (Competency- 4)	4
5.	Health Information system including Nursing Informatics (use of computers) (Competency-5)	4

	Advanced Nursing Practice (ANP)	
6.	ANP-Definition, Scope, Philosophy, Accountability, Roles & Responsibilities (Collaborative practice and Nurse Prescribing roles)(Competency-6&7)	3
7.	Regulation (accreditation of training institutions and Credentialing) & Ethical Dimensions of advanced nursing practice role (Competency-8)	3
8.	Nurse Practitioner – Roles, Types, Competencies, Clinical settings for practice, cultural competence(Competency-6)	3
9.	Training for NPs – Preceptorship (Competency-9)	2
10.	Future challenges of NP practice(Competency-11)	4
11.	Theories of Nursing applied to APN(Competency-10)	3
12.	Nursing process applied to APN(Competency-9)	2
	Self-Learning assignments	6
1.	Identify Health Care and Education Policies and analyse its impact on Nursing	
2.	Describe the legal position in India for NP practice. What is the future of nurse prescribing policies in India with relevance to these policies in other countries?	
3.	Examine the nursing protocols relevant to NP practice found in various ICUS in you tertiary Centre	
	Total	40 hrs

Course Outcomes:

- Analyses the global healthcare trends and challenges
- Analyses the impact of Healthcare and Education policies in India on nursing consulting the documents available.
- Develops in depth understanding of the healthcare delivery system in India, and its challenges
- Applies economic principles relevant to delivery of healthcare services in critical care
- Manages and transforms health information to effect health outcomes such as cost, quality and satisfaction
- Accepts the accountability and responsibility in practicing the Nurse practitioner's roles and competencies
- Actively participates in collaborative practice involving all healthcare team members in critical care and performs the prescriptive roles within the authorized scope. Engages in ethical practice having a sound knowledge of law, ethics and regulation of advanced nursing practice Uses the training opportunities provided through well planned preceptorship and performs safe and competent care applying nursing process. Applies the knowledge of nursing theories in providing competent care to critically ill patients. Predicts future challenges of nurse practitioner's roles in variety of healthcare settings particularly

in India

Referances:

- Barkers,A.M.(2009). *Advanced Practice Nursing*. Massachussets: Jones & Bartlett Publishers
- Hickey, J. V., Ouimette, R. M., & Venegoni, S. L. (1996).*Advanced practice nursing: Changing roles and clinical applications*. Philadelphia: Lippincott Williams and Wilkins.
- Schober, M., & Affara, F. A. (2006).*Advanced nursing practice*. Oxford: Blackwell publishing.
- Stewart,G.J.,& Denisco,S.M.(2015).*Role Development for the Nurse Practitioner*. USA: Springer Publishing Company

II. Research Application and Evidence Based Practice in Critical Care

Course Description – This course is designed to assist the students to acquire sound knowledge in research methodology and to use the research findings in evidenced based practice. It will further enable the students to participate in clinical research to improve quality patient care in critical care settings.

COURSE OBJECTIVES

1. Applies sound research knowledge and skills in conducting independent research in critical care setting
2. Participates in collaborative research to improve patient care quality
3. Interprets and uses research findings in advanced practice to produce EBP
4. Tests / Evaluates current practice to develop best practices and health outcomes and quality care in advanced practice
5. Analyzes the evidence for nursing interventions carried out in critical care nursing practice to promote safety and effectiveness of care
6. Develops skill in writing scientific research reports

Hours of Instruction

(Theory: 56 + Lab / skill lab: 24hrs) =80hrs

Sl. No.	Topic	Hours
1	Research and Advanced Practice Nursing: Significance of Research and inquiry related to Advanced nursing role (Competency 1)	2
2	Research agenda for APN practice: Testing current practice to develop best practice, health outcomes and indicators of quality care in advanced practice (Competency 3,4,5), promoting research culture	5
3	Research Knowledge and skills: Research Course Objectives essential for APNs (interpretation and use of research, evaluation of practice, participation in collaborative research) Research Methodology Phases / steps (Research question, Review of literature, conceptual framework, research designs, sampling, data collection, methods & tools, Analysis and Reporting) writing research proposal and research report (Competency – 1 & 2)	40 (5 days workshop)
4	Writing for publication (writing workshop – Manuscript preparation and finding funding sources) (Competency – 6)	5 (workshop)

5	Evidence based practice - Concepts, principles, importance and steps - Integrating EBP to ICU environment - Areas of evidence in critical care - Barriers to implement EBP - Strategies to promote (Competency – 3,4,5)	4
	Total	56 hrs

Practical / Lab & Assignments- 24hrs

- Identifying research priorities
- Writing exercises on Research question, objectives and hypothesis
- Writing research proposal
- Scientific paper writing – preparation of manuscript for publication
- Writing systematic review – Analyze the evidence for a given nursing intervention in ICU

Clinical Practicum

- Research practicum: Dissertation (336 hrs=7weeks)

Course Outcomes:

- Applies sound research knowledge and skills in conducting independent research in critical care setting
- Participates in collaborative research to improve patient care quality
- Interprets and uses research findings in advanced practice to produce EBP
- Tests / Evaluates current practice to develop best practices and health outcomes and quality care in advanced practice
- Analyzes the evidence for nursing interventions carried out in critical care nursing practice to promote safety and effectiveness of care
- Develops skill in writing scientific research reports

Referances:

- Burns, N., & Grove, S. K. (2011). *Understanding nursing research: Building an evidence-based practice* (5th ed.). Ist Indian reprint 2012, New Delhi: Elsevier.
- Polit, D. F., & Beck, C. T. (2012). *Nursing research: Generating and assessing evidence for nursing practice* (9th ed.). Philadelphia: Lippincott Williams & Wilkins.
- Schmidt, N. A., & Brown, J. M. (2009). Evidence – based practice for nurses appraisal and application of research. Sd: Jones and Bartlet Publishers.

III. Advanced skills in Leadership, Management and Teaching

Course Description: This course is designed to assist the students to develop a broad understanding of Principles, concepts, trends and issues related to leadership and management in critical care units. It would also provide opportunity to students to understand, appreciate and acquire skills in budgetary planning, supervision and management of manpower and supplies in critical care units. Further it would enable the students to understand the basic principles of education, and acquire skill in teaching.

COURSE OBJECTIVES

1. Applies principles of leadership and management in critical care units
2. Manages stress and conflicts effectively in a critical care setting using sound knowledge of principles
3. Applies problem solving and decision making skills effectively
4. Uses critical thinking and communication skills in providing leadership and managing patient care in ICU
5. Builds teams and motivates others in ICU setting
6. Develops unit budget, manages supplies and staffing effectively
7. Participates appropriately in times of innovation and change
8. Uses effective teaching methods, media and evaluation based on sound principles of teaching
9. Develops advocacy role in patient care, maintaining quality and ethics in ICU environment
10. Provides counseling to families and patients in crisis situations particularly end of life care

Hours of Instruction

(56+24=80Hrs)

Sl. No.	Topic	Hours
1.	Theories, styles of leadership and current trends	2
2	Theories, styles of management and current trends	2
3	Principles of leadership and management applied to critical care settings	4
4	Stress management and conflict management – principles and application to critical care environment, Effective time management	4
5	Quality improvement and audit	4
6	Problem solving, critical thinking and decision making, communication skills applied to critical care nursing practice	5
7	Team building, motivating and mentoring within ICU set up	2
8	Budgeting and management of resources including human resources – ICU budget, material management, staffing, assignments	5
9	Change and innovation	2
10	Staff performance, and evaluation (performance appraisals)	6

11	Teaching – Learning theories and principles applied to Critical Care Nursing	2
12	Competency based education and outcome based education	2
13	Teaching methods / strategies, media: educating patients and staff in Critical Care settings	8
14	Staff education and use of tools in evaluation	4
15	APN – Roles as a teacher	2
16	Advocacy roles in critical care environment	2
	Total	56 hrs.

Practical / Lab = 24 hrs.

1. Preparation of staff patient assignment
2. Preparation of unit budget
3. Preparation of staff duty roster
4. Patient care audit
5. Preparation of nursing care standards and protocols
6. Management of equipment and supplies
7. Monitoring, evaluation, and writing report of infection control practices
8. Development of teaching plan
9. Micro teaching / patient education sessions
10. Preparation of teaching method and media for patients and staff
11. Planning and conducting OSCE/OSPE
12. Construction of tests

Assignment - ICU work place violence

Course Outcomes:

- Applies principles of leadership and management in critical care units
- Manages stress and conflicts effectively in a critical care setting using sound knowledge of principles
- Applies problem solving and decision making skills effectively
- Uses critical thinking and communication skills in providing leadership and managing patient care in ICU
- Builds teams and motivates others in ICU setting
- Develops unit budget, manages supplies and staffing effectively

- Participates appropriately in times of innovation and change
- Uses effective teaching methods, media and evaluation based on sound principles of teaching
- Develops advocacy role in patient care, maintaining quality and ethics in ICU environment
- Provides counseling to families and patients in crisis situations particularly end of life care

References:

- Bastable, S. B. (2010). *Nurse as educator: Principles of teaching and learning for nursing practice* (3rd ed.). New Delhi: Jones & Bartlett Publishers
- Billings, D. M., & Halstead, J. A. (2009). *Teaching in nursing: A guide for faculty* (3rd ed.). St. Louis, Missouri: Saunders Elsevier.
- Clark, C. C. (2010). *Creative nursing leadership and management*. New Delhi: Jones and Bartlett Publishers.
- McConnel .(2008). *Management principles for health professionals*. Sudbury, M. A: Jones and Bartlett Publishers.
- Roussel, L., & Swansburg, R. C. (2010). *Management and leadership for nurse administrators* (5th ed.). New Delhi: Jones and Bartlett Publishers.

ADVANCED NURSING COURSE

A. Advanced Pathophysiology Applied to Critical Care Nursing – I

Course Description: The course is designed to enhance advanced knowledge on pathophysiology and the adaptive responses that will support clinical decision making about the diagnosis and treatment of acute and chronic disease conditions

Course Objectives:

- Integrates the knowledge of pathophysiological process in critical conditions in developing diagnosis and plan of care
- Applies the pathophysiological principles in symptom management and secondary prevention of critical illnesses
- Analyzes the pathophysiological changes relevant to each critical illness recognizing the value of diagnosis, treatment, care and prognosis

Hours of instruction:

Theory: 30 hours

Unit	Hours	Content
I	(8)	1. Cardiovascular function Advanced pathophysiological process of cardiovascular conditions <ul style="list-style-type: none"> • Hypertensive disorder • Peripheral artery disorder • Venous disorders • Coronary artery diseases • Valvular heart disease • Cardiomyopathy and heart failure • Cardiac Tamponade • Arrhythmias • Cor pulmonale • Heart block and conduction disturbances
	(4)	2. Pulmonary function Advanced pathophysiological process of pulmonary conditions <ul style="list-style-type: none"> • Chronic obstructive pulmonary disease • Disorders of the pulmonary vasculature • Infectious diseases • Respiratory failure • Chest trauma

	(6)	3. Neurological function Advanced pathophysiological process of neurological conditions <ul style="list-style-type: none"> • Seizure disorder • Cerebrovascular disease • Infections • Spinal cord disorder
		<ul style="list-style-type: none"> • Degenerative neurological diseases • Neurological trauma • Coma, unconsciousness
	(4)	4. Renal function Advanced pathophysiological process of renal conditions <ul style="list-style-type: none"> • Acute renal failure • Chronic renal failure • Bladder trauma • Infections(Glomerulonephritis) • Nephrotic syndrome
	(4)	5. Gastrointestinal and hepatobiliary function Advanced pathophysiological process of hepatobiliary conditions <ul style="list-style-type: none"> • Gastrointestinal bleeding • Intestinal obstruction • Pancreatitis • Hepatic failure • Gastrointestinal perforation
	(4)	6. Endocrine functions Advanced pathophysiological process of endocrine conditions <ul style="list-style-type: none"> • Diabetic ketoacidosis • Hyperosmolar non ketotic coma • Hypoglycemia • Thyroid storm • Myxedema coma • Adrenal crisis • Syndrome of inappropriate antidiuretic hormone secretion

Course outcomes:

- Integrates the knowledge of pathophysiological process in critical conditions in developing diagnosis and plan of care
- Applies the pathophysiological principles in symptom management and secondary prevention of critical illnesses
- Analyzes the pathophysiological changes relevant to each critical illness recognizing the value of diagnosis, treatment, care and prognosis

Referances

- Huether, S. E., &McCance, K. L. (2012). Understanding pathophysiology (5th ed.). St. Louis, Missouri: Elsevier
- John, G., Subramani, K., Peter, J. V., Pitchamuthu, K., &Chacko, B. (2011). Essentials of critical care (8th ed.). Christian Medical College: Vellore.
- Porth, C. M. (2007). Essentials of pathophysiology: Concepts of altered health stat

IV.B. Advanced Pathophysiology Applied to Critical Care Nursing – II

Course Description: The course is designed to enhance advanced knowledge on pathophysiology and the adaptive responses that will support clinical decision making about the diagnosis and treatment of acute and chronic disease conditions

Course Objectives:

- Integrates the knowledge of pathophysiological process in critical conditions in developing diagnosis and plan of care
- Applies the pathophysiological principles in symptom management and secondary prevention of critical illnesses
- Analyzes the pathophysiological changes relevant to each critical illness recognizing the value of diagnosis, treatment, care and prognosis

Hours of instruction

Theory: 30 hours

Unit	Hours	Content
I	(8)	1. Hematological function Advanced pathophysiological process of hematological conditions <ul style="list-style-type: none">• Disorders of red blood cells<ul style="list-style-type: none">- Polycythemia- Anemia- Sickle cell diseases• Disorders of white blood cells<ul style="list-style-type: none">- Leucopenia- Neoplastic disorders• Disorders of hemostasis<ul style="list-style-type: none">- Platelet disorders- Coagulation disorders- Disseminated intravascular coagulation
II	(2)	2. Integumentary function Advanced pathophysiological process of integumentary conditions <ul style="list-style-type: none">• Wound healing• Burns• Steven Johnson Syndrome

III	(8)	<p>3. Multisystem dysfunction Advanced pathophysiological process of neurological conditions</p> <ul style="list-style-type: none"> • Shock <ul style="list-style-type: none"> - Hypovolemic - Cardiogenic - Distributive • Systemic inflammatory syndrome • Multiple organ dysfunction syndrome • Trauma <ul style="list-style-type: none"> - Thoracic - Abdominal - Musculoskeletal - maxillofacial • Drug overdose and poisoning • Envenomation
IV	(6)	<p>4. Specific infections Advanced pathophysiological process of specific infections</p> <ul style="list-style-type: none"> • HIV • Tetanus • SARS • Rickettsiosis • Leptospirosis • Dengue
		<ul style="list-style-type: none"> • Malaria • Chickungunya • Rabies • Avian flu • Swine flu
V	(6)	<p>5. Reproductive functions Advanced pathophysiological process of reproductive conditions</p> <ul style="list-style-type: none"> • Antepartum hemorrhage • Pregnancy induced hypertension • Obstructed labour • Ruptured uterus • Postpartum hemorrhage • Puerperal sepsis • Amniotic fluid embolism • HELLP (Hemolysis, Elevated Liver enzymes, Low Platelet Count) • Trauma

Course Outcomes:

- Uses advanced skills in complex and unstable environments
- Applies ethically sound solutions to complex issues related to individuals, populations and systems of care
- Practices principles of infection control relevant to critical care
- Practices independently within the legal framework of the country towards the interest of patients, families and communities
- Develops practice that is based on scientific evidence

- should be commenced when a nurse begins in critical care or when he/she has no previous experience of the specialty
- should be completed during the period of an academic critical care programme The Critical Care Competency Framework Content includes several system and additional areas.
- The recommendations are based on evidence from research in critical care nursing or allied fields.
- Ability to cooperate, being able to perceive the situation correctly, being aware of abilities and limitations, being able to act, and being able to disregard the technology when needed.
- will know and apply the basic and clinically supportive science in relation to cardiovascular physiology, respiratory physiology, renal physiology, metabolic/endocrine physiology, and all other systems as they relate to the critically ill patient.

References

- Huether, S. E., & McCance, K. L. (2012). Understanding pathophysiology (5th ed.). St. Louis, Missouri: Elsevier
- John, G., Subramani, K., Peter, J. V., Pitchamuthu, K., & Chacko, B. (2011). Essentials of critical care (8th ed.). Christian Medical College: Vellore.
- Porth, C. M. (2007). Essentials of pathophysiology: Concepts of altered health states

V. Advanced Pharmacology relevant to Critical Care Nursing

Course Description: This course is designed to enhance the advanced knowledge and clinical application of drug therapy with emphasis on mechanisms of drug actions, therapeutic effects, adverse effects, drug interactions with an integrated approach to pathophysiology and relevant considerations for illness management

COURSE OBJECTIVES

1. Applies the pharmacological principles in providing care to critically ill patients and families
2. Analyzes pharmaco-therapeutics and pharmacodynamics relevant to drugs used in the treatment of critical care conditions
3. Performs safe drug administration based on principles and institutional protocols
4. Documents accurately and provides follow up care
5. Applies sound knowledge of drug interactions in administration of drugs to critically ill patients in the critical care settings and guiding their families in self-care management

Hours of instruction

Theory: 54 hours

Unit	Hours	Content
I	2	Introduction to pharmacology in critical care <ul style="list-style-type: none">• History• Classification of drugs and schedules
II	4	Pharmacokinetics and Pharmaco-dynamics <ul style="list-style-type: none">• Introduction• Absorption, Distribution, Metabolism, Distribution and Excretion in critical care• Plasma concentration, half life• Loading and maintenance dose• Therapeutic index and drug safety• Potency and efficacy• Principles of drug administration<ul style="list-style-type: none">• The rights of drug administration• Systems of measurement• Enteral drug administration• Topical drug administration• Parenteral drug administration

III	5	<p>Pharmacology and Cardiovascular alterations in Critical care</p> <ul style="list-style-type: none"> • Vasoactive Medications <ul style="list-style-type: none"> • Vasodilator, • Vasopressor, • Inotropes - Cardiac glycosides – digoxin - Sympathomimetics – Dopamine, dobutamine, epinephrine, isoproterenol, norepinephrine, phenylephrine - Phosphodiesterase inhibitors – amrinone, milrinone • Antiarrhythmic Medications
		<ul style="list-style-type: none"> • Cardiac critical care conditions <ul style="list-style-type: none"> • Medications to improve cardiac contractility • Medications in the management of hypertension in critical care • Medications in the management of heart failure • Medications in the management of angina pectoris and myocardial infarction • Medications in the management of dysrhythmias, Heart block and conduction disturbances • Medications in the management of Pulmonary hypertension, Valvular heart disease, Cardiomyopathy • Medications in the management of Atherosclerotic disease of aorta and Peripheral artery disease • Medications in the management of Deep vein thrombosis • Institutional Protocols/Standing orders for cardiac critical care emergencies
IV	4	<p>Pharmacology and Pulmonary alterations in Critical care</p> <ul style="list-style-type: none"> • Mechanical Ventilation <ul style="list-style-type: none"> • Introduction • Medications used on patients with mechanical ventilator • Mechanical ventilation impact on pharmacotherapy – Sedation and analgesia, Neuromuscular, blockade, Nutrition • Pulmonary critical care conditions <ul style="list-style-type: none"> • Medications in the management of Status asthmaticus • Medications in the management of Pulmonary edema • Medications in the management of Pulmonary embolism • Medications in the management of Acute respiratory failure and Acute respiratory distress syndrome • Medications in the management of Chest trauma • Medications in the management of Chronic obstructive pulmonary disease • Medications in the management of Pneumonia • Medications in the management of Pleural effusion • Medications in the management of Atelectasis • Standing orders for pulmonary critical care emergencies

V	6	<p>Pharmacology and Neurological alterations in Critical care</p> <ul style="list-style-type: none"> • Pain <ul style="list-style-type: none"> • NSAID • Opioid analgesia • Sedation <ul style="list-style-type: none"> • amino butyric acid stimulants • Dexmedetomidine • Analgosedation • Delirium <ul style="list-style-type: none"> • Haloperidol • Atypical anti psychotics • Medications used for local and general anesthesia <ul style="list-style-type: none"> • Local- Amides, esters, and miscellaneous agents
		<ul style="list-style-type: none"> • General – Gases, Volatile liquids, IV anesthetics • Non anesthetic drugs adjuncts to surgery • Paralytic Medications <ul style="list-style-type: none"> • Non-depolarizing and depolarizing agents • Anxiolytics • Autonomic drugs <ul style="list-style-type: none"> • Adrenergic agents/ Sympathomimetics • Adrenergic blocking agents • Cholinergic agents • Anti cholinergic agents • Medications in the management of anxiety and insomnia <ul style="list-style-type: none"> • Antidepressants • Benzodiazepines • Barbiturates • Neurological critical care conditions <ul style="list-style-type: none"> • Medications in the management of psychoses • Medications in the management of acute head and spinal cord injury with elevated intracranial pressure • Medications in the management of muscle spasm • Medications in the management of spasticity • Medications in the management of Cerebro vascular disease and cerebro vascular accident • Medications in the management of Encephalopathy • Medications in the management of Gillian Bare syndrome and Myasthenia gravis • Medications in the management of Brain herniation syndrome • Medications in the management of Seizure disorder • Medications in the management of Coma, Unconsciousness and persistent vegetative state • Appropriate nursing care to safeguard patient • Standing orders for neurology critical care emergencies

VI	5	<p>Pharmacology and Nephrology alterations in Critical care</p> <ul style="list-style-type: none"> • Diuretics • Fluid replacement <ul style="list-style-type: none"> • Crystalloids • Colloids • Electrolytes <ul style="list-style-type: none"> • Sodium • Potassium • Calcium • Magnesium • Phosphorus • Nephrology critical care conditions <ul style="list-style-type: none"> • Medications in the management of Acute / Chronic renal failure
		<ul style="list-style-type: none"> • Medications in the management of Acute tubular necrosis • Medications in the management of Bladder trauma • Medications in the management of Electrolyte imbalances • Medications in the management of Acid base imbalances • Medications used during dialysis • Standing orders for nephrology critical care emergencies
VII	5	<p>Pharmacology and Gastrointestinal alterations in Critical care</p> <ul style="list-style-type: none"> • Anti-ulcer drugs • Laxatives • Anti diarrheals • Anti emetics • Pancreatic enzymes • Nutritional supplements, Vitamins and minerals • Gastro intestinal critical care conditions <ul style="list-style-type: none"> • Medications in the management of Acute GI bleeding, Hepatic failure • Medications in the management of Acute pancreatitis • Medications in the management of Abdominal injury • Medications in the management of Hepatic encephalopathy • Medications in the management of Acute intestinal obstruction • Medications in the management of Perforative peritonitis • Medications used during Gastrointestinal surgeries and Liver transplant • Standing orders for gastro intestinal critical care emergencies
VIII	4	<p>Pharmacology and Endocrine alterations in Critical care</p> <ul style="list-style-type: none"> • Hormonal therapy • Insulin and Other hypoglycemic agents • Endocrine critical care conditions <ul style="list-style-type: none"> • Medications in the management of Diabetic ketoacidosis, Hyperosmolar non ketotic coma • Medications in the management of hypoglycemia • Medications in the management of Thyroid storm • Medications in the management of Myxedema coma • Medications in the management of Adrenal crisis • Medications in the management of SIADH • Standing orders for endocrine critical care emergencies

IX	5	<p>Pharmacology and Hematology alterations in Critical care</p> <ul style="list-style-type: none"> • Anticoagulants • Antiplatelet drugs • Thrombolytics • Hemostatics/ antifibrinolytics • Hematopoietic growth factors <ul style="list-style-type: none"> • Erythropoietin • Colony stimulating factors • Platelet enhancers • Blood and blood products <ul style="list-style-type: none"> • Whole blood, Packed red blood cells, Leukocyte-reduced red cells,
		<ul style="list-style-type: none"> • Washed red blood cells, Fresh frozen plasma, Cryoprecipitate • Albumin • Transfusion reactions, Transfusion administration process • Vaccines • Immunostimulants • Immunosuppressant • Chemotherapeutic drugs – Alkylating agents, antantimetabolite, tumor antibiotics, alkaloids, hormones and hormone antagonists, corticosteroids, gonadalhormones, antiestrogens, androgen antagonists, biologic response modifiers • Hematology critical care conditions <ul style="list-style-type: none"> • Medications in the management of Anemia in critical illness • Medications in the management of DIC • Medications in the management of Thrombocytopenia and acute leukemia • Medications in the management of Heparin induced thrombocytopenia • Medications in the management of Sick cell anemia • Medications in the management of Tumor lysis syndrome • Standing orders for hematology critical care emergencies
X	3	<p>Pharmacology and Skin alterations in Critical care</p> <ul style="list-style-type: none"> • Hematology critical care conditions <ul style="list-style-type: none"> • Medications used in burn management • Medications used in wound management • Standing orders for skin critical care emergencies
XI	5	<p>Pharmacology and Multisystem alterations in Critical care</p> <ul style="list-style-type: none"> • Medications in the management of shock, sepsis, Multiple Organ Dysfunction, Systemic inflammatory response syndrome, Anaphylaxis • Medications in the management of Trauma, Injuries (Heat, Electrical, Near Hanging, Near drowning) • in the management of bites, Drug overdose and Poisoning • Medications in the management of fever in critical care setting <ul style="list-style-type: none"> • Antipyretics • NSAIDS • Corticosteroids • Standing orders for multi system critical care emergencies

XII	6	<p>Pharmacology and Infections in Critical care</p> <ul style="list-style-type: none"> • Antibacterial drugs <ul style="list-style-type: none"> • Introduction • Beta lactams – Penicillins, cephalosporins, monobactams, carbapenams, • Aminoglycosides • Anti MRSA • Macrolides • Quinolones • Miscellaneous – lincosamide group, nitroimidazole, tetracyclins and chloramphenicol, polymyxins, anti malarials, anti fungals, anti virals • Anti fungal drugs
		<ul style="list-style-type: none"> • Anti protozoal drugs • Anti viral drugs • Choice of antimicrobials • Infectious critical care conditions <ul style="list-style-type: none"> • Medications in the management of HIV, Tetanus, SARS, Rickettsiosis, Leptospirosis, Dengue, Malaria, Chickungunya, Rabies, Avian flu and Swine flu • Standing orders for infectious critical care emergencies

Course outcomes:

- Applies the pharmacological principles in providing care to critically ill patients and families
- Analyzes pharmaco-therapeutics and pharmacodynamics relevant to drugs used in the treatment of critical care conditions
- Performs safe drug administration based on principles and institutional protocols
- Documents accurately and provides follow up care
- Applies sound knowledge of drug interactions in administration of drugs to critically ill patients in the critical care settings and guiding their families in self-care management

References:

Johnson, T. J. (2012). *Critical care pharmacotherapeutics*. Jones & Bartlett Learning: United States of America

Wynne, A. L., Woo, T. M., & Olyaei, A. J. (2007). *Pharmacotherapeutics for nurse practitioner prescribers* (2nd ed.). Philadelphia: Davis.

VI. Advanced Health/Physical Assessment in Critical Care Nursing

Course Description: The course is designed to develop advanced health assessment skills to identify critical conditions and carry out treatment /intervention to stabilize and restore patient's health.

COURSE OBJECTIVES

- Applies the physical assessment principles in developing appropriate system-wise examination skills
- Uses advanced health assessment skills to differentiate between variations of normal and abnormal findings
- Orders screening and diagnostic tests based on the examination findings
- Analyzes the results of various investigations and works collaboratively for development of diagnoses
- Documents assessment, diagnosis, and management and monitors follow up care in partnership with health care team members, patients, and families

Hours of instruction

Theory: 70 hours
Practical/Lab: 46 hours

Unit	Hours	Content
	4	1. Introduction <ul style="list-style-type: none">• History taking• Physical examination
	6	2. Cardiovascular system <ul style="list-style-type: none">• Cardiac history• Physical examination• Cardiac laboratory studies – biochemical markers, hematological studies• Cardiac diagnostic studies – Electrocardiogram, echocardiography, stress testing, radiological imaging
	6	3. Respiratory system <ul style="list-style-type: none">• History• Physical examination• Respiratory monitoring – Arterial blood gases, pulse oximetry, end-tidal carbon dioxide monitoring• Respiratory Diagnostic tests – Chest radiography, ventilation perfusion scanning, pulmonary angiography, bronchoscopy, thoracentesis, sputum culture, pulmonary function test

	6	4. Nervous system <ul style="list-style-type: none"> • Neurological history • General physical examination • Assessment of cognitive function • Assessment of cranial nerve function
		<ul style="list-style-type: none"> • Motor assessment – muscle strength, power, and reflexes • Sensory assessment – dermatome assessment • Neurodiagnostic studies – CT scan, MRI, PET
	6	5. Renal system <ul style="list-style-type: none"> • History • Physical examination • Assessment of renal function • Assessment of electrolytes and acid base balance • Assessment of fluid balance
	4	6. Gastrointestinal system <ul style="list-style-type: none"> • History • Physical examination • Nutritional assessment • Laboratory studies – Liver function studies, blood parameters, stool test • Diagnostic studies – radiological and imaging studies, endoscopic studies
	4	7. Endocrine system <ul style="list-style-type: none"> • History, physical examination, laboratory studies, and diagnostic studies of • Hypothalamus and pituitary gland • Thyroid gland • Parathyroid gland • Endocrine gland • Adrenal gland
	4	8. Hematological system <ul style="list-style-type: none"> • History • Physical examination • Laboratory studies - blood parameters • Diagnostic studies – bone marrow aspiration
	3	9. Integumentary system <ul style="list-style-type: none"> • History • Physical examination • Pathological examination – tissue examination
	6	10. Musculoskeletal system <ul style="list-style-type: none"> • History • Physical examination – gait assessment, joint assessment, • Laboratory studies – blood parameters (inflammatory enzymes, uric acid) • Diagnostic studies - Radiological and imaging studies, endoscopic studies
	5	11. Reproductive system(Male & Female) <ul style="list-style-type: none"> • History • Physical examination • Laboratory studies • Diagnostic studies

	4	12. Sensory Organs <ul style="list-style-type: none"> • History • Physical examination • Laboratory studies • Diagnostic studies - Radiological and imaging studies, endoscopic studies
	6	13. Assessment of children <ul style="list-style-type: none"> • Growth and development • Nutritional assessment • Specific system assessment
	6	14. Assessment of older adults <ul style="list-style-type: none"> • History • Physical assessment • Psychological assessment

List of skills to be practiced in the skill lab (46 hours include demonstration by the faculty and practice by the students)

- Comprehensive history taking
- Focused history taking (system-wise)
- Comprehensive physical examination
- Focused physical examination (system wise)
- Monitoring clinical parameters (system wise)

Invasive BP monitoring, Multi-parameter Monitors, ECG, Pulse index Continuous Cardiac Output (PiCCO), Peripheral vascular status, ABG, Pulse Oximetry, End Tidal CO₂ (ETCO₂), Intracranial Pressure (ICP), Glasgow Coma Scale (GCS), Cranial nerve assessment, Pain and Sedation score of critically ill, Motor assessment, Sensory assessment, Renal function tests, Fluid balance, acid base balance, electrolytes, Bowel sounds, Abdominal pressure, Residual gastric volume, Liver function tests, GRBS, Lab tests, Radiological and Imaging tests(system wise)

- Ordering and interpretation of screening and diagnostic tests (system wise) (Enclosed- Appendix 3)
- Assessment of children-neonate and child
- Assessment of Older adults
- Assessment of pregnant women

Course outcomes:

- Applies the physical assessment principles in developing appropriate system wise examination skills
- Uses advanced health assessment skills to differentiate between variations of normal and abnormal findings
- Orders screening and diagnostic tests based on the examination findings
- Analyzes the results of various investigations and works collaboratively for development of diagnoses
- Documents assessment, diagnosis, and management and monitors follow up care in partnership with health care team members, patients, and families

References:

1. Bickley, L. S., & Szilagy, P. G. (2013). Bates' guide to physical examination and history taking(11th ed.). New Delhi: Lippincott Williams and Wilkins.
2. Rhoads, J. (2006). Advanced health assessment and diagnostic reasoning. Philadelphia: Lippincott Williams & Wilkins.
3. Wilson, S. F., & Giddens, J. F. (2006). Health assessment for nursing practice (4th ed.). St. Louis, Missouri: Saunders Elsevier.

2nd Year

1. Foundations of Critical Care Nursing Practice
2. Critical Care Nursing - I
3. Critical Care Nursing - II

CRITICAL CARE SPECIALTY COURSES

(Foundations of Critical Care Nursing Practice, Critical Care Nursing I and Critical Care Nursing II)

Course Description: This course provides the student

This course is designed to assist students to appraise the diagnostic and monitoring requirements and management necessary to maintain homeostasis of critically ill patients and communicate their significance and possible consequences to relevant members of the multidisciplinary team and demonstrate skilled, safe, effective and sensitive practice in the care of critically ill patients

COURSE OBJECTIVES

- Applies advanced concepts of critical care nursing based on sound knowledge of these concepts
- Uses invasive and noninvasive technology and interventions to assess, monitor and promote physiologic stability
- Works in collaboration with other healthcare team members
- Consults with and is consulted by other health care professionals
- Provides nursing care related to health protection, disease prevention, anticipatory guidance, counseling, management of critical illness, palliative care and end of life care
- Uses advanced skills in complex and unstable environments
- Applies ethically sound solutions to complex issues related to individuals, populations and systems of care
- Practices principles of infection control relevant to critical care
- Practices independently within the legal framework of the country towards the interest of patients, families and communities
- Develops practice that is based on scientific evidence
- Uses applicable communication, counseling, advocacy and interpersonal skills to initiate , develop and discontinue therapeutic relationships
- Creates and maintains a safe therapeutic environment using risk management strategies and quality improvement
- Adapts practice to the social, cultural and contextual milieu

VII. Foundations of Critical Care Nursing Practice

Hours of instruction:

**Theory: 96 hours,
Practical/skill lab: 48 hours**

Unit	Hours	Content
I	10	<p>Introduction to Critical Care Nursing</p> <ul style="list-style-type: none"> • Introduction to the course • Review of anatomy and physiology of vital organs (Brain, Spinal Cord, Lungs, Heart, Kidney, Liver, Pancreas, Thyroid, Adrenal and Pituitary gland) • Historical review- Progressive patient care(PPC) • Concepts of critical care nursing • Principles of critical care nursing • Scope of critical care nursing • Critical care unit set up (including types of ICU, equipment, supplies, beds and accessories, use and care of various type of monitors & ventilators, Flow sheets, supply lines and the environment) • Personnel in ICU • Nursing staff • Doctors • Critical care technicians • Ancillary staff • Technology in critical care • Healthy work environment • Future challenges in critical care nursing
II	5	<p>Concept of Holistic care applied to critical care nursing practice</p> <ul style="list-style-type: none"> • Application of nursing process in the care of critically ill • Admission and progress in ICU- An overall view • Overview of ICU Management • Ensure adequate tissue oxygenation • Maintain chemical environment • Maintain temperature • Organ protection • Nutritional support • Infection control • Physiotherapy and rehabilitation • Family visiting hours • Restraints in critical care – physical, chemical and alternatives to restraints • Death in critical care unit: End of life care/Care of dying, care of family, organ donation • Transport of the critically ill – By air ambulance and surface ambulance • Stress and burnout syndrome among health team members

III	10	<p>Appraisal of the critically ill <i>Triaging concept, process and principles,</i></p> <p><i>Assessment of the critically ill</i></p> <ul style="list-style-type: none"> • General assessment • Respiratory assessment • Cardiac assessment • Renal assessment • Neurological assessment • Gastrointestinal assessment • Endocrine assessment • Musculoskeletal assessment • Integumentary assessment <p>Monitoring of the critically ill</p> <ul style="list-style-type: none"> • Arterial blood gas (ABG) • Capnography • Hemodynamics • Electrocardiography (ECG) • Glasgow Coma Scale (GCS) • Richmond agitation sedation scale (RASS) • Pain score • Braden score <p>Evaluation of the critically ill</p> <ul style="list-style-type: none"> • Evaluation of pre critical illness • Evaluation of critical illness • Outcome and scoring systems • Acute Physiology and Chronic Health Evaluation (APACHE I-IV) • Mortality probability model (MPM I, II) • Simplified acute physiology score (SAPS I, II) • Organ system failure • Full outline of unresponsiveness (FOUR) • Model for end-stage liver disease (MELD)
IV	14	<p>Advanced Concepts and Principles of Critical Care</p> <ul style="list-style-type: none"> • Principles of cardio-pulmonary-brain resuscitation • Emergencies in critical care: CPR • BLS • ACLS • Airway management • Oxygenation and oximetry, care of patient with oxygen delivery devices • Ventilation and ventilator support (including humidification and inhaled drug therapy), care of patient with invasive and non invasive ventilation

		<ul style="list-style-type: none"> • Circulation and perfusion (including hemodynamic evaluation and waveform graphics) • Fluids and electrolytes (review), care of patient with imbalances of fluid and electrolytes • Evaluation of acid base status • Thermoregulation, care of patient with hyper/hypo-thermia • Liberation from life support (Weaning) • Glycemic control, care of patient with glycemic imbalances
V	8	<p>Pain and Management</p> <ul style="list-style-type: none"> • Pain in Critically ill patients • Pain – Types, Theories • Physiology, Systemic responses to pain and psychology of pain Review • Acute pain services • Pain assessment – Pain scales, behavior and verbalization • Pain management-pharmacological (Opioids, benzodiazepines, propofol, Alpha agonist, Tranquilisers, Neuromuscular blocking agents) • Nonpharmacological management • Transcutaneous electrical nerve stimulation(TENS)
VI	8	<p>Psychosocial and spiritual alterations: Assessment and management</p> <ul style="list-style-type: none"> • Stress and psychoneuroimmunology • Post-traumatic stress reaction • ICU Psychosis, Anxiety, Agitation, Delirium • Alcohol withdrawal syndrome and delirium tremens • Collaborative management • Sedation and Relaxants • Spiritual challenges in critical care • Coping with stress and illness • Care of family of the critically ill • Counseling and communication
VII	4	<p>Patient and family education and counseling</p> <ul style="list-style-type: none"> • Challenges of patient and family education • Process of adult learning • Factors affecting teaching-learning process • Informational needs of families in critical care • Counseling needs of patient and family • Counseling techniques
VIII	5	<p>Nutrition Alterations and Management in critical care</p> <ul style="list-style-type: none"> • Nutrient metabolism and alterations

		<ul style="list-style-type: none"> • Assessing nutritional status • Nutrition support • Nutrition and systemic alterations • Care of patient on enteral and parenteral nutrition
IX	4	<p>Sleep alterations and management</p> <ul style="list-style-type: none"> • Normal human sleep • Sleep pattern disturbance • Sleep apnea syndrome
X	5	<p>Infection control in critical care</p> <ul style="list-style-type: none"> • Nosocomial infection in intensive care unit; methyl resistant staphylococcus aureus (MRSA) and other recently identified strains • Disinfection, Sterilization, • Standard safety measures, • Prophylaxis for staff • Antimicrobial therapy- review
XI	6	<p>Legal and ethical issues in critical care-Nurse's role</p> <p>Legal issues</p> <ul style="list-style-type: none"> • Issues giving raise to civil litigation • Related laws in india • Medical futility • Administrative law: Professional regulation • Tort law: Negligence, professional malpractice, intentional torts, wrongful death, defamation, assault and battery • Constitutional Law: Patient decision making <p>Ethical Issues</p> <ul style="list-style-type: none"> • Difference between morals and ethics • Ethical principles, ethical decision making in critical care, Strategies for promoting ethical decision making • Ethical issues relevant to critical care : • withholding and withdrawing treatment, <p>Managing Scarce resource in critical care</p> <ul style="list-style-type: none"> • Brain death, Organ donation & Counseling, • Do Not Resuscitate(DNR), Euthanasia, Living will • Nurses' Role
XII	8	<p>Quality assurance</p> <ul style="list-style-type: none"> • Design of ICU/CCU • assurance models applicable to ICUs • Standards, Protocols, Policies, Procedures • Infection control policies and protocols • Standard safety measures • Nursing audit relevant to critical care • Staffing

XIII	3	Evidence based practice in critical care nursing <ul style="list-style-type: none"> • Evidence based practice in critical care • Barriers to implementation • Strategies to promote implementation
	5	Class tests
Total	96 hrs	

List of skills to be practiced in the skill lab (46 hours include demonstration by the faculty and practice by the students)

- CPR (BLS and ACLS)
- Airway Management
 - o Laryngeal mask airway
 - o Cuff inflation and anchoring the tube
 - o Care of ET tube
 - o Tracheostomy care
 - o Suctioning – open/closed
 - o Chest physiotherapy
- Oxygenation and oximetry, care of patient with oxygen delivery devices
 - o Devices to measure oxygen/oxygenation
 - Fuel cell
 - Para magnetic oxygen analyzer
 - PO2 electrodes-Clark electrodes
 - Transcutaneous oxygen electrodes
 - Oximetry – Pulse oximetry, Venous oximetry
 - o Capnography
 - o Non-invasive ventilation
 - Low flow variable performance devices: nasal catheters/cannulae/double nasal prongs, face mask, face mask with reservoir bags
 - High flow fixed performance devices: Entrainment (Venturi) devices, NIV/ CPAP / Anesthetic masks, T pieces, breathing circuits
 - o Postural drainage
- Ventilation and ventilator support
 - o Connecting to ventilator
 - o Weaning from ventilator
 - o Extubation
 - o Humidifiers
 - o Nebulizers – jet, ultrasonic
 - o Inhalation therapy – metered dose inhalers (MDI), dry powder inhalers (DPI)
- Circulation and perfusion (including hemodynamic evaluation and waveform graphics)
 - o Invasive blood pressure monitoring
 - o Non-invasive BP monitoring

- o Venous pressure (Peripheral, Central and Pulmonary artery occlusion pressure)
- o Insertion and removal of arterial line
- o Insertion and removal of central line
- o Pulse index Continuous Cardiac output (PiCCO)
- o Electrocardiography (ECG)
- o Waveforms
- Fluids and electrolytes
 - o Fluid calculation and administration (crystalloids and colloids)
 - o Administration of blood and blood products
 - o Inotrope calculation, titration and administration
 - Cardiac glycosides – Digoxin
 - Sympathomimetics – Dopamine, dobutamine, epinephrine, isoproterenol, norepinephrine, phenylephrine
 - Phosphodiesterase inhibitors – amrinone, milrinone
 - o Electrolyte correction (Sodium, potassium, calcium, phosphorus, magnesium)
 - o Use of fluid dispenser and infusion pumps
- Evaluation of acid base status
 - o Arterial blood gas (ABG)
- Thermoregulation, care of patient with hyper/hypothermia
 - o Temperature probes
 - o Critical care management of hyper and hypothermia
- Glycemic control, care of patient with glycemic imbalances
 - o Monitoring GRBS
 - o Insulin therapy (sliding scale and infusion)
 - o Management of Hyperglycemia – IV fluids, insulin therapy, potassium supplementation
 - o Management of hypoglycemia – Dextrose IV
- Pharmacological management of pain, sedation, agitation, and delirium
 - Calculation, loading and infusion of – Morphine, Fentanyl, Midazolam, Lorazepam, Diazepam, Propofol, Clonidine, Desmetomidine, Haloperidol
 - Epidural analgesia- sensory and motor block assessment, removal of epidural catheter after discontinuing therapy, change of epidural catheter site dressing, insertion and removal of subcutaneous port for analgesic administration, intermittent catheterization for urinary retention for patients on epidural analgesia/PCA, dose titration for epidural infusion, epidural catheter adjustment, purging epidural drugs to check patency of catheter and also for analgesia
- Counseling
- Family education

Course Outcomes:

- Applies advanced concepts of critical care nursing based on sound knowledge of these concepts
- Uses invasive and noninvasive technology and interventions to assess, monitor and promote physiologic stability
- Works in collaboration with other healthcare team members
- Consults with and is consulted by other health care professionals
- Provides nursing care related to health protection, disease prevention, anticipatory guidance, counseling, management of critical illness, palliative care and end of life care

References:

1. Bickley, L. S., & Szilagy, P. G. (2013). Bates' guide to physical examination and history taking (11th ed.). New Delhi: Lippincott Williams and Wilkins.
2. Rhoads, J. (2006). Advanced health assessment and diagnostic reasoning. Philadelphia: Lippincott Williams & Wilkins.
3. Wilson, S. F., & Giddens, J. F. (2006). Health assessment for nursing practice (4th ed.). St. Louis, Missouri: Saunders Elsevier.

Critical Care Nursing I

Course Description:

This course is designed to assist students to appraise the diagnostic and monitoring requirements and management necessary to maintain homeostasis of critically ill patients and communicate their significance and possible consequences to relevant members of the multidisciplinary team and demonstrate skilled, safe, effective and sensitive practice in the care of critically ill patients

COURSE OBJECTIVES

- Applies advanced concepts of critical care nursing based on sound knowledge of these concepts
- Uses invasive and noninvasive technology and interventions to assess, monitor and promote physiologic stability
- Works in collaboration with other healthcare team members
- Consults with and is consulted by other health care professionals
- Provides nursing care related to health protection, disease prevention, anticipatory guidance, counseling, management of critical illness, palliative care and end of life care
- Uses advanced skills in complex and unstable environments
- Applies ethically sound solutions to complex issues related to individuals, populations and systems of care

Hours of instruction:

Theory: 96 hours,
Practical: 48hours

Unit	Hours	Content
I	6	Introduction <ul style="list-style-type: none">• Review of anatomy and physiology of vital organs• Review of assessment and monitoring of the critically ill

	16	<p>Cardiovascular alterations</p> <ul style="list-style-type: none"> • Review of Clinical assessment, pathophysiology, and pharmacology • Special diagnostic studies • Cardiovascular conditions requiring critical care management <ul style="list-style-type: none"> - Heart block and conduction disturbances - Coronary heart disease - Myocardial infarction - Pulmonary hypertension - Valvular heart disease - Atherosclerotic disease of aorta - Peripheral artery disease - Cardiomyopathy - Heart failure - Deep vein thrombosis - Congenital heart disease(cyanotic and acyanotic) • Cardiovascular therapeutic management <ul style="list-style-type: none"> - Cardiac transplant - Pacemakers - Cardioversion - Defibrillation - Implantable cardiovert defibrillators, - Thrombolytic therapy - Radiofrequency catheter ablation - Percutaneous Transluminal Coronary Angioplasty(PTCA) - Cardiac surgery –Coronary artery bypass grafting(CABG)/ Minimally invasive coronary artery surgery)MICAS, Valvular surgery, vascular surgery - Mechanical circulatory assistive devices – Intra aortic balloon pump - Effects of cardiovascular medications - Ventricular assist devices(VAD) - Extra corporeal membrane oxygenation(ECMO) • Recent advances and development
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III	15	<p>Pulmonary alterations</p> <ul style="list-style-type: none"> • Review of Clinical assessment, pathophysiology, and pharmacology • Special diagnostic studies • Pulmonary conditions requiring critical care management <ul style="list-style-type: none"> - Status asthmaticus - Pulmonary edema - Pulmonary embolism - Acute respiratory failure - Acute respiratory distress syndrome - Chest trauma - Chronic obstructive pulmonary disease - Pneumonia - Pleural effusion - Atelectasis - Longterm mechanical ventilator dependence • Pulmonary therapeutic management <ul style="list-style-type: none"> - Thoracic surgery - Lung transplant - Bronchial hygiene: Nebulization, deep breathing and coughing exercise, chest physiotherapy and postural drainage - Chest tube insertion and care of patient with chest drainage • Recent advances and development
IV	15	<p>Neurological alterations</p> <ul style="list-style-type: none"> • Review of Clinical assessment, pathophysiology, and pharmacology • Special diagnostic studies • Neurological conditions requiring critical care management <ul style="list-style-type: none"> - Cerebro vascular disease and cerebro vascular accident - Encephalopathy - Gillian Bare syndrome and Myasthenia gravis - Brain herniation syndrome - Seizure disorder - Coma, Unconsciousness - persistent vegetative state - Head injury - Spinal cord injury - Thermoregulation • Neurologic therapeutic management <ul style="list-style-type: none"> - Intracranial pressure – Assessment and management of intracranial hypertension

		<ul style="list-style-type: none"> - Craniotomy • Recent advances and development
V	15	<p>Nephrology alterations</p> <ul style="list-style-type: none"> • Review of Clinical assessment, pathophysiology, and pharmacology • Special diagnostic studies • Nephrology conditions requiring critical care management - Acute renal failure - Chronic renal failure - Acute tubular necrosis - Bladder trauma • Nephrology therapeutic management - Renal Replacement therapy: Dialysis - Renal transplant • Recent advances and development
VI	12	<p>Gastrointestinal alterations</p> <ul style="list-style-type: none"> • Review of Clinical assessment, pathophysiology, and pharmacology • Special diagnostic studies • Gastrointestinal conditions requiring critical care management - Acute GI bleeding - Hepatic failure - Acute pancreatitis - Abdominal injury - Hepatic encephalopathy - Acute intestinal obstruction - Perforative peritonitis • Gastrointestinal therapeutic management - Gastrointestinal surgeries - Liver transplant • Recent advances and development
VII	12	<p>Endocrine alterations</p> <ul style="list-style-type: none"> • Review of Clinical assessment, pathophysiology, and pharmacology • Special diagnostic studies • Endocrine conditions requiring critical care management - Neuroendocrinology of stress and critical illness - Diabetic ketoacidosis, Hyperosmolar non ketotic coma - hypoglycemia - Thyroid storm - Myxedema coma - Adrenal crisis - SIADH

		<ul style="list-style-type: none"> • Endocrine therapeutic management • Recent advances and development
	5	Class tests
Total	96 hours	

List of skills to be practiced in the skill lab (69 hour include demonstration by the faculty and practice by the students).

- Cardiovascular alterations

- o Thrombolytic therapy
- o Use of equipment and their settings – Defibrillator, PiCCO), Pace makers, Intra aorticballon pump(IABP)

- Pulmonary alterations

- o Tracheostomy Care
- o Nebulization
- o Chest physiotherapy
- o Chest tube insertion
- o Chest drainage

- Neurological alterations

- o Monitoring GCS
- o Conscious and coma monitoring
- o Monitoring ICP
- o Sedation score
- o Brain Death Evaluation

- Nephrology alterations

- o Dialysis
- Priming of dialysis machine
- Preparing patient for dialysis
- Cannulating for dialysis
- Starting and closing dialysis

- Gastrointestinal alterations

- o Abodminal pressure monitoring
- o Calculation of calorie and protein requirements

- o Special diets – sepsis, respiratory failure, renal failure, hepatic failure, cardiac failure, weaning, pancreatitis
- o Enteral feeding – NG/Gastrostomy/ Pharyngeal/Jejunostomy feeds
- o Total parenteral nutrition
- Endocrine alterations
 - o Collection of blood samples for cortisol levels, sugar levels, and thyroid hormone levels
 - o Calculation and administration of corticosteroids
 - o Calculation and administration of Insulin – Review

Course Outcomes:

- Uses advanced skills in complex and unstable environments
- Applies ethically sound solutions to complex issues related to individuals, populations and systems of care
- Practices principles of infection control relevant to critical care
- Practices independently within the legal framework of the country towards the interest of patients, families and communities
- Develops practice that is based on scientific evidence
- should be commenced when a nurse begins in critical care or when he/she has no previous experience of the specialty
- should be completed during the period of an academic critical care programme The Critical Care Competency Framework Content includes several system and additional areas.
- The recommendations are based on evidence from research in critical care nursing or allied fields.
- Ability to cooperate, being able to perceive the situation correctly, being aware of abilities and limitations, being able to act, and being able to disregard the technology when needed.
- will know and apply the basic and clinically supportive science in relation to cardiovascular physiology, respiratory physiology, renal physiology, metabolic/endocrine physiology, and all other systems as they relate to the critically ill patient.

References:

1. Bickley, L. S., & Szilagy, P. G. (2013). Bates' guide to physical examination and history taking (11th ed.). New Delhi: Lippincott Williams and Wilkins.
2. Rhoads, J. (2006). Advanced health assessment and diagnostic reasoning. Philadelphia: Lippincott Williams & Wilkins.
3. Wilson, S. F., & Giddens, J. F. (2006). Health assessment for nursing practice (4th ed.). St. Louis, Missouri: Saunders Elsevier.

Critical Care Nursing - II

Course Description:

This course is designed to assist students to appraise the diagnostic and monitoring requirements and management necessary to maintain homeostasis of critically ill patients and communicate their significance and possible consequences to relevant members of the multidisciplinary team and demonstrate skilled, safe, effective and sensitive practice in the care of critically ill patients

Course Objectives:

- Practices principles of infection control relevant to critical care
- Practices independently within the legal framework of the country towards the interest of patients, families and communities
- Develops practice that is based on scientific evidence
- Uses applicable communication, counseling, advocacy and interpersonal skills to initiate , develop and discontinue therapeutic relationships
- Creates and maintains a safe therapeutic environment using risk management strategies and quality improvement
- Adapts practice to the social, cultural and contextual milieu

Hours of instruction:

Theory: 96 hours,

Practical: 48 hours

Unit	Hours	Content
I	12	Hematological alterations <ul style="list-style-type: none">• Review of Clinical assessment, pathophysiology, and pharmacology• Special diagnostic studies• Hematology conditions requiring critical care management<ul style="list-style-type: none">- DIC- Thrombocytopenia- Heparin induced thrombocytopenia- Sickle cell anemia- Tumor lysis syndrome- Anemia in critical illness• Hematology therapeutic management<ul style="list-style-type: none">- Autologous blood transfusion- bone marrow transplantation• Recent advances and development

II	8	Skin alterations <ul style="list-style-type: none"> • Review of Clinical assessment, pathophysiology, and pharmacology • Special diagnostic studies • Conditions requiring critical care management <ul style="list-style-type: none"> - Burns - Wounds • Therapeutic management <ul style="list-style-type: none"> - Reconstructive surgeries for burns - Management of wounds • Recent advances and development
III	12	Multi system alterations requiring critical care <ul style="list-style-type: none"> • Trauma • Sepsis • Shock • Multiple Organ Dysfunction • Systemic inflammatory response syndrome • Anaphylaxis • DIC • Other injuries (Heat, Electrical, Near Hanging, Near drowning) • Envenomation • Drug overdose • Poisoning
IV	10	Specific infections in critical care <ul style="list-style-type: none"> • HIV • Tetanus • SARS • Rickettsiosis
V	9	Critical care in Obstetrics <ul style="list-style-type: none"> • Physiological changes in pregnancy • Conditions requiring critical care <ul style="list-style-type: none"> - Antepartum hemorrhage - PIH - Obstructed labor - Ruptured uterus - PPH - Puerperal sepsis - Obstetrical shock - HELLP syndrome - DIC - Amniotic fluid embolism - ARDS - Trauma

VI	10	<p>Critical care in children</p> <ul style="list-style-type: none"> • Prominent anatomical and physiological differences and implications • Conditions requiring critical care <ul style="list-style-type: none"> - Asphyxia neonatorum - Metabolic disorders - Intracranial hemorrhage - Neonatal sepsis - Dehydration - ARDS - Poisoning - Foreign bodies - Seizures - Status asthmaticus - Cyanotic heart disease - congenital hypertrophic pyloric stenosis - Tracheoesophageal fistula - imperforate anus - Acute bronchopneumonia - Trauma in children • Selected pediatric challenges <ul style="list-style-type: none"> - Ventilatory issue - Medication administration - Pain Management • Interaction with children and families
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II	10	<p>Critical Care in Older Adult</p> <ul style="list-style-type: none"> • Normal psycho biological characteristics of aging <ul style="list-style-type: none"> - Biological issues - Psychological issues - Concepts and theories of ageing - Stress & coping in older adults - Common Health Problems & Nursing Management; • Physical challenges <ul style="list-style-type: none"> - Auditory changes - Visual changes - Other sensory changes - Skin changes - Cardiovascular changes - Respiratory changes - Renal changes - Gastro intestinal changes - Musculoskeletal changes - Endocrine changes - Immunological changes • Psychological challenges <ul style="list-style-type: none"> - Cognitive changes - Abuse of the older person - Alcohol abuse • Challenges in medication use <ul style="list-style-type: none"> - Drug absorption - Drug distribution - Drug metabolism - Drug excretion • Hospital associated risk factors for older adults • Long term complications of critical care <ul style="list-style-type: none"> - Care transitions - Palliative care and end of life in critical care
VIII	10	<p>Critical Care in Perianesthetic period</p> <ul style="list-style-type: none"> • Selection of anesthesia • General anesthesia • Anesthetic agents • Perianesthesia assessment and care • Post anesthesia problems and emergencies requiring critical care <ul style="list-style-type: none"> - Respiratory-Airway obstruction, Laryngeal edema, Laryngospasm, Bronchospasm, Noncardiogenic pulmonary edema, Aspiration, Hypoxia,Hypoventilation - Cardiovascular – Effects of anesthesia on cardiac function, Myocardial dysfunction, Dysrhythmias, postoperative hypertension, post operative hypotension - Thermoregulatory – Hypothermia, shivering, hyperthermia, malignant hyperthermia

		- Neurology- Delayed emergence, emergence delirium, - Nausea and vomiting
IX	10	Other special situations in critical care • Rapid response teams and transport of the critically ill • Disaster management • Ophthalmic emergencies – Eye injuries, glaucoma, retinal detachment • ENT emergencies - Foreign bodies, stridor, bleeding, quinsy, acute allergic conditions • Psychiatric emergencies – Suicide, crisis intervention
	5	Class tests
Total	96 hours	

List of skills to be practiced in the skill lab (69 hours include demonstration by the faculty and practice by *the students*).

- Hematological alterations
 - o Blood transfusion
 - o Bone marrow transplantation
 - o Care of Catheter site
- Bone marrow aspiration
 - o Skin alterations
 - o Burn fluid resuscitation
 - o Burn feeds calculation
 - o Burn dressing
 - o Burns bath
 - o Wound dressing
- Multi system alterations requiring critical care
 - o Triage
 - o Trauma team activation
 - o Administration of anti snake venom
 - o Antidotes
- Specific infections in critical care
 - o Isolation precautions
 - o Disinfection and disposal of equipment
- Critical care in Obstetrics, children, and Older Adult
 - o partogram

- o equipments – incubators, warmers
- Critical Care in Perianesthetic period
 - o Assisting with planned intubation
 - o Monitoring of patients under anesthesia
 - o Administration of nerve blocks
 - o Titration of drugs – Ephedrine, Atropine, Naloxone, Avil, Ondansetron
 - o Sensory and motor block assessment for patients on epidural analgesia.
 - o Technical troubleshooting of syringe / infusion pumps.
- Other special situations in critical care
 - o Disaster preparedness and protocols

Note : The skills listed under the Specialty courses such as Foundations of Critical Care Nursing Practice, Critical Care Nursing I and Critical Care Nursing II are taught by the faculty in skill lab. The students after practicing them in the lab, will continue to practice in the respective ICUs. The log book specifies all the requirements to be completed and the list of skills that are to be signed by the preceptor once the students develop proficiency in doing the skills independently.

Course Outcomes:

- Uses applicable communication, counseling, advocacy and interpersonal skills to initiate, develop and discontinue therapeutic relationships
- Creates and maintains a safe therapeutic environment using risk management strategies and quality improvement
- Adapts practice to the social, cultural and contextual milieu
- Critical Care in Perianesthetic period
- Plan and perform procedures and therapies for the purpose of assessment and/or management
- Establish plans for ongoing care and, when appropriate, timely consultation
- Actively contribute, as an individual and as a member of a team providing care, to the continuous improvement of health care quality and patient safety.
- Perform a patient-centred clinical assessment and establish a management plan.
- Practice medicine within their defined scope of practice and expertise
- Engage patients and their families in developing plans that reflect the patient's health care needs and goals

- Document and share written and electronic information about the medical encounter to optimize clinical decision-making, patient safety, confidentiality, and privacy
- Work effectively with physicians and other colleagues in the health care professions
- Integrate best available evidence into practice
- Demonstrate a commitment to patients by applying best practices and adhering to high ethical standards

References:

- Diepenbrock, N. H. (2008). Quick reference to critical care (3rd ed.). Philadelphia: Lippincott Williams and Wilkins.
- John, G., Subramani, K., Peter, J. V., Pitchamuthu, K., & Chacko, B. (2011). Essentials of critical care (8th ed.) .
- Christian Medical College: Vellore.
- Morton, P. G., & Fontaine, D. K. (2013). Critical Care Nursing: A Holistic Approach (9th ed.). Lippincott Williams and Wilkins: Philadelphia
- Perrin, K. O. (2009). Understanding the essentials of critical care nursing. New Jersey: Pearson Education.
- Urden, L. D., Stacy, K. M., & Lough, M. E. (2014). Critical Care Nursing- Diagnosis and management (7th ed.). Elsevier: Missouri
- Wyckoff, M., Houghton, D., & Lepage, C. (2009). Critical care. New York: Springer publishing company.

Appendix 1
EQUIPMENT LIST FOR A TEN BEDDED ICU

1.	Adjustable electronic cot with mattress	–	10
2.	IV stand	–	20
3.	Bed side locker	–	11 (10 – patient; 1 – stock)
4.	Over bed trolley	–	10
5.	Dressing trolley (Small)	–	5
6.	Dressing trolley (medium)	–	2
7.	Syringe pump	–	60
8.	Infusion pump	–	35
9.	Monitors	-	11 (10 –patient; 1- stock)
10.	Transport monitor/pulseoximeter	–	2
11.	Ventilators	–	12 (10 – patient; 2 – stock)
12.	Portable ventilators	-	2
13.	ABG machine	–	2
14.	ECG machine	–	1
15.	Ultrasound machine	–	1
16.	Doppler machine	–	1
17.	Defibrillator	–	2
18.	Peripheral Nerve Stimulator	–	1
19.	Blood warmer	–	3
20.	Patient warmer	–	5
21.	Sequential Compression Device	–	10
22.	Alpha mattress with motor	–	15
23.	LED shield	–	1
24.	Crash cart	–	1
25.	Transfer trolley	–	4
26.	OR trolley	-	2
27.	Safe slider	–	2
28.	Computer	–	4
29.	Printers	–	2

30.	Bain circuit	–	12
31.	Oxygen flow meter	–	30
32.	Suction port with jar	–	15
33.	Air flow meter /pulmoaid	–	10
34.	Refrigerator	–	3 (1- feeds, 1- drugs,
35.	Metal foot step/foot stool	–	10
36.	Ambulation chair	–	5
37.	UPS	-	1
38.	Flat trolley	-	1
39.	Dialysis machine	-	1
40.	Spot light	–	2
41.	Labelling machine	–	1
42.	Glucometer	–	2
43.	Ambu bag with different sizes	–	10 sets
44.	Fiberoptic bronchoscope	–	1
45.	Intubating videoscope	-	1
46.	Minimum standards for Indian ICUS		(ICU 6-12 beds) (ISCCM, 2010)

Bed space – minimum 100 sq. ft.

Additional space (storage, Nursing station, doctors room and circulation space)- 100% extra of the bed space.

Oxygen outlets 2

Vacuum outlets 2

Compressed air outlets 1

Electric outlets (2 on each side of patients)

With 5/15 amp pins

Central nursing station

Appendix 2a
CLINICAL LOG BOOK FOR NURSE PRACTITIONER (NP)
PROGRAM IN CRITICAL CARE

(Specific competencies/Skills)

I YEAR

S.No.	SKILLS	NUMBER PERFORMED	DATE	SIGNATURE OF THE PRECEPTOR*
I.	RESEARCH APPLICATION AND EVIDENCE BASED PRACTICE			
1.	Preparation of research instrument			
2.	Preparation of a manuscript for Publication			
3.	Writing systematic review			
4.	Dissertation Topic:			
II.	ADVANCED SKILLS IN LEADERSHIP, MANAGEMENT, AND TEACHING			
1.	Preparation of staff patient assignment			
2.	Preparation of unit budget			
3.	Preparation of staff duty roster			
4.	Patient care audit			
5.	reparation of nursing care standards and protocols			
6.	Management of equipment and supplies			
7.	Monitoring, evaluation, and writing report of infection control practices			
8.	Micro teaching / patient education sessions			
9.	Preparation of teaching method and media for patients and staff			
10	Planning and conducting OSCE/OSPE			
11.	Construction of tests			
III.	ADVANCED HEALTH ASSESSMENTS			
1.	Comprehensive history taking			
2.	Focused physical assessment (System wise)			
2.1	Respiratory system			
2.2	Cardiac system			
2.3	Gastrointestinal			
2.4	Nervous			
2.5	Genitourinary			

2.6	Endocrine			
2.7	Hematological			
2.8	Musculoskeletal			
2.9	Integumentary			
2.10	Sensory organs			
3	Age specific History &physical Examination			
3.1	Geriatric			
3.2	Adult			
3.3	Child			
3.4	Neonate			
4	History &Physical examination of a Pregnant woman			
III	DIAGNOSTIC PROCEDURES			
1.	Collecting blood sample			
1.1	Biochemistry			
1.2	Clinical pathology			
1.3	Microbiology			
1.4	ABG			
2.	Assisting procedures			
2.1	Paracentesis			
2.2	Thoracentesis			
2.3	Lumbar puncture			
2.4	Liver biopsy			
2.5	Renal biopsy			
2.6	Bone marrow aspiration			
3.	Witnessing procedures			
3.1	Chest X – ray			
3.2	ERCP			
3.3	PET scan			
3.4	Endoscopy			
3.5	MRI / CT			
3.6	Ultrasound			
3.7	EMG			
3.8	Echocardiogram			
4	ECG			
III	GENERAL COMPETENCIES			
1	Admission			
2	Transfer			
3	Transport			
4	Discharge / LAMA			
5	Medico-legal compliance			
6	Family education andcounselling			

7	End of life Care			
7.1	Brain death			
7.2	Organ donation			
8.	After life Care			
9.	Setting up, use and maintenance of Critical care equipment			
9.1	Ventilator			
9.2	Monitor			
9.3	Transducer / pressure bag			
9.4	Temperature probes			
9.5	SpO2 probes			
9.6	Sequential compressing device			
9.7	12 –lead ECG monitor			
9.8	Warmer			
9.9	Fluid warmer			
9.10	ET Cuff pressure monitor			
9.11	Defibrillator			
9.12	Pacemaker			
9.13	Syringe pump			
9.14	Infusion pump			
9.15	Alpha mattress			
9.16	CRASH trolley			
10	Triage			
11	Care during transfer by air ambulance and surface ambulance			

Appendix 2b
CLINICAL LOG BOOK FOR NP IN CRITICAL CARE

(Specific competencies/Skills)

II Year

S.No.	SKILLS	NUMBER PERFORMED	DATE	SIGNATURE OF THE PRECEPTOR*
I.	GENERAL COMPETENCIES			
1.	Setting up, use and maintenance of Critical care equipment			
1.1	Ventilator			
1.2	Monitor			
1.3	Transducer / pressure bag			
1.4	Temperature probes			
1.5	SpO2 probes			
1.6	Sequential compressing device			
1.7	12 –lead ECG monitor			
1.8	Warmer			
1.9	Fluid warmer			
1.10	ET Cuff pressure monitor			
1.11	Defibrillator			
1.12	Pacemaker			
1.13	Syringe pump			
1.14	Infusion pump			
1.15	Alpha mattress			
1.16	CRASH trolley			
1.17	CPAP / BiPAP			
2.	Monitoring of critically ill patients			
2.1	Arterial blood gas ABG			
2.2	Oxygen saturation			
2.3	Endotracheal tube cuff pressure			
2.4	Capnography			
2.5	Hemodynamics			
2.6	Electrocardiogram (ECG)			

2.7	Intracranial pressure			
2.8	Invasive BP monitoring			
2.9	Non invasive BP monitoring			
2.10	PiCCO			
2.11	Peripheral vascular status			
2.12	Glasgow Coma Scale			
2.13	Sedation Scale			
2.14	Pain Score			
2.15	Braden Score			
2.16	Bowel sounds			
2.17	GRBS			
2.18	Partogram			
3.	Administration of medication			
3.1	Sedation			
3.2	Muscle relaxant			
3.3	Electrolyte infusion			
3.4	Insulin infusion			
3.5	Inotropes administration			
3.6	Thrombolytic drug			
3.7	Corticosteroid			
4.	Infection control			
5	Universal precaution			
6	Disinfection / Sterilization			
7	Preparation of standards/policies/protocols			
8.	BLS			
9.	ACLS			
10	Management of Cardiovascular Alterations			
10.1	Fluid administration (Colloid/Crystalloid)			
10.2	Blood and blood product administration			
10.3	Application of TED stocking			
10.4	Insertion and Care of CVP line			

10.5	Removal of CVP line			
10.6	Assisting with insertion of arterial line			
10.7	Care of arterial line			
10.8	Removal of arterial line			
10.9	Assisting with insertion of pulmonary artery catheter			
10.10	Care of Patient with Pacemaker			
10.11	Blood collection from arterial line			
11	Management of Pulmonary Alterations			
11.1	Airway application			
11.2	Laryngeal mask airway			
11.3	Assisting with intubation			
11.4	Care of ET tube			
11.5	Extubation			
11.6	Assisting for tracheostomy insertion			
11.7	Tracheostomy care and suctioning			
11.8	Endotracheal suctioning – Open			
11.9	Endotracheal suctioning – Closed			
11.10	Assisting with insertion of chest tube			
11.11	Care of patient with Chest drainage			
11.12	Chest tube removal			
11.13	Nebulization			
11.14	Oxygen administration			
11.15	Care of patient on Mechanical ventilator			
11.16	Non – invasive ventilation			
11.17	Connecting to Ventilator			
11.18	Weaning from ventilator			
11.19	Use of T-tube and Venturi devices			
11.20	Postural drainage			
11.21	Weaning from tracheostomy			

11.22	Chest physiotherapy			
11.23	Assisting for bronchoscopy			
12	Management of Neurological Alterations			
12.1	Sensory stimulation			
12.2	Consciousness/Coma status monitoring			
12.3	Brain death evaluation			
13	Management of Genitourinary Alterations			
13.1	Cannulating for hemodialysis			
13.2	Starting and closing of hemodialysis			
13.3	Care of patient on hemodialysis			
13.4	Initiating peritoneal dialysis			
13.5	Care of patient on peritoneal dialysis			
13.6	Calculation of fluid replacement			
13.7	Care of patient with continuous urinary drainage			
14	Management of Gastrointestinal Alterations			
14.1	Estimation of dietary allowance			
14.2	Enteral nutrition			
14.2.1	NG feeding			
14.2.2	Gastrostomy / Jejunostomy feeding			
14.3	Test feeds			
14.4	Parenteral nutrition			
14.5	Therapeutic diet planning			
15	Management of Endocrine Alterations			
15.1	Titration of insulin			
15.2	Calculation of steroid administration			
16.	Ordering procedures and investigations			
16.1	EKG			
16.2	ABG			
16.3	Chest X ray			

16.4	Ultrasound			
16.5	Biochemistry investigations			
16.6	Microbiology investigations			
17	Ordering Treatment			
17.1	Ordering Treatment			
17.2	Nebulization			
17.3	Chest physiotherapy			
17.4	Distal colostomy wash			
17.5	Insertion and removal of urinary catheter for female patients.			
17.5	Test feeds			
17.6	TEDS			
17.7	Surgical dressing			
17.8	Starting and closing dialysis			
17.9	Administration of TPN infusion with written Order			
17.10	Magnesium Sulphate dressing for Thrombophlebitis / extravasation.			
17.11	Application of Icthammol Glycerin /			
17.12	Pin site care for patients on external fixators			
17.13	Isometric and isotonic exercises			
17.14	Hot and cold applications			

* When the student is found competent to perform the skill it will be signed by the Preceptor.

Appendix 3

CLINICAL REQUIREMENTS FOR NP CRITICAL CARE NURSING PROGRAM

S.No.	CLINICAL REQUIREMENT	DATE	SIGNATURE OF THE PRECEPTOR
I	Clinical Conference		
	Drug studies on standing orders		
II	Case/ Clinical Presentation		
III	Nursing Rounds		
IV	Clinical Seminar		
V.	Journal Club		
VI	Nursing Process(NP)/Care study Report		
VII	Advanced Health Assessment		
VIII	Faculty Lecture		

IX	Self directed learning		
X.	Written Assignment		
XI	Case study analysis		
XII	Workshop		

The number under each category will be finalized based on implementation plan of theory, practical and clinical.

Appendix 4

STANDING ORDERS

NURSE PRACTITIONER IN CRITICAL CARE

Nurse practitioners are prepared and qualified to assume responsibility and accountability for the care of critically ill patients. They collaborate with Intensivists, physicians, surgeons and specialists to ensure accurate therapy for patients with high acuity needs. On completion of the program, the NPs will be permitted to administer drugs listed in standing orders as per the institutional protocols/standing orders. They will also be permitted to order diagnostic tests/procedures and therapies

The following intravenous injections or infusions may be administered by the Nurse Practitioner during emergency in any of the ICUs

Catecholamines

1. Adrenaline
2. Noradrenaline
3. Dopamine
4. Dobutamine

Antidysrhythmic

5. Adenosine
6. Amiodarone
7. Lidocaine/ Xylocard

Adrenergic agent

8. Ephedrine

Bronchodilators

9. Aminophylline
10. Deriphylline

Non depolarizing skeletal muscle relaxant

11. Atracurium (Vecuronium, Pancurium)

Anticholinergic

12. Atropine Sulphate

Antihistamine

13. Avil

Antihypertensive

14. Clonidine
15. Glycerintrinitrate
16. Isoptin

Corticosteroid

17. Hydrocortisone
18. Dexamethasone

Antiepileptic

19. Levitracetam

20. Phenytoin

Sedatives & relaxants

- 21. Valium
- 22. Midazolam
- 23. Morphine Sulphate
- 24. Pentazocin Lactate (Fortwin)
- 25. Pethidine Hydro Chloride
- 26. Propofol

Electrolytes & acid base correction agents

- 27. Soda bicarbonate 8.4%
- 28. Soda bicarbonate 7.5%
- 29. Magnesium sulphate
- 30. Potassium chloride

Additional drugs that can be administered specific to each ICU are as follows:

SURGICAL INTENSIVE CARE UNIT (including nephrology, burns, obstetric and gynaecologic patients)	MEDICAL INTENSIVE CARE UNIT (including nephrology, hematology, dermatology and infectious patients)	CARDIOTHORACIC CRITICAL CARE UNIT	CARDIAC CRITICAL CARE UNIT
Naloxone Pitocin Proataminesulphate	Digoxin Tranexamic acid Verapamil	Sodium nitroprusside Largactil Amrinone Milrinone Decadron	Sorbitrate Angised Streptokinase Urokinase Elaxime
EMERGENCY SERVICES	PAEDIATRIC INTENSIVE CARE	NEUROLOGICAL INTENSIVE CARE	

	UNIT	UNIT	
Methylprednisolone Emeset Antisnake venom	Dilantin	Tensilon Neostigmine Thiopentone Mestinon Prostigmine	

The following investigations and therapies may be ordered by the Nurse Practitioner

ORDERING INVESTIGATIONS	ORDERING THERAPIES
ECG ABG Chest X ray Basic Bio chemistry investigations – Hb, PCV, TIBC, WBC Total, WBC differentials, ESR, Electrolytes, platelets, PT, aPTT, bleeding and clotting time, procalcitonin, D dimer, creatinine, HbA1C, AC, PC, HDL, LDL, TIG, Cholesterol total, HIV, HbsAg, HCV, Basic Microbiology investigations – blood samples for culture and sensitivity, tips of vascular access and ET tube for culture,	Nebulization Chest physiotherapy Distal colostomy wash Insertion and removal of urinary catheter for female patients. Test feeds TEDS Surgical dressing Starting and closing dialysis Administration of TPN infusion with written order Application of Icthammol Glycerin / Magnesium Sulphate dressing for Thrombophlebitis / extravasation. Pin site care for patients on external fixators Isometric and isotonic exercises