Krishna Institute of Medical Sciences Deemed University

Krishna Institute of Nursing Sciences.

Syllabus

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M.Sc. in NPCC Nursing - Program code: 4306

Krishna Institute Of Medical Sciences Deemed University

Krishna Institute of Nursing Sciences.

Syllabus

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Nurse Practitioner in Critical Care Post Graduate Residency Program

INDEX

Philosophy

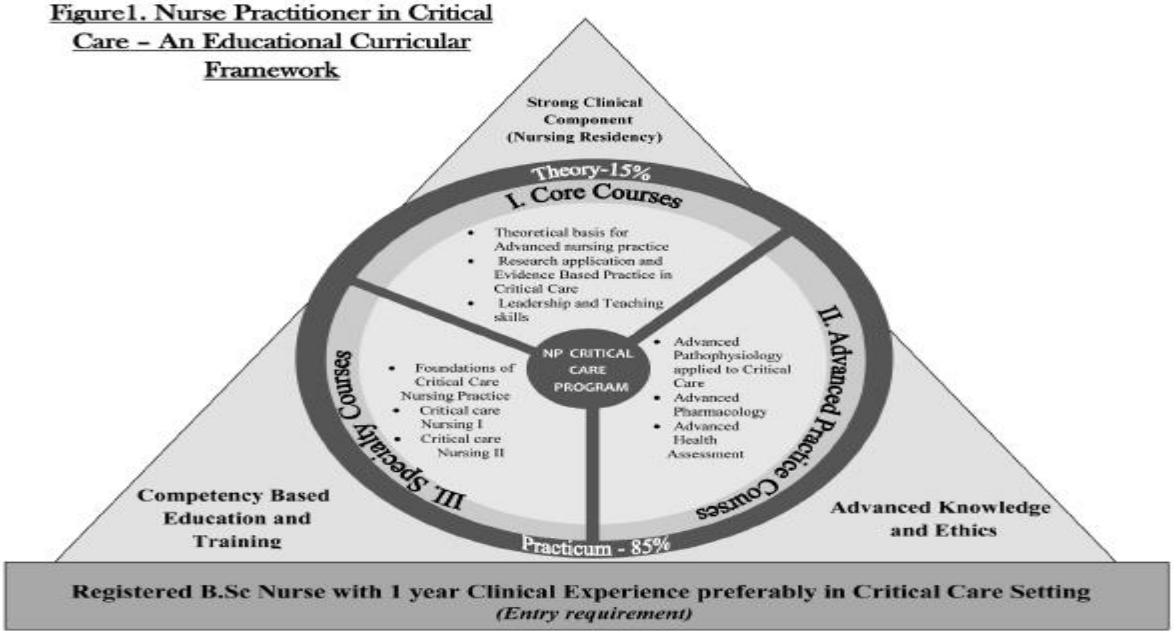
Krishna institute of medical sciences Deemed to be university's, Krishna Institute of Nursing Sciences believes that, there is a great need to establish a postgraduate program titled Nurse Practitioner in Critical Care to meet the challenges and demands of tertiary health care services in India which is reflected in the National Health Policy (NHP draft document 2015) in order to provide quality care to critically ill patients and families.

Krishna Institute of Nursing Sciences believes that postgraduates from a residency program focused on strong clinical component and competency based training must be able to demonstrate clinical competence based on sound theoretical and evidence based knowledge. The teaching learning approach should focus on adult learning principles, competency based education, collaborative learning, clinical experience with medical and nursing preceptors, experiential learning and self-directed learning. Education providers/preceptors/mentors must update their current knowledge and practices. Medical faculty is invited to participate as preceptors in the training.

Krishna Institute of Nursing Sciences also believes that a variety of educational strategies can be used in the clinical settings to address the deficit of qualified critical care nursing faculty. It is hoped to facilitate developing policies towards registration/ licensure and create cadre positions for appropriate placement of these postgraduate critical care NPs to function in critical care units of tertiary care centers.

An educational framework for the NP curriculum is proposed (See Figure 1).

Figure1. Nurse Practitioner in Critical Care – An Educational Curricular Framework



PROGRAM DESCRIPTION

Program Description

The NP program is a Nursing residency program with a main focus on Competency based training. The duration is of two years with the curriculum consisting of theory that includes core courses, advanced practice courses and clinical courses besides clinical practicum which is a major component (Refer Curricular framework).

AIM

The critical care NP program prepares registered BSc nurses for advanced practice roles as clinical experts, managers, educators and consultants leading to M.Sc degree in critical care NP.

OBJECTIVES

On completion of the program, the NP will be able to

1. Assume responsibility and accountability to provide competent care to critically ill patients and appropriate family care in tertiary care centers.
2. Demonstrate clinical competence / expertise in providing critical care which includes

diagnostic reasoning, complex monitoring and therapies
3. Apply theoretical, patho-physiological and pharmacological principles and evidence base in implementing therapies / interventions in critical care
4. Identify the critical conditions using differential diagnosis and carry out treatment/interventions to stabilize and restore patient's health and minimize or manage complications independently or collaboratively as a part of critical care team
5. Collaborate with other health care professionals in the critical care team, across the continuum of critical care.

MINIMUM REQUIREMENTS TO START THE NP

CRITICAL CARE PROGRAM

The institution must accept the accountability for the NP program and its students and offer the program congruent with the INC standards. It must fulfill the following requirements.

1. Essentiality Certificate

a. If any institution opting to start NP program already has BSc (N) or MSc (N) program recognized by INC, it will be exempted from NOC (No Objection Certificate)/Essentiality Certificate for NP in critical care post graduate residency program from State Government
b. If the institution is having any University education program of training nurses and doctors or if they have DNB program, NOC will not be required to start NP program

2. Hospital

The hospital should be a parent tertiary care centre, with a minimum of 200 beds. It can have a medical college or nursing college

3. ICU Beds

The hospital should have a minimum of 4 ICUs namely medical ICU, surgical ICU, cardio/cardiothoracic ICU and Emergency care unit with a minimum of 5 beds each and total of 20 beds.

4. ICU staffing

a. Every ICU should have a charge nurse with BSc or MSc qualification
b. The nurse patient ratio should be 1:1 for every shift for ventilated patients
c. For the rest of ICU beds the nurse patient ratio should be 1:2 for every shift
d. Provision of additional 45% staff towards leave reserve
e. Doctor patient ratio can be 1:5

5. Faculty/ Staff resources

a. Clinical area: Full time qualified GNM with 6 years of experience in critical care nursing or BSc with 2 years experience in critical care nursing or MSc(Specialty-Medical Surgical Nursing/Pediatric Nursing/ Obsetrics&Gynaecology Nursing) with one year critical care nursing experience (One faculty for every 10 students)
b. Teaching faculty: Professor/Associate professor- 1(Teaching experience- 5 years post PG), Assistant professor- 1 (Teaching experience- 3 years post BSc)
c. The above faculty shall perform dual role or a senior nurse with MSc qualification employed in the tertiary hospital.
d. Guest lecturers: for pharmacology Preceptor student ratio -Nursing 1:10, Medical 1:10

6. Physical and learning resources at hospital/college

a. One classroom/conference room at the clinical area

b. Skill lab for simulated learning (hospital/college)

c. Library and computer facilities with access to online journals

d. E-Learning facilities

7. List of equipment for ICU (enclosed) Appendix-1

8. Student Recruitment/Admission Requirements

a. 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.

b. Must have undergone the BSC in an institution recognized by the Indian Nursing Council.

c. Must have scored not less than 55% aggregate marks in the BSc program

d. 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%

EXAMINATION REGULATION

Classification of results

Pass: 50% pass in theory and Clinical Practicum

Second Division: 50-59%

First Division: 60-74%

Distinction: 75% and above

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: 6hours 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 MSc faculty teaching the NP program with minimum two years of experience.

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-MScN)

Ethical clearance should be obtained by the hospital ethics committee

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

- **Scheme of Final Examination**

S. NO	Title	Theory %			Practical %		
		Hours	Internal	External	Hours	Internal	External
I Year							
	I Year **Core Courses**						
1	Theoretical Basis for advanced practice nursing	3 hrs	50				
2	Research Application and Evidence	3 hrs	30	70			
3	Advanced skills in Leadership, Management and Teaching	3 hrs	30	70			
4	**Advanced Practice Courses** Advanced Pathophysiology & Advanced Pharmacology relevant to Critical Care	3 hrs	30	70			
5	Advanced Health/physical Assessment	3 hrs	30	70		50	50
1	**II Year** **Specialty Courses**	3 hrs	30	70		100	100
2	Critical Care Nursing I	3 hrs	30	70		100	100
3	Critical Care Nursing II	3 hrs	30	70		100	100

4	Dissertation and viva	3 hrs				50	50

CURRICULUM

Courses of Instruction

		Theory(Hrs)	Lab/Skill Lab(Hrs)	Clinical (Hrs)
I Year				
I	**Core Courses** Theoretical Basis for Advanced Practice Nursing	40		
II	Research Application and Evidence Based Practice in Critical Care	56	24	**336** 7wks
III	Advanced skills in Leadership, Management and Teaching Skills	56	24	**184** 4wks
IV	**Advanced Practice Courses**	60		**336** 7wks
V	Advanced Pathophysiology applied to Critical Care	54	48	**336** 7wks
VI	Advanced Pharmacology applied to Critical Care	70		**576** 12wks
TOTAL= 2208hrs		**336 (7wks)**	**96 (2wks)**	**1776(37wks)**
II year				
VII	**Specialty Courses** Foundations of Critical Care Nursing Practice	96	48	**552** 11wks
VIII	Critical Care Nursing I	96	48	**552** 13wks
IX	Critical Care Nursing II	96	48	**644** 13wks
TOTAL=2208hrs		**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
Two years = 4416 hrs
Instructional Hours: Theory = 624hrs, Skill lab= 240hrs, Clinical =3552hrs
TOTAL= 4416 hrs

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

II year : 288-144-1776hrs (Theory-skill lab-clinical)[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 PRACTICE

□□□ 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)

□□□ 8 hours duty with one day Off in a week and on call duty one per week

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

C. Teaching methods:

Teaching-theoretical, lab & Clinical can be done in the following methods and integrated during
clinical posting

- Clinical conference
- Case/clinical presentation
- In depth drug study, presentation and report
- Nursing rounds
- Clinical seminars
- Journal clubs
- Case study/Nursing process
- Advanced health assessment
- Faculty lecture in the clinical area
- Directed reading
- Assignments
- Case study analysis
- Workshops

D. Procedures/log book

At the end of each clinical posting, clinical log book (Specific competencies/Clinical skills & clinical

requirements) has to be signed by the preceptor every fortnight (Appendix 2a, 2b, 3)

E. NP Critical Care Competencies (Adapted from ICN, 2005)

- Uses advanced comprehensive assessment, diagnostic, treatment planning, implementation and
- evaluation skills
- Applies and adapts advanced skills in complex and / or unstable environments
- Applies sound advanced clinical reasoning and decision making to inform, guide and teach in practice
- Documents assessment, diagnosis, management and monitors treatment and follow-up care in partnership with the patient
- Administer drugs and treatments according to institutional protocols
- Uses applicable communication, counseling, advocacy and interpersonal skills to initiate, develop and
- discontinue therapeutic relationships
- Refers to and accepts referrals from other health care professionals to maintain continuity of care
- Practices independently where authorizes and the regulatory framework allows in the interest of the patients, families and communities
- Consults with and is consulted by other health care professionals and others
- Works in collaboration with health team members in the interest of the patient
- Develops a practice that is based on current scientific evidence and incorporated into the health management of patients, families and communities
- Introduces, tests, evaluates and manages evidence based practice
- Uses research to produce evidence based practice to improve the safety,

efficiency and effectiveness of care through independent and inter-professional research

- Engages in ethical practice in all aspects of the APN role responsibility
- Accepts accountability and responsibility for own advanced professional judgement, actions, and continued competence
- Creates and maintains a safe therapeutic environment through the use of risk management strategies and quality improvement
- Assumes leadership and management responsibilities in the delivery of efficient advanced practice nursing services in a changing health care system
- Acts as an advocate for patients in the health care systems and the development of health policies that promote and protect the individual patient, family and community
- Adapts practice to the contextual and cultural milieu

F. Institutional Protocol/standing orders based administration of drugs & ordering of investigations and therapies

The students will be trained to independently administer drugs and order diagnostic tests, procedures, medical equipment and therapies as per institutional protocols/standing orders. (Appendix 4 Standing orders).Administration of emergency drugs is carried out in consultation with concerned physician and endorsed later by written orders.

Implementation of curriculum-A tentative plan

I yr. Courses	**Introductory classes**	**Workshop**	**Theory integrated in clinical**	**Methods of teaching (Topic can be specified)**
1. Theoretical basis for Advanced practice Nursing (40)	8hrs		1x32=32hrs	· Seminar / Theory application · Lecture (faculty)
2. Research Application and Evidence Based Practice in Critical Care (56+24)	8	40 (5days) +6hrs	1x26=26hrs	· Research study analysis/ · Exercise / Assignment (lab)
3. Advanced skills in leadership, Management and Teaching (56+24)	12	2hrs(Block classes)	1x26=26hrs 2.5x16=40hrs	· Clinical conference · Seminar Exercises/Assignment (lab)
4. Advanced Pathophysiology (60)			1.5x37=56hrs	· Case presentation · Seminar · Clinical conference
5. Advanced Pharmacology (54)			1x44=44hrs	· Nursing rounds · Drug study presentation · Standing orders / presentation

6. Advanced Health Assessment (70+40)	6hrs		2x26=52hrs 1.5x18=27hrs 1x12=12hrs 2x7=14hrs 2x2=4hrs	· 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**	**Methods of teaching**
1. Foundations (96+48hrs) =144hrs	9hrs x11wks=99 hrs	· Demonstration (lab) · Return demonstration (lab) · Clinical teaching · Case study · Seminar · Clinical conference · Faculty lecture
2. Critical Care Nursing 96+48hrs) =144hrs	9x16=144hrs --------	· 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	9x16=144hrs	· Demonstration (lab) · Return Demonstration · Nursing rounds · Clinical conference / journal club · Seminar · Faculty lecture

II year 45 wks – 8.5/9hrs/wk

Attendance: 100% in theory, practical and clinical.

<u>Topic for every teaching method will be specified in the detailed plan by the respective teacher/ institution concerned.</u>

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M.SC. in NPCC Nursing Program code: 4306 Course code: 4306-11

1st Year M.SC. in NPCC Nursing

NURSE PRACTITIONER IN CRITICAL CARE POST GRADUATE RESIDENCY

PROGRAM.

I st Yr.N.P.C.C. THEORY: 336 hrs, Skill lab= 96 hrs, Clinical =1776 hrs

COURSE DESCRIPTION

The NP program is a Nursing residency program with a main focus on Competency based training. The duration is of two years with the curriculum consisting of theory that includes core courses, advanced practice courses and clinical courses besides clinical practicum which is a major component (Refer Curricular framework).

OBJECTIVES

On completion of the program, the NP will be able to

1. Assume responsibility and accountability to provide competent care to critically ill patients and appropriate family care in tertiary care centers.
2. Demonstrate clinical competence / expertise in providing critical care which includes diagnostic reasoning, complex monitoring and therapies.
3. Apply theoretical, patho-physiological and pharmacological principles and evidence base in implementing therapies / interventions in critical care.
4. Identify the critical conditions using differential diagnosis and carry out treatment/interventions to stabilize and restore patient's health and minimize or manage

complications independently or collaboratively as a part of critical care team.

5. Collaborate with other health care professionals in the critical care team, across the continuum of critical care.

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M.SC. in NPCC Nursing Program code: 4306 Course code:

1st Year M.SC. in NPCC Nursing

NURSE PRACTITIONER IN CRITICAL CARE POST GRADUATE RESIDENCY PROGRAM.

1. Theoretical Basis for Advanced Practice Nursing

Hours of instruction: 40hrs.

COMPETENCIES

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
7. Actively participates in collaborative practice involving all healthcare team members in critical care and performs the prescriptive roles within the authorized scope
8. Engages in ethical practice having a sound knowledge of law, ethics and regulation of advanced nursing practice
9. Uses the training opportunities provided through well planned preceptorship and performs safe and competent care applying nursing process/care pathways or clinical pathways
10. Applies the knowledge of nursing theories in providing competent care to critically ill patients
11. Predicts future challenges of nurse practitioner's roles in variety of healthcare settings particularly in India.

UNIT NO. & TOTAL HRS.	OBJECTIVES	CONTENTS WITH DISTRIBUTED HOURS			T/L METHODS	METHODS OF EVALUATION
		MUST KNOW	DESIRABLE TO KNOW	NICE TO KNOW		
UNIT-I 40 HRS	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	➢ Global Health Care Challenges and Trends(Competency-1) 2hrs ➢ Health System in India ➢ Health Care Delivery System in India – Changing Scenario(Competency-3)2hrs ➢ National Health Planning – 5 year plans and National	➢ Health Economics & Health Care financing(Competency- 4)4hrs ➢ Theories of Nursing applied to APN(Competency -10) 3 hrs ➢ Nursing process applied to APN(Competency -9) 2 hrs ➢ Examine the nursing protocols relevant to NP practice found in	➢ Health Information system including Nursing Informatics (use of computers)(Competency-5) 4hrs	-Clinical conference - Case/clinical presentation -In depth drug study, presentation and report	Seminar Written assignments/Term papers Case/Clinical presentation

	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 7. Actively participates in collaborative practice involving all healthcare team members in critical care and performs the prescriptive roles within the authorized scope	Health Policy(Competency-2)2hrs ADVANCED NURSING PRACTICE (ANP): ➢ ANP-Definition, Scope, Philosophy, Accountability, Roles & Responsibilities (Collaborative practice and Nurse Prescribing roles)(Competency-6&7) 3hrs ➢ Regulation (accreditation of training institutions and Credentialing) & Ethical Dimensions of ➢ advanced nursing practice role (Competency-8)3hrs ➢ Nurse Practitioner – Roles, Types, Competencies, Clinical settings for practice, cultural competence(Competency-6)3hrs ➢ Training for NPs – Preceptorship (Competency-9) 2hrs ➢ Future challenges of NP practice(Competency-11) 4hrs SELF LEARNING ASSIGNMENTS: ➢ Identify Health Care and Education Policies and analyse its impact on Nursing.2 hrs ➢ Describe the legal position in India for NP practice. What is the future of nurse relevance to these policies in other countries? 2 hrs	various ICUS in you tertiary Centre.2 hrs		-Nursing rounds Clinical seminars	

Bibliography:

- Barkers,A.M.(2009). Advanced Practice Nursing. Massachussets: Jones & Bartlett Publisher
- 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

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1st Year M.SC. in NPCC Nursing

NURSE PRACTITIONER IN CRITICAL CARE POST GRADUATE RESIDENCY PROGRAM.

2. Research application and Evidence based practice in critical care

COMPETENCIES

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

UNIT NO. & TOTAL HRS.	OBJECTIVES	CONTENTS WITH DISTRIBUTED HOURS			T/L METHODS	METHODS OF EVALUATION
		MUST KNOW	DESIRABLE TO KNOW	NICE TO KNOW		
UNITII 56 HRS	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 reportsOI	**RESEARCH APPLICATION AND EVIDENCE BASED PRACTICE IN CRITICAL CARE:** ➢ Research and Advanced Practice Nursing : Significance of Research and inquiry related to Advanced nursing role (Competency 1)**2 hrs** ➢ Research Knowledge and skills: ➢ Research competencies essential for APNs (interpretation and use of research, evaluation ofpractice, 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)**40hrs (5 days Workshop)** ➢ Evidence based practice - Concepts, principles, importance and steps - Integrating EBP to ICU environment	➢ Writing for publication (writing workshop – Manuscript preparation and finding funding sources) (Competency – 6) **5 hrs (workshop)**	➢ 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 hrs**	Clinical conference - Case/clinical presentation	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

		- Areas of evidence in critical care - Barriers to implement EBP - Strategies to promote (Competency – 3,4,5)**4 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/literature review – Analyze the evidence for a given nursing intervention in ICU**

Practicum

Research practicum: Dissertation (336 hrs=7weeks)

Bibliography:

Burns, N., & Grove, S. K. (2011).Understanding nursing research: Building an evidence-based practice (5th ed.). Ist Indian reprint 2012, New Delhi: Elsevier.

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Schmidt, N. A., & Brown, J. M. (2009). Evidence – based practice for nurses appraisal and application of research. Sd: Jones and Bartlet Publishers.

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M.SC. in NPCC Nursing Program code: 4306 Course code: 4306-12

1st Year M.SC. in NPCC Nursing

NURSE PRACTITIONER IN CRITICAL CARE POST GRADUATE RESIDENCY PROGRAM.

3. Advanced skills in Leadership, Management and Teaching

COMPETENCIES

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)

UNIT NO. & TOTAL HRS.	OBJECTIVES	CONTENTS WITH DISTRIBUTED HOURS		
		MUST KNOW	DESIRABLE TO KNOW	NICE TO KNOW
UNIT III 56HRS	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.	**ADVANCED SKILLS IN LEADERSHIP, MANAGEMENT AND TEACHING:** ➢ Theories, styles of leadership and current trends**. 2hrs** ➢ Theories, styles of management and current trends. **2hrs** ➢ Principles of leadership and management applied to critical care settings **4hrs** ➢ Quality improvement and audit**4hrs** ➢ Problem solving, critical thinking and decision making, communication skills applied to critical care nursing practice **5hrs** ➢ Team building, motivating and mentoring within ICU set up **2hrs** ➢ Budgeting and management of resources including human resources – ICU budget, material management, staffing, assignment**s 5hrs** ➢ Change and innovation **2hrs** ➢ Staff performance, and evaluation (performance appraisals) **6hrs** ➢ Teaching – Learning theories and principles applied to Critical Care Nursing **2hrs** ➢ Competency based education and outcome based education **2hrs** ➢ Teaching methods / strategies, media: educating patients and staff in Critical Care settings **8hrs** ➢ Staff education and use of tools in	➢ Stress management and conflict management – principles and application to critical care ,environment, Effective time management**4 hrs**	➢ Advocacy roles in critical care environment.**2 hr**

		evaluation **4hrs** ➢ APN – Roles as a teacher **2hrs**		

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 Development of teaching plan
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

Bibliography:

- 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 Bartlet Publishers.
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1st Year M.SC. in NPCC Nursing

NURSE PRACTITIONER IN CRITICAL CARE POST GRADUATE RESIDENCY PROGRAM.

4. A. Advanced Pathophysiology Applied to Critical Care Nursing

COMPETENCIES

- Integrates the knowledge of pathopysiological process in critical conditions in developing diagnosis and plan of care
- Applies the pathophysiogical 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 NO. & TOTAL HRS.	OBJECTIVES	CONTENTS WITH DISTRIBUTED HOURS		
		MUST KNOW	DESIRABLE TO KNOW	NICE TO KNOW
UNIT-IV 30 HRS	1. Integrates the knowledge of pathopysiological process in critical conditions in developing diagnosis and plan of care 2. Applies the pathophysiogical principles in symptom management and secondary prevention of critical illnesses 3.Analyzes the pathophysiological changes relevant to each critical illness recognizing the value of diagnosis, treatment, care and prognosis	**ADVANCED NURSING COURSE ADVANCED PATHOPHYSIOLOGY APPLIED TO CRITICAL CARE NURSING – I:** **1. Cardiovascular function** Advanced pathophysiological process of cardiovascular conditions · Hypertensive disorder · Peripheral artery disorder · Venous disorders · Coronary artery diseases · Valvular heart disease · Cardiomyopathy and heart failure · Cardiac Tamponade · Heart block and conduction disturbances. **7hrs** **2. Pulmonary function** Advanced pathophysiological process of pulmonary conditions · Chronic obstructive pulmonary disease · Disorders of the pulmonary vasculature · Infectious diseases · Respiratory failure · Chest trauma. **4hrs** **3. Neurological function** Advanced pathophysiological process of neurological conditions · Seizure disorder · Cerebrovascular disease · Infections	**Endocrine functions** Advanced pathophysiological process of endocrine conditions · Diabetic ketoacidosis · Hyperosmolar non ketotic coma · Hypoglycemia · Thyroid storm · Syndrome of inappropriate antidiuretic hormone secretion.**3hrs** ➢ Corpumonale ➢ Arrythmias**1hr**	➢ Myxedema coma ➢ Adrenal crisis **1hr**

		· Spinal cord disorder · Degenerative neurological diseases · Neurological trauma · Coma, unconsciousness. **6 hrs** **4. Renal function** Advanced pathophysiological process of renal conditions · Acute renal failure · Chronic renal failure · Bladder trauma · Infections(Glomerulonephritis) · Nephrotic syndrome. **4hrs** **5. Gastrointestinal and hepatobiliary function** Advanced pathophysiological process of hepatobiliary conditions · Gastrointestinal bleeding · Intestinal obstruction · Pancreatitis · Hepatic failure · Gastrointestinal perforation. **4hrs**		

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5. B. Advanced Pharmacology relevant to Critical Care Nursing

COMPETENCIES

- 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 protocol
- 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

Hours of instruction Theory: 54 hours

UNIT NO. & TOTAL HRS.	OBJECTIVES	CONTENTS WITH DISTRIBUTED HOURS			T/L METHODS	METHODS OF EVALUATION
		MUST KNOW	DESIRABLE TO KNOW	NICE TO KNOW		
UNIT VI 54HRS	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	**ADVANCED PHARMACOLOGY RELEVANT TO CRITICAL CARE NURSING :** ➢ Introduction to pharmacology in critical care • History • Classification of drugs and schedules **2hrs** ➢ Pharmacokinetics and Pharmaco-dynamics • Introduction • Absorption, Distribution, Metabolism, Distribution and Excretion in critical care • Plasma concentration, half life • Loading and maintenance dose • Therapeutic index and drug safety	Atypical anti psychotics · Medications used for local and general anesthesia Local- Amides, esters, and miscellaneous agents General – Gases, Volatile liquids, IV anesthetics Non anesthetic drugs adjuncts to surgery · Paralytic Medications Non-depolarizing and depolarizing agents Anxiolytics	➢ Medications in the management of Brain herniation syndrome ➢ Phosphodiesterase inhibitors – amrinone, milrinone. ➢ Leptospirosis, Dengue, Malaria, Chickungunya, Rabies, Avian flu. **2hr**	Clinical conference -Case/clinical presentation -In depth drug study, presentation and report -Nursing rounds Clinical seminars Advanced health assessment Faculty lecture in	Seminar Written assignments/Term papers Case/Clinical presentation

	ill patients in the critical care settings and guiding their families in self-care management	• Potency and efficacy • Principles of drug administration The rights of drug administration Systems of measurement Enteral drug administration Topical drug administration Parentral drug administration **3hrs** ➢ **Pharmacology and Cardiovascular alterations in Critical care** • Vasoactive Medications Vasodilator, Vasopressor, Inotropes - Cardiac glycosides – digoxin - Sympathomimetics – Dopamine, dobutamine, epinephrine, isoproterenol, norepinephrine, phenylephrine • Antiarrhythmic Medications • Cardiac critical care conditions 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	· Autonomic drugs Adrenergic agents/ Sympathomimetic Adrenergic blocking agents Cholinergic agents Anti-cholinergic agents · Medications in the management of anxiety and insomnia ➢ Standing orders for pulmonary critical care emergencies.**2hr**		the clinical area	

		Pulmonary hypertension, Valvular heart disease, Cardiomypathy 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 **5hrs** ➢ **Pharmacology and Pulmonary alterations in Critical care** · Mechanical Ventilation Introduction Medications used on patients with mechanical ventilator Mechanical ventilation impact on pharmacotherapy – Sedation and analgesia, Neuromucsular blockade, Nutrition · Pulmonary critical care conditions 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. **4hrs** **Pharmacology and Neurological alterations in Critical care** · Pain - NSAID - Opioid analgesia · Sedation - amino butyric acid stimulants - Dexmeditomidine - Analgosedation · Delirium - Haloperidol - Antidepressants - Benzodiazepines - Barbiturates · Neurological critical care conditions - 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 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. **6hrs**
		Pharmacology and Nephrology alterations in Critical care
		· Diuretics
		· Fluid replacement
		  Crystalloids
		  Colloids
		· Electrolytes
		  Sodium
		  Potassium
		  Calcium
		  Magnesium
		  Phosphorus
		· Nephrology critical care conditions
		  Medications in the management of Acute / Chronic renal failure
		  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**.** **5hrs** ➢ **Pharmacology and Gastrointestinal alterations in Critical care:** · Anti-ulcer drugs · Laxatives · Anti diarrheals · Anti emetics · Pancreatic enzymes · Nutritional supplements, Vitamins and minerals · Gastro intestinal critical care conditions 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 **5hrs** **Pharmacology and Endocrine alterations in Critical care** · Hormonal therapy · Insulin and Other hypoglycemic agents · Endocrine critical care conditions 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**4 hrs** ➢ **Pharmacology and Hematology alterations in Critical care** · Anticoagulants · Antiplatelet drugs · Thrombolytics				

		· Hemostatics/ antifibrinolytics
		· Hematopoietic growth factors
		  Erythropoietin
		  Colony stimulating factors
		  Platelet enhancers
		· Blood and blood products
		  Whole blood, Packed red blood cells, Leukocyte-reduced red cells, Washed red blood cells, Fresh frozen plasma, Cryoprecipitate
		  Albumin
		· Transfusion reactions, Transfusion administration process
		· Vaccines
		· Immunostimulants
		· Immunosuppressant
		· Chemotherapeutic drugs – Alkylating agents, anti metabolites, anti tumor antibiotics, alkaloids, hormones and hormone antagonist, corticosteroids, gonadal hormones, anti estrogens, androgen antagonists, biologic response modifiers
		· Hematology critical care conditions
		  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 Sickle cell anemia. Medications in the management of Tumor lysis syndrome · Standing orders for hematology critical care emergencies. **5hrs** ➢ **Pharmacology and Skin alterations in Critical care** · Hematology critical care conditions Medications used in burn management Medications used in wound management · Standing orders for skin critical care emergencies**. 3hrs** **Pharmacology and Multisystem alterations in Critical care** · 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 □ Antipyretics □ NSAIDS □ Corticosteroids · Standing orders for multi system critical care emergencies. **5hrs** **Pharmacology and Infections in Critical care** · Antibacterial drugs □ 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 · Anti protozoal drugs · Anti viral drugs · Choice of antimicrobials · Infectious critical care conditions □ Medications in the management of				

		HIV, Tetanus, SARS, Rickettsiosis,, Swine flu · Standing orders for infectious critical care emergencies. **6hrs**				

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6. Advanced Health/Physical Assessment in Critical Care Nursing

COMPETENCIES

- 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 and institutional protocols
- Analyzes the physical examination findings and results of various investigations and works collaboratively with intensivists 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: 48 hours

UNIT NO. & TOTAL HRS.	OBJECTIVES	CONTENTS WITH DISTRIBUTED HOURS			T/L METHODS	METHODS OF EVALUATION
		MUST KNOW	DESIRABLE TO KNOW	NICE TO KNOW		
UNIT-VII 70HRS	1.Applies the physical assessment principles in developing appropriate system wise examination skills 2, Uses advanced health assessment skills to differentiate between variations of normal and abnormal findings 3. Orders screening and diagnostic tests based on the examination findings 4. Analyzes the results of various investigations and works collaboratively for development of diagnoses 5. Documents assessment, diagnosis, and management and monitors follow up care in partnership withhealth care team members, patients, and families	**ADVANCED HEALTH/PHYSICAL ASSESSMENT IN CRITICAL CARE NURSING:** **1. Introduction** · History taking · Physical examination **4hrs** **2. Cardiovascular system** · Cardiac history · Physical examination · Cardiac laboratory studies – biochemical markers, hematological studies · Cardiac diagnostic studies – Electrocardiogram, echocardiography, stress testing, radiological imaging**6hrs** **3. Respiratory system** · History	**Sensory Organs** · History · Physical examination · Laboratory studies · Diagnostic studies - Radiological and imaging studies, endoscopic studies. **4hrs** **Assessment of older adults** · History · Physical assessment · Psychological assessment. **6hrs**	**Assessment of children** · Growth and development · Nutritional assessment · Specific system assessment. **6hrs**	Clinical conference -Case/clinical presentation -In depth drug study, presentation and report -Nursing rounds Clinical seminars Advanced health assessment Faculty lecture in the clinical area	Seminar Written assignments/Term papers Case/Clinical presentation

		· Physical examination · Respiratory monitoring – Arterial blood gases, pulse oximetry, end-tidal carbondioxide monitoring · Respiratory Diagnostic tests – Chest radiography, ventilation perfusion scanning, pulmonary angiography, bronchoscopy, thoracentesis, sputum culture, pulmonary function test. **6hrs** **4. Nervous system** · Neurological history · General physical examination · Assessment of cognitive function · Assessment of cranial nerve function · Motor assessment – muscle strength, power, and reflexes · Sensory assessment – dermatome assessment · Neurodiagnostic studies – CT scan, MRI, PET. **6hrs** **5. Renal system** · History · Physical examination · Assessment of renal function · Assessment of electrolytes and acid base balance · Assessment of fluid balance **6hrs** **6. Gastrointestinal system** · History · Physical examination · Nutritional assessment · Laboratory studies – Liver function studies, blood parameters, stool test · Diagnostic studies – radiological and imaging studies, endoscopic studies. **4hrs**				

		7. Endocrine system · History, physical examination, laboratory studies, and diagnostic studies of · Hypothalamus and pituitary gland · Thyroid gland · Parathyroid gland · Endocrine gland · Adrenal gland. **4hrs** **8. Hematological system** · History · Physical examination · Laboratory studies - blood parameters · Diagnostic studies – bone marrow aspiration. **4hrs** **9. Integumentary system** · History · Physical examination · Pathological examination – tissue examination **3hrs** **10. Musculoskeletal system** · History · Physical examination – gait assessment, joint assessment, · Laboratory studies – blood parameters (inflammatory enzymes, uric acid) · Diagnostic studies - Radiological and imaging studies, endoscopic studies **6hrs** **11. Reproductive system(Male & Female)** · History · Physical examination · Laboratory studies · Diagnostic studies. **5hrs**				

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) (EnclosedAppendix 3) Assessment of children-neonate and child Assessment of Older adults Assessment of pregnant women

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NURSE PRACTITIONER IN CRITICAL CARE POST GRADUATE RESIDENCY PROGRAM.

1. Foundations of Critical Care Nursing Practice

THEORY: 96 HRS, SKILL LAB= 48 HRS

COMPETENCIES

- 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 and prepares care/clinical pathways in assessment and management of patients with critical conditions
- 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

UNIT NO. & TOTAL HRS.	OBJECTIVES	CONTENTS WITH DISTRIBUTED HOURS			T/L METHODS	METHODS OF EVALUATION
		MUST KNOW	DESIRABLE TO KNOW	NICE TO KNOW		
UNIT-I 10HRS	1. Applies advanced concepts of critical care nursing based on sound knowledge of these concepts 2. Uses invasive and noninvasive technology and interventions to assess, monitor and promote physiologic	**FOUNDATIONS OF CRITICAL CARE NURSING PRACTICE:** **Introduction to Critical Care Nursing** · Introduction to the course · Historical review-Progressive patient care(PPC) · Concepts of critical	· 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	➢ Review of anatomy and physiology of vital organs (Brain, Spinal Cord, Lungs, Heart, Kidney, Liver, Pancreas, Thyroid, Adrenal and	Clinical conference -Case/clinical presentation -In depth drug study, presentation and report -Nursing rounds	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

	stability 3. Works in collaboration with other healthcare team members 4. Consults with and is consulted by other health care professionals	care nursing · Principles of critical care nursing · Scope of critical care nursing · Future challenges in critical care nursing.**6hrs** **0**	environment) · Personnel in ICU · Nursing staff · Doctors · Critical care technicians · Ancillary staff · Technology in critical care · Healthy work environment.**3hrs**	Pituitary gland) **1hrs**	Clinical seminars	
UNIT-II 5 HRS	1.Provides nursing care related to health protection, disease prevention, anticipatory guidance, counseling, management of critical illness, palliative care and end of life care.	**Concept of Holistic care applied to critical care nursing practice** · 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 · Transport of the critically ill – By air ambulance and surface ambulance **3 hrs**	· Death in critical care unit: End of life care/Care of dying, care of family, organ donation. **1hrs**	➢ Stress and burnout syndrome among health team members. **1 hrs**	Clinical conference - Case/clinical presentation	Seminar Written assignments/Term papers Case/Clinical presentation
UNIT-III 10 HRS	1. Uses advanced skills in complex	**Appraisal of the critically ill** ***Triaging concept, process and principles:***	· Richmond agitation sedation scale	➢ · Model for end-stage liver disease(ME	Clinical conference -Case/clinical	Clinical performance evaluation Log book-(Competency list and

	and unstable environments. 2. Applies ethically sound solutions to complex issues related to individuals, populations and systems of care.	***Assessment of the critically ill*** · General assessment · Respiratory assessment · Cardiac assessment · Renal assessment · Neurological assessment · Gastrointestinal assessment ·Endocrine assessment · Musculoskeletal assessment · Integumentary assessment **Monitoring of the critically ill** · Arterial blood gas (ABG) · Capnography · Hemodynamics · Electrocardiography (ECG) · Glasgow Coma Scale (GCS) **Evaluation of the critically ill** · Evaluation of pre critical illness · Evaluation of critical illness · Outcome and scoring systems **6hrs**	(RASS) · Pain score · Braden score · 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)**3hrs**	LD) **1hr**	presentation	clinical requirements) counter signed by the medical/nursing faculty preceptor Objective Structured Clinical Examination(OSCE)/OSPE Test papers

UNIT-IV 14 HRS	1. Uses advanced skills in complex and unstable environments.	**ADVANCED CONCEPTS AND PRINCIPLES OF CRITICAL CARE:** · 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 · Circulation and perfusion (including hemodynamic evaluation and waveform graphics) · Fluids and electrolytes (review), care of patient with imbalances of fluid and electrolytes. **10 hrs**	· 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. **3hr**	➢ Glycemic control, care of patient with glycemic imbalances. **1hr**	Clinical conference -Case/clinical presentation -In depth drug study, presentation and report -Nursing rounds Clinical seminars	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
UNIT-V 8 HRS	1.Applies ethically sound solutions to complex issues related to individuals, populations and systems of Care.	**Pain and Management** · Pain – Types, Theories · Physiology, Systemic responses to pain and psychology of pain Review · Acute pain services · Pain assessment – Pain scales, behavior	· Pain in Critically ill patients. **1 hr**	➢ Transcutaneous electrical nerve stimulation(TENS) **1 hr**	Clinical conference -Case/clinical presentation -In depth drug study, presentation and report -Nursing	Seminar Written assignments/Term papers Case/Clinical presentation

		and verbalization · Pain management-pharmacological (Opioids, benzodiazepines, propofol, Alpha agonist, -Tranquilisers, Neuromuscular blocking agents) · Nonpharmacological management. **6 hr**			rounds Clinical seminars	
UNIT-VI 8 HRS	1.Provides nursing care related to health protection, disease prevention, anticipatory guidance, counseling, management of critical illness, palliative care and end of life care	**Psychosocial and spiritual alterations: Assessment and management** · Stress &psychoneuroimmunology · Post traumatic stress reaction · ICU Psychosis, Anxiety, Agitation, Delirium · Alcohol withdrawal syndrome and delirium tremens · Collaborative management · Sedation and Relaxants **6 hr**	· Coping with stress and illness · Care of family of the critically ill · Counseling and communication. **1 hr**	· Spiritual challenges in critical care. **1 hr**	Clinical conference -Case/clinical presentation -In depth drug study, presentation and report -Nursing rounds Clinical seminars	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
UNIT-VII 4 HRS	1.Develops practice that is based on scientific evidence	**Patient and family education and counseling** · Challenges of patient and family education · Process of adult learning · Factors affecting teaching learning process · Informational needs of families in critical care. **2 hr**	· Counseling needs of patient and family. **1 hr**	· Counseling techniques. **1 hr**	Clinical conference -Case/clinical presentation -In depth drug study, presentation and report	Seminar Written assignments/Term papers Case/Clinical presentation

UNIT-VIII 5 HRS	1.Creates and maintains a safe therapeutic environment using risk management strategies and qualityimprovement Adapts practice.	**Nutrition Alterations and Management in critical care** · Nutrient metabolism and alterations · Assessing nutritional status · Nutrition and systemic alterations **3 hr**	· Care of patient on enteral and parentral nutrition.**1 hr**	· Nutrition support **1 hr**	Nursing rounds Clinical seminars	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
UNIT-IX 5 HRS	1.Develops practice that is based on scientific evidence	**Sleep alterations and management** · Normal human sleep. · Sleep pattern disturbance. **3 hr**	· Sleep apnea syndrome **2 hr**	---------	Clinical conference -Case/clinical presentation	Seminar Written assignments/Term papers
UNIT-X 5 HRS	1.Practices principles of infection control relevant to critical care.	**Infection control in critical care** · Nosocomial infection in intensive care unit; methyl resistant staphylococcus aureus (MRSA) and other recently identified strains · Disinfection, Sterilization. **2 hr**	· Standard safety measures, · Prophylaxis for staff **2 hr**	· Antimicrobial therapy- review. **1 hr**	Nursing rounds Clinical seminars	Seminar Written assignments/Term papers Case/Clinical presentation
UNIT-XI 5 HRS	1.Applies ethically sound solutions to complex issues related to individuals, populations and systems of Care.	**Legal and ethical issues in critical care-Nurse's role** ***Legal issues*** · 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 **Ethical Issues** · Difference between morals and ethics · Ethical principles,	**Managing Scarce resource in critical care** · Brain death, Organ donation & Counseling, · Do Not Resuscitate (DNR), Euthanasia, Living will. **1 hr**	· Constitutional Law: Patient decision making **1 hr**	Clinical conference -Case/clinical presentation	Seminar Written assignments/Term papers

		ethical decision making in critical care, Strategies for promoting ethical decisionmaking · Ethical issues relevaqnt to critical care :· withholding and withdrawing treatment, · Nurses' Role. **3 hr**				
UNIT-XII 5 HRS	1. Creates and maintains a safe therapeutic environment using risk management strategies and qualityimprovement.	**Quality assurance** · Design of ICU/CCU · assurance models applicable to ICUs · Standards, Protocols, Policies, Procedures · Standard safety measures · Staffing**2 hr**	· Infection control policies and protocols **2 hr**	· Nursing audit relevant to critical care. **1 hr**	Nursing rounds Clinical seminars	Seminar Written assignments/Term papers Case/Clinical presentation
UNIT-XIII 3 HRS	1.Develops practice that is based on scientific evidence	**Evidence based practice in critical care nursing** · Evidence based practice in critical care. · Strategies to promote implementation. **2 hr**	· Barriers to implementation **1 hr**	-----	Nursing rounds Clinical seminars	Seminar Written assignments/Term papers
5 HRS		**CLASS TEST**				

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 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, phosphrous, 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 o Calculation, loading and infusion of – Morphine, Fentanyl, Midazolam, Lorazepam, Diazepam, Propofol, Clonidine, Desmedetomidine, Haloperidol o 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

KIMSDU. KINS.

M.SC. in NPCC Nursing Program code: 4306 Course code: 4306-22

IInd Year M.SC. in NPCC Nursing

2. CRITICAL CARE NURSING I

THEORY: 96 HRS, PRACTICAL = 48 HRS

UNIT NO. & TOTAL HRS.	OBJECTIVES	CONTENTS WITH DISTRIBUTED HOURS			T/L METHODS	METHODS OF EVALUATION
		MUST KNOW	DESIRABLE TO KNOW	NICE TO KNOW		
UNIT-I 6HRS	1.Uses invasive and noninvasive technology and interventions to assess, monitor and promote physiologic stability	**Introduction** · Review of anatomy and physiology of vital organs **4hrs**	· Review of assessment and monitoring of the critically ill. **2 hrs**	---------	Nursing rounds Clinical seminars	Seminar Written assignments/Term papers
UNIT-II 16HRS	1.Applies advanced concepts of critical care nursing based on sound knowledge of these concepts	**Cardiovascular alterations** · Review of Clinical assessment, pathophysiology, and pharmacology · Special diagnostic studies · Cardiovascular conditions requiring critical care management - Heart block and conduction disturbances - Coronary heart disease - Myocardial infarction - Pulmonary hypertension - Valvular heart disease - Atherosclerotic disease of aorta - Peripheral artery disease - Cardiomypathy - Heart failure - Deep vein thrombosis - Congenital heart disease(cyanotic and acyanotic) · - Cardiac transplant - Pacemakers - Cardioversion - Defibrillation - Implantable cardiovert defibrillators,	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 **2 hrs**	- Cardiovascular therapeutic management **1 hrs**	-Clinical conference - Case/clinical presentation	Seminar Written assignments/Term papers Case/Clinical presentation

		- Thrombolytic therapy - Radiofrequency catheter ablation - Percutaneous Transluminal Coronary Angioplasty(PTCA) - Cardiac surgery –Coronary artery bypass grafting(CABG)/ Minimally invasivecoronary artery surgery)MICAS, Valvular surgery, vascular surgery. **13 hrs**				
UNIT-III 15 HRS	1.Uses invasive and noninvasive technology and interventions to assess, monitor and promote physiologic stability	**Pulmonary alterations** · Review of Clinical assessment, pathophysiology, and pharmacology · Special diagnostic studies · Pulmonary conditions requiring critical care management - Status asthmaticus - Pulmonary edema - Pulmonary embolism - Acute respiratory failure - Acute respiratory distress syndrome - Chest trauma - Chronic obstructive pulmonary dis. - Pneumonia - Pleural effusion - Atelectasis - Long-term mechanical ventilator dependence - Bronchial hygiene: Nebulization, deep breathing and coughing exercise, chest physiotherapy and postural drainage · Recent advances and development **12 hrs**	· Pulmonary therapeutic management - Thoracic surgery - Lung transplant **2 hrs**	- Chest tube insertion and care of patient with chest drainage **1 hrs**	Clinical conference - Case/clinical presentation	Seminar Written assignments/Term papers
UNIT-IV 15 HRS	1.Provides nursing care related to health protection, disease prevention, anticipatory	**Neurological alterations** · Review of Clinical assessment, pathophysiology, and pharmacology · Special diagnostic studies · Neurological conditions	Myasthenia gravis - Brain herniation syndrome - Seizure disorder **2 hrs**	-Assessment and management of intracranial hypertension **1 hrs**	Nursing rounds Clinical seminars	Seminar Written assignments/Term papers

	guidance, counseling, management of critical illness, palliative care and end of life care	requiring critical care management - Cerebro vascular disease and cerebro vascular accident - Encephalopathy - Gillian Bare syndrome and - Coma, Unconsciousness - persistent vegetative state - Head injury - Spinal cord injury - Thermoregulation · Neurologic therapeutic management - Intracranial pressure –- Craniotomy · Recent advances and development **12 hrs**				
UNIT-V 15HRS	1.Practices principles of infection control relevant to critical care	**Nephrology alterations** · 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 - Renal Replacement therapy: Dialysis · Recent advances and development.**12hrs**	- Renal transplant **2 hrs**	· Nephrology therapeutic management **1 hrs**	Clinical conference - Case/clinical presentation	Seminar Written assignments/Term papers
UNIT-VI 12 HRS	1. Practices principles of infection control relevant to critical care	**Gastrointestinal alterations** · Review of Clinical assessment, pathophysiology, and pharmacology · Special diagnostic studies · Gastrointestinal conditions requiring critical care management - Acute GI bleeding - Hepatic failure	- Hepatic encephalopathy - Acute intestinal obstruction **2 hrs**	- Liver transplant **1 hrs**	Nursing rounds Clinical seminars	Seminar Written assignments/Term papers Case/Clinical presentation

		- Acute pancreatitis - Abdominal injury - Perforative peritonitis · Gastrointestinal therapeutic management - Gastrointestinal surgeries · Recent advances and development **9 hrs**				
UNIT-VII 12 HRS	1.Creates and maintains a safe therapeutic environment using risk management strategies and quality Improvement.	**Endocrine alterations** · 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 · Recent advances and development **9hrs**	- Myxedema coma - Adrenal crisis - SIADH **2 hrs**	· Endocrine therapeutic management **1hrs**	Clinical conference - Case/clinical presentation	Seminar Written assignments/Term papers
5 HRS		**CLASS TEST**				

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 aortic ballon 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 Abdominal 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

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M.SC. in NPCC Nursing Program code: 4306 Course code: 4306-23

II[nd] Year M.SC. in NPCC Nursing

3. CRITICAL CARE NURSING II

THEORY: 96 HRS, PRACTICAL = 48 HRS

UNIT NO. & TOTAL HRS.	OBJECTIVES	CONTENTS WITH DISTRIBUTED HOURS			T/L METHODS	METHODS OF EVALUATION
		MUST KNOW	DESIRABLE TO KNOW	NICE TO KNOW		
UNIT-I 12 HRS	1. Practices independently within the legal framework of the country towards the interest of patients, families and communities	**Hematological alterations** · Review of Clinical assessment, pathophysiology, and pharmacology · Special diagnostic studies · Hematology conditions requiring critical care management - Thrombocytopenia - Heparin induced thrombocytopenia - Tumor lysis syndrome - Anemia in critical illness · Recent advances and development **9hrs**	· Hematology therapeutic management - Autologus blood transfusion - bone marrow transplantation **2hrs**	- DIC - Sickle cell anemia **1hrs**	Nursing rounds Clinical seminars	Seminar Written assignments/Term papers
UNIT-II 8 HRS	1.Provides nursing care related to health protection, disease prevention, anticipatory guidance, counseling, management of critical illness, palliative care and end of life care	**Skin alterations** · Review of Clinical assessment, pathophysiology, and pharmacology · Special diagnostic studies · Conditions requiring critical care management - Burns - Wounds · Recent advances and development. **6 hrs**	· Therapeutic mgt. - Management of wounds **1 hrs**	- Reconstructive surgeries for burns **1 hrs**		Seminar Written assignments/Term papers
UNIT-III 12 HRS	1.Practices principles of	**Multi system alterations requiring critical care**	· Drug overdose · Poisoning **2**	· Other injuries (Heat,	Nursing	Seminar Written

	infection control relevant to critical care	· Trauma · Sepsis · Shock · Multiple Organ Dysfunction · Systemic inflammatory response syndrome · Anaphylaxis · DIC **9hrs**	**hrs**	Electrical, Near Hanging, Near drowning) · Envenomation **1hrs**	rounds Clinical seminars	assignments/Term papers Case/Clinical presentation
UNIT-IV 10 HRS	1.Uses invasive and noninvasive technology and interventions to assess, monitor and promote physiologic stability	**Specific infections in critical care** · HIV · Tetanus · SARS · Rickettsiosis · Leptospirosis · Dengue · Malaria · Rabies **7 hrs**	· Swine flu · Chickungunya **2 hrs**	· Avian flu **1 hrs**		Seminar Written assignments/Term papers
UNIT-V 9 HRS	1. Practices principles of infection control relevant to critical care	**Critical care in Obstetrics** · Physiological changes in pregnancy · Conditions requiring critical care - Antepartum hemorrhage - PIH - Obstructed labor - Ruptured uterus - PPH - Puperal sepsis - Obstetrical shock - DIC - Trauma **6 hrs**	- Amniotic fluid embolism - ARDS **2 hrs**	- HELLP syndrome **1 hrs**		Seminar Written assignments/Term papers
UNIT-VI 10 HRS	1.Practices principles of infection control relevant to critical care	**Critical care in children** · Prominent anatomical and physiological differences and implications · Conditions requiring critical care - Asphyxia neonatarum - Metabolic disorders - Intracranial hemorrhage - Neonatal sepsis	- Ventilatory issue - Medication administration - Pain Management · Interaction with children andfamilies. **2 hrs**	- Trauma in children · Selected pediatric challenges. **1 hrs**		Seminar Written assignments/Term papers Case/Clinical presentation

		- Dehydration - ARDS - Poisoning - Foreign bodies - Seizures - Status asthmatics - Cyanotic heart disease - congenital hypertrophic pyloric stenosis - Tracheoesophageal fistula - imperforate anus - Acute bronchopneumonia **7 hrs**				
UNIT-VII 10 HRS	1. Practices principles of infection control relevant to critical care	**Critical Care in Older Adult** · Normal psycho biological characteristics of aging - Biological issues - Psychological issues - Concepts and theories of ageing - Stress & coping in older adults - Common Health Problems & Nursing Management; · Physical challenges - 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 - Cognitive changes - Abuse of the older person	· Hospital associated risk factors for older adults - Care transitions - Palliative care and end of life in critical care **2 hrs**	· Long term complications of critical care **1hrs**		Seminar Written assignments/Term papers

		- Alcohol abuse · Challenges in medication use - Drug absorption - Drug distribution - Drug metabolism - Drug excretion **7 hrs**				
UNIT-VIII 10 HRS	1.Adapts practice to the social, cultural and contextual milieu	**Critical Care in Perianesthetic period** · Selection of anesthesia · General anesthesia · Anesthetic agents · Perianesthesia assessment and care · Post anesthesia problems and emergencies requiring critical care - 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 **7 hrs**	- Thermoregulatory – Hypothermia, shivering, hyperthermia, malignant hyperthermia **2 hrs**	- Neurology-Delayed emergence, emergence delirium, - Nausea and vomiting **1hrs**		Seminar Written assignments/Term papers
UNIT-IX 10 HRS	1.Adapts practice to the social, cultural and contextual milieu	**Other special situations in critical care** · Rapid response teams and transport of the critically ill · Disaster management · Ophthalmic emergencies – Eye injuries, glaucoma, retinal detachment **7hrs**	· ENT emergencies - Foreign bodies, stridor, bleeding, quinsy, acute allergic conditions **2hrs**	· Psychiatric emergencies – Suicide, crisis intervention. **1hrs**		Seminar Written assignments/Term papers
5HRS		**CLASS TEST**				

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 o Bone marrow aspiration 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 equipment – 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