



## Criterion 2- Teaching-Learning and Evaluation

**2.6.1 The Institution has stated learning outcomes /graduate attributes as per the provisions of Regulatory bodies which are integrated into the assessment process and widely publicized through the website and other documents**



**Y B N UNIVERSITY**

**RAJAULATU, NAMKUM, RANCHI (Jharkhand)**

Established by the Act. of Government of Jharkhand Act 15, 2017

Gazette Notification No 505, Dated 17 July 2017

As per Section 2(f) of UGC Act. 1956



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**Response:**

## **Learning Outcomes and Graduate Attributes as per Regulatory Bodies**

Y.B.N. University, Ranchi, has developed a robust framework of learning outcomes and graduate attributes aligned with regulatory bodies like UGC, AICTE, NCTE, PCI, and INC. These outcomes guide curriculum design, teaching methodologies, and assessments, fostering well-rounded graduates equipped with knowledge, skills, and ethical values for modern challenges.

### **Development of Learning Outcomes:**

- 1.Program Outcomes (POs): Broad competencies like critical thinking, problem-solving, communication, and ethical reasoning.
- 2.Course Outcomes (COs): Subject-specific knowledge and practical skills tailored to individual courses.
- 3.Graduate Attributes: Emphasis on intellectual competence, professional skills, research aptitude, social responsibility, ethical integrity, and lifelong learning adaptability.

### **Integration into Assessment Processes:**

- 1.Outcome-Based Education (OBE): Curriculum and assessments designed to achieve measurable outcomes.
- 2.Rubric-Based Assessment: Clear rubrics for evaluating assignments, projects, and exams.
- 3.Skill-Oriented Assessments: Focus on practical skills, problem-solving, and application-based learning for employability.
- 4.Formative and Summative Evaluation: Continuous internal assessments and end-semester exams to track progress.
- 5.Feedback Mechanisms: Regular feedback from students, alumni, and industry to keep assessments relevant.

### **Dissemination of Learning Outcomes:**

- 1.University Website: Learning outcomes for programs and courses are displayed online for transparency.
- 2.Student Handbook & Prospectus: Graduate attributes and learning objectives guide students from the start.





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- 3.Orientation Programs: Introduce newly admitted students to learning outcomes.
- 4.Course Syllabi: Explicit mention of outcomes in all course syllabi.
- 5.Workshops: Faculty and staff are trained to integrate outcomes into teaching and assessments.

## **Graduate Attributes:**

- 1.Intellectual Excellence: Comprehensive knowledge with critical analysis.
- 2.Professional Competence: Industry-ready technical and practical skills.
- 3.Research Aptitude: Inquiry-based learning promoting innovation.
- 4.Ethical Integrity: Strong sense of ethics and social responsibility.
- 5.Global Perspective: Adaptability to global trends and diversity.
- 6.Lifelong Learning: Emphasis on adaptability for dynamic careers.

## **Monitoring and Evaluation:**

Tools include course-end surveys, academic audits, graduate exit surveys, placement data, and industry collaboration to assess effectiveness.

## **Impact:**

Clear outcomes enhance academic performance, employability, research output, and social responsibility, ensuring graduates are competent and ready to face global challenges.

Y.B.N. University demonstrates a strong commitment to holistic, outcome-based education aligned with national and global standards.

# **CO-PO Attainment Handbook**

By

**Internal Quality Assurance Cell (IQAC)**

**YBN University, Ranchi**



**YBN University**

Rajaulatu, Namkum

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## **Terminology (Abbreviations)**

- **OBE:** Outcome-Based Education (OBE) is a student-centric teaching and learning methodology in which the course delivery, assessment are planned to achieve stated objectives and outcomes. It focuses on measuring student performance i.e. outcomes at different levels.
- **Course Outcomes (CO):** Course Outcomes (COs) are what the student should be able to do at the end of a course. The most important aspect of a CO is that it should be observable and measurable
- **Program Outcomes (PO):** Program outcomes are statements that describe what the knowledge, skills and attitudes students should have at the time of graduation from an engineering program. That means just at the end of 4 years these represent what is the knowledge, skills and attitudes they should have. And at present POs are 12 in number and they are identified by NBA and are applicable to all engineering programs.
- **Program Educational Objectives (PEO) :** These are broad statements that describe the career and professional accomplishments in four to five years after graduation that the program is preparing the graduates to achieve
- **Program Specific Outcomes (PSO):** PSOs are outcomes that are specific to a program. PSOs characterize the specificity of the core courses of a program. PSOs can be 2 to 4 in number.

## **Few definitions**

### **Mapping Factor (Correlation Level)**

It indicates to what extent a certain component (either assessment method to CO or CO to PO or PO to PEO & PSO

- **3-indicates Substantial (high)** mapping (high contribution towards attainment)
- **2-indicates Moderate** (medium) mapping (medium contribution towards attainment)
- **1-indicates Sligh t(low)** mapping (some contribution towards attainment)

### Level of attainment

Here 3 levels of attainment is taken as 1-Low; 2-medium; 3-High

3 levels of attainment can be defined as

- **Attainment 3:** 60% Students scoring  $\geq 70\%$  of max marks allocated to CO
- **Attainment 2:** 50% Students scoring  $\geq 70\%$  of max marks allocated to CO
- **Attainment 1:** 40% Students scoring  $\geq 70\%$  of max marks allocated to CO
- **Attainment 0:** Less than 40% Students scoring  $\geq 70\%$  of max marks allocated to CO

### Setting CO Attainment Targets

There can be several methods:

#### Example 1:

- Same target is identified for all the COs of a course.
- For example the target can be “the class average marks  $\geq 60$  marks”

#### Example 2

- Targets are the same for all COs and are set in terms of performance levels of different groups of students.
- While this method classifies students into different categories, it does not provide any specific clues to plans for improvement of quality of learning

Targets			
(% of students getting < 50)	(% of students getting >50 and <65)	(% of students getting >65 and <80)	(% of students getting $\geq 80$ )
10	40	40	10

### Example3:

- Targets are set for each CO of a course separately.
- It does not directly indicate the distribution of performance among the students. However, it has the advantage of finding out the difficulty of specific COs.

CO	Target(Class Average)
CO-1	70%
CO-2	80%
CO-3	75%
CO-4	65%
CO-5	70%
CO-6	80%

### Example 4:

- Targets are quantized into certain levels, 3 being the most common number of levels.
- Level 3: 60% Students scoring  $\geq 70\%$  of max marks allocated to CO
- Level 2: 50% Students scoring  $\geq 70\%$  of max marks allocated to CO
- Level 1: 40% Students scoring  $\geq 70\%$  of max marks allocated to CO
- Level 0: Less than 40% Students scoring  $\geq 70\%$  of max marks allocated to CO
- **Aim is to attain Level 3**

### Attainment of COs:

- Attainment of COs can be measured **directly** and **indirectly**.
- Direct attainment of COs can be determined from the performances of students in all the relevant assessment instruments.
- Indirect attainment of COs (which is optional as per NBA) can be determined from the course exit survey.
- The exit survey form should permit receiving feedback from students on the entire COs.

### Direct CO attainment:

- Direct attainment of COs is determined from the performances of students in Mid Term Assessment (MTA) and Semester End Examination (SEE).

- The proportional weightages of CIE: SEE will be as per the academic regulations in force. Proportions of 20:80, 30:70 are all possible!
- Direct attainment of a specific COs is determined from the performances of students to all the assessment items related to that particular CO.
- Hence, every assessment item needs to be tagged with the relevant CO.
- Also, we need data about performance of student's assessment item– wise.

### **Direct CO attainment from MTA**

- Mid Term Assessment (MTA) is conducted and evaluated by the Department itself. Thus, institution have access to question-wise marks in all assessment instruments in MTA.
- When questions are tagged with relevant COs, the department has access to performances of students with respect to each CO.
- Hence, computing the direct attainment of COs from MTA is straight forward for the university.

### **Direct CO attainment from ESE**

- However, End Semester Examination (ESE) is conducted and evaluated by the University.
- Thus the departments in University get only total marks scored in ESE and not question-wise marks.
- As a consequence, departments in Tier2 institutes have no means of computing the direct attainment of individual COs from ESE!
- ESE performance cannot be ignored!!
- The only possible solution, though not satisfactory, is to treat the average marks in ESE as the common attainment of all COs.



## **Steps for preparation of CO-PO attainment**

**Step1:** Details of the course (course name, course code, total student no., semester etc.).

**Course Name:** Introductory Chemistry

**Course code:** 1Y4CHEIRC-1

**Course prerequisite:** Candidates must have basic science knowledge of Chemistry or have studied Chemistry as one of the subject at 10+2 level.

**Course objective:**

1. To expose the students to the basic principles of Chemistry.
2. To Exposure of all three major branches of Chemistry.
3. To learn the Atomic theory and its evolution.
4. To get the concept of molecular framework and chemical bonding
5. To get the concept of Hybridization and shapes of atomic, molecular orbitals, bond parameters, bond- distances and energies.
6. To get the concept of Valence bond theory incorporating concepts of hybridization predicting geometry of molecules.

**Step 2:** Outline the Course Outcomes (COs) as shown below:

**CO-1:** To expose the students to the basic principles of Chemistry.

**CO-2:** Elements in periodic table, physical and chemical characteristics, periodicity.

**CO-3:** Hybridization and shapes of atomic, molecular orbitals, bond parameters, bond-distances and energies.

**CO-4:** Valence bond Theory incorporating concepts of hybridization predicting geometry of molecules.

**CO-5:** Basic of organic molecules, structure, bonding, reactivity and reaction mechanisms.

**CO-6:** Stereochemistry of organic molecules conformation and configuration, asymmetric molecules and nomenclature.

### **Step 3: Outline the Program Outcomes (PO) and Program Specific Outcomes (PSO)**

#### **PROGRAMME OUTCOMES (PO)**

**PO-1:** The students after completing course at graduation level in chemistry will develop an understanding of major concepts, theoretical principles and physical and chemical aspects of various processes related to life, environment and chemical reactions.

**PO-2:** They will have an ability to work effectively in diverse teams in both classroom and laboratory having a technical knowledge

**PO-3:** They are able to employ critical thinking and efficient problem solving skills in the four basic areas of chemistry (analytical, inorganic, organic, and physical).

**PO-4:** They are able to conduct experiments, analyze data, and interpret results, while observing responsible and ethical scientific conduct.

**PO-5:** The students have effective written and oral communication skills, especially the ability to transmit complex technical information in a clear and concise manner.

**PO-6:** They are able to use modern library searching and retrieval methods to obtain information about a topic, chemical, chemical technique, or an issue relating to chemistry.

**PO-7:** They know the proper procedures and regulations for safe handling and use of chemicals and can follow the proper procedures and regulations for safe handling when using chemicals.

**PO-8:** They are able to understand the ethical, historic, philosophical, and environmental dimensions of problems and issues facing chemists and have a basic foundation for research.

### Programme Specific Outcomes (PSO):

**PSO-1:** Have proficient theoretical and experimental knowledge in the broad subject area of chemistry as well as different sub-fields of chemistry such as Analytical Chemistry, Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Material Chemistry, etc.

**PSO-2:** They have an idea of the nomenclature, chemical formulae, solving numerical problems in compounds, stereochemistry, and chemical reactions.

**PSO-3:** Understanding of spectroscopic methods, UV, IR and NMR Spectroscopy and discuss different rearrangements and determine structure of compounds using spectroscopy. They must be familiar with ordinary and sophisticated equipments, tools, models, chem-draw, charts etc.

### Step 4: Perform the CO mapping with PO and PSO: B.Sc. (Hons.) Chemistry

CO mapping with PO and PSO											
CO	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PSO-1	PSO-2	PSO-3
CO-1	2	-	3	3	2	3	2	2	2	2	3
CO-2	1	2	-	-	3	2	-	-	1	2	-
CO-3	2	3	2	2	1	2	2	3	-	3	2
CO-4	2	2	2	1	2	-	2	2	3	2	2
CO-5	3	1	-	2	-	1	1	-	2	-	-
CO-6	-	1	2	2	2	1	-	2	2	2	1
Average	1.66	1.5	1.5	1.66	1.66	1.5	1.16	1.5	1.66	1.83	1.15

**3-High**

**2-Medium**

**1-Low**

Here in the table, '3' corresponds to a high correlation; '2' corresponds to a medium correlation, and '1' corresponds to a low correlation, between CO and PO/PSO.

**Overall Average between COs &POs = 1.39125**

**Overall Average between COs &PSOs = 1.30875**

**Attainment level (3 if more than 80% of students achieved the target / 2 for >70% / 1 for>60%)**

**Direct assessment 1:** Refers to evaluation through internal assessments which majorly include Internal Assessments (IA) in terms of Mid Term Assessment (MTA), Lab Assignments, Home Assignments, Class/Assignment Tests, Presentations, quizzes, etc.

**Direct assessment 2:** Refers to evaluation through End Semester Examination (ESE)

**Indirect assessment:** Refers to the exit feedback survey taken by students/faculty/employers.

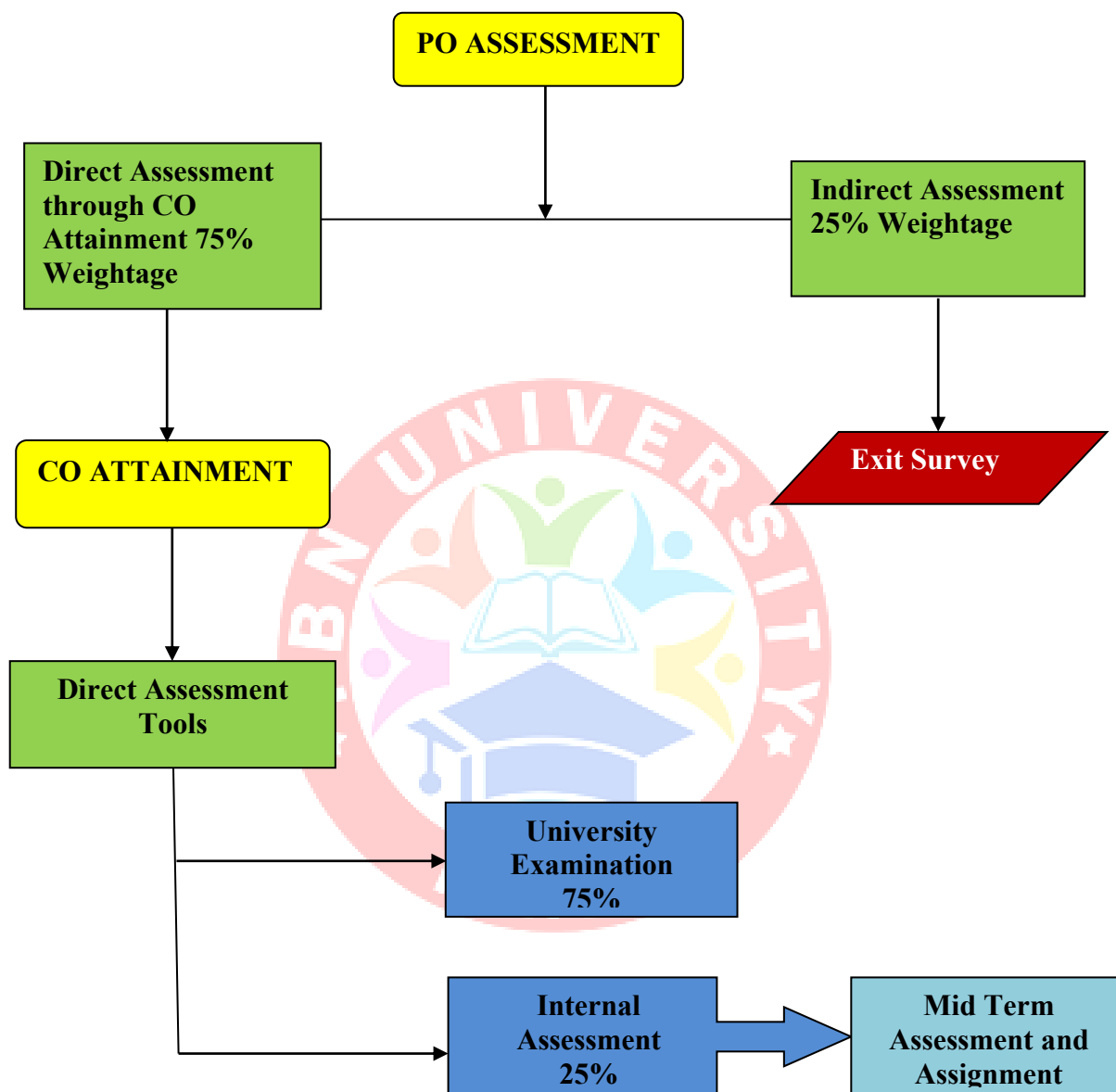
The exit feedback survey must be taken up before the end of the semester. The exit survey may be based on a marking scheme (1-3) for each CO.



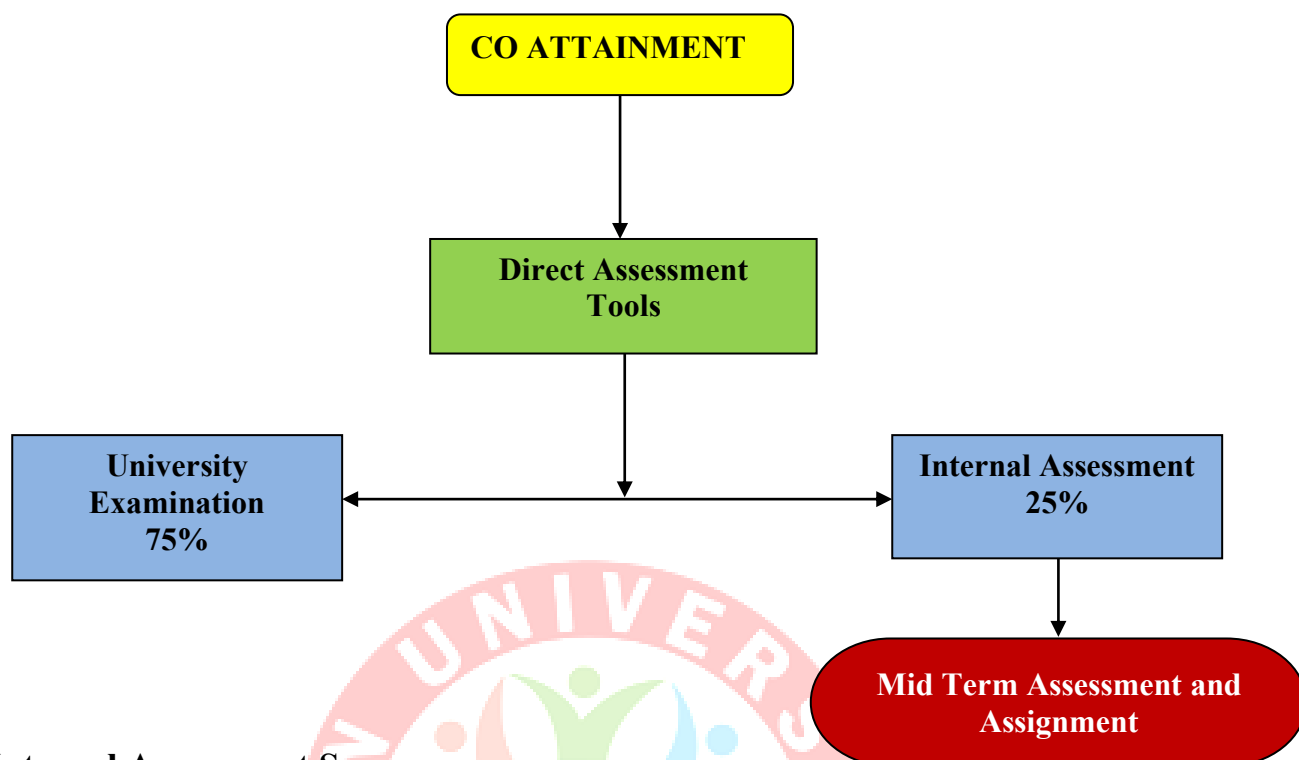


## Attainment of COs and POs in B.Sc. (Hons.) Chemistry

### Assessment Tools:



## CO Attainment Tools:



### Internal Assessment Score:

The internal assessment score is determined as per the following rules:

Range (% of attempts $\geq 60\%$ )	Level of Attainment	
$\geq 80\%$	3	High
$>70$ to $<80\%$	2	Medium
60-70%	1	Low

### University Examination Score:

The University examination score is determined as per the following rules:

Range (% of attempts $\geq 60\%$ )	Level of Attainment	
$\geq 80\%$	3	High
$>70$ to $<80\%$	2	Medium
60-70%	1	Low

### Overall CO Attainment

The overall CO attainment is calculated on a scale of 3 by considering 80 % of the level of attainment from University examination and 20% of the level of attainment from Internal assessment.

**Programme: B.Sc. (Hons.) Chemistry**  
**Course Name: Introductory Chemistry**  
**Course Code: 1Y4CHEIRC-1**  
**Semester I**

**Attainment (Direct Assessment)**

<b>Sl. No</b>	<b>Students Name</b>	<b>Enrollement</b>	<b>Internal Assessment (25)</b>	<b>End Sem. (75)</b>	<b>Final</b>
1	AzharMahmood	YBNU2301633	22	58	<b>80</b>
2	BrotinMondal	YBNU2301440	21	54	<b>75</b>
3	BubaiParamanik	YBNU2301272	21	55	<b>76</b>
4	Karan Bauri	YBNU2301279	20	53	<b>73</b>
5	ManjushaKindo	YBNU2301650	13	48	<b>61</b>
6	Navneet Kumar	YBNU2301274	21	51	<b>72</b>
7	Rahul Kumar	YBNU2301343	22	53	<b>75</b>
8	Shagufta	YBNU2301485	14	49	<b>63</b>
9	Sheikh Sana Kausar	YBNU2301479	23	62	<b>85</b>
10	Sourav Chandra	YBNU2301271	20	58	<b>78</b>
11	SurjakantaRajak	YBNU2301270	13	49	<b>62</b>
12	YasmeenAnjum	YBNU2301483	21	52	<b>73</b>
13	MoniKhatoon	YBNU2301873	13	50	<b>63</b>
14	Karan Bauri	YBNU2301279	20	51	<b>71</b>
15	NeerajTiwari	YBNU2301723	21	54	<b>75</b>
16	SaziaTabassum	YBNU2301714	20	56	<b>76</b>
17	Shushil Kumar Nishad	YBNU2301958	19	51	<b>70</b>
18	SudhansuTripathi	YBNU2302088	19	52	<b>71</b>
19	SujalSengar	YBNU2301485	20	53	<b>73</b>
20	Anurag Kumar Patal	YBNU2302209	12	50	<b>62</b>
21	JyotiVerma	YBNU2302225	21	54	<b>75</b>
22	KunalKanhaiya	YBNU2301806	13	51	<b>64</b>
23	Navlesh Kumar Singh	YBNU2301116	21	59	<b>80</b>
24	PriyanjaliRai	YBNU2301589	22	61	<b>83</b>

**Step 5: Fill in the entries (bold) as suggested in the table for CO attainment calculations**

The target (P) may be 60% (first division) or as per the requirements of the course and program. Further, the target remains same for direct and indirect assessments

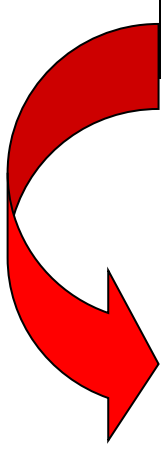
<b>CO Attainment Calculations</b>					
	Direct Assessment (DA)				Indirect Assessment (IA)
	DA 1	DA 2			
	Mid Term Assessment (MTA)	End Semester Exam (ESE)			Course Exit Survey
Number of students who have scored more than the target (P) (Target is 60%)	18	24			24
Percentage of students who have achieved the target = $(P/N) \times 100$ (N is the number of students who appeared in the exam)	75	100			100
Attainment Level (3 for >80%, 2 for >70%, 1 for > 60%)	a= 2	b=3			c= 3
Attainment based on Mid Term Assessment (MTA)			MTA	2	
Direct CO Attainment Level (DA) =25% MTA (a) + 75% End-Term (b)			DA	2.75	$(2 \times 25/100 + 3 \times 75/100)$
Indirect CO Attainment Level (IA) ( based on Exit Survey (c))			IA	3	
80 % of DA				2.20	
20 % IA				0.60	
<b>CO Attainment Level (COA) = 80 % DA+ 20 % IA</b>			<b>COA</b>	<b>2.80</b>	



**Step 7: Based on the Course Objectives Attainment (COA) value as calculated at the end of step 6, perform the PO/PSO Attainment Calculations as shown below:**

$$\text{PO/PSO Attainment} = \text{COA} \frac{M}{3} \text{ (Refer to Step 6 for COA value = 2.80)}$$

<b>CO mapping with PO and PSO</b>											
CO	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PSO-1	PSO-2	PSO-3
CO-1	2	-	3	3	2	3	2	2	2	2	3
CO-2	1	2	-	-	3	2	-	-	1	2	-
CO-3	2	3	2	2	1	2	2	3	-	3	2
CO-4	2	2	2	1	2	-	2	2	3	2	2
CO-5	3	1	-	2	-	1	1	-	2	-	-
CO-6	-	1	2	2	2	1	-	2	2	2	1
<b>Average</b>	<b>1.66</b>	<b>1.5</b>	<b>1.5</b>	<b>1.66</b>	<b>1.66</b>	<b>1.5</b>	<b>1.16</b>	<b>1.5</b>	<b>1.66</b>	<b>1.83</b>	<b>1.15</b>



<b>PO Attainment Calculations</b>											
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PSO-1	PSO-2	PSO-3
<b>Average Mapping (M)</b>	1.66	1.5	1.5	1.66	1.66	1.5	1.16	1.5	1.66	1.83	1.15
<b>PO/PSO Attainment Level</b>	<b>1.55</b>	<b>1.40</b>	<b>1.40</b>	<b>1.55</b>	<b>1.55</b>	<b>1.40</b>	<b>1.08</b>	<b>1.40</b>	<b>1.55</b>	<b>1.71</b>	<b>1.07</b>



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**SCHOOL OF NURSING**  
**BSC NURSING**

**PROGRAM OUTCOME**

**PROGRAM OUTCOME**

PO1: Utilize critical thinking to synthesize knowledge derived from physical, biological, behavioral sciences, and humanities, in the practice of professional nursing and midwifery

PO2: Practice professional nursing and midwifery competently and safely in diverse settings, utilizing caring, critical thinking and therapeutic nursing interventions with individuals, families, populations and communities at any developmental stage and with varied lived health experiences.

PO3: Provide promotive, preventive and restorative health services in line with national health policies and programs.

PO4: Integrate professional caring into practice decisions that encompass values, ethical, and moral and legal aspects of nursing.

PO5: Respect the dignity, worth, and uniqueness of self and others.

PO6: Apply concepts of leadership, autonomy and management to the practice of nursing and midwifery to enhance quality and safety in health care.

PO7: Utilize the latest knowledge and skills related to information and technology to enhance patient outcomes.

PO8: Communicate effectively with patients, peers, and all health care providers.

PO9: Utilize the requisite knowledge, skills and technologies to practice independently and collaboratively with all health professionals applying the principles of safety and quality improvement.

PO10: Integrate research findings and nursing theory in decision making in evidence-based practice.



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PO11: Accept responsibility and accountability for the effectiveness of one's own nursing and midwifery practice and professional growth as a learner, clinician and leader.

PO12: Participate in the advancement of the profession to improve health care for the betterment of the global society.

## **COURSE OUTCOME(COs):**

### **B.SC (N)1<sup>ST</sup> SEMESTER**

#### **ENGL 101-COMMUNICATIVE ENGLISH**

CO1. Identify the significance of Communicative English for healthcare professionals.

CO2. Apply the concepts and principles of English language use in professional development such as pronunciation, vocabulary, grammar, paraphrasing, voice modulation, spelling, pause and silence.

CO3. Demonstrate attentive listening in different hypothetical situations.

CO4. Converse effectively, appropriately and timely within the given context and the individual or team they are communicating with either face to face or by other means.

CO5. Read, interpret and comprehend content in text, flow sheet, framework, figures, tables, reports, anecdotes etc.

CO6. Analyse the situation and apply critical thinking strategies.

CO7. Enhance expressions through writing skills.

CO8. Apply LSRW (Listening, Speaking, Reading and Writing) skill in combination to learn, teach, educate and share information, ideas and results.



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### **ANAT 105-APPLIED ANATOMY**

CO1.Describe anatomical terms.

CO2.Explain the general and microscopic structure of each system of the body.

CO3.Identify relative positions of the major body organs as well as their general anatomic locations.

CO4.Explore the effect of alterations in structure.

CO5.Apply knowledge of anatomic structures to analyze clinical situations and therapeutic applications.

### **PHYS 110- APPLIED PHYSIOLOGY**

CO1.Develop understanding of the normal functioning of various organ systems of the body.

CO2.Identify the relative contribution of each organ system towards maintenance of homeostasis.

CO3.Describe the effect of alterations in functions.

CO4.Apply knowledge of physiological basis to analyze clinical situations and therapeutic applications.

### **SOCI 115- APPLIED SOCIOLOGY**

CO1.Identify the scope and significance of sociology in nursing.

CO2.Apply the knowledge of social structure and different culture in a society in identifying social needs of sick clients.

CO3.Identify the impact of culture on health and illness.

CO4.Develop understanding about types of family, marriage and its legislation.

CO5.Identify different types of caste, class, social change and its influence on health and health practices.

CO6.Develop understanding about social organization and disorganization and social problems in India.

CO7.Integrate the knowledge of clinical sociology and its uses in crisis intervention.





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### **PSYC 120- APPLIED PSYCHOLOGY**

- CO1. Identify the importance of psychology in individual and professional life.
- CO2. Develop understanding of the biological and psychological basis of human behavior.
- CO3. Identify the role of nurse on promoting mental health and dealing with altered personality.
- CO4. Perform the role of nurses applicable to the psychology of different age groups.
- CO5. Identify the cognitive and affective needs of clients.
- CO6. Integrate the principles of motivation and emotion in performing the role of nurse in caring for emotionally sick client.
- CO7. Demonstrate basic understanding of psychological assessment and nurse's role.
- CO8. Apply the knowledge of soft skills in workplace and society.
- CO9. Apply the knowledge of self- empowerment in workplace, society and personal life.

#### **COURSE OUTCOME(COs):**

#### **B.SC (N) 2<sup>nd</sup> SEMESTER**

### **BIOC 135 APPLIED BIOCHEMISTRY**

- CO1. Describe the metabolism of carbohydrates and its alterations.
- CO2. Explain the metabolism of lipids and its alterations.
- CO3. Explain the metabolism of proteins and amino acids and its alterations.
- CO4. Explain clinical enzymology in various disease conditions.
- CO5. Explain acid base balance, imbalance and its clinical significance.
- CO6. Describe the metabolism of hemoglobin and its clinical significance.
- CO7. Explain different function tests and interpret the findings.
- CO8. Illustrate the immunochemistry.



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## **NUTR 140-APPLIED NUTRITION AND DIETETICS**

- CO1. Identify the importance of nutrition in health and wellness.
- CO2. Apply nutrient and dietary modifications in caring patients.
- CO3. Explain the principles and practices of Nutrition and Dietetics.
- CO4. Identify nutritional needs of different age groups and plan a balanced diet for them.
- CO5. Identify the dietary principles for different diseases.
- CO6. Plan therapeutic diet for patients suffering from various disease conditions.
- CO7. Prepare meals using different methods and cookery rules.

## **N-NF (I)125-NURSING FOUNDATION- I (including First Aid module)**

- CO1. Develop understanding about the concept of health, illness and scope of nursing within health care services.
- CO2. Apply values, code of ethics and professional conduct in professional life.
- CO3. Apply the principles and methods of effective communication in establishing communication links with patients, families and other health team members.
- CO4. Develop skill in recording and reporting.
- CO5. Demonstrate competency in monitoring and documenting vital signs.
- CO6. Describe the fundamental principles and techniques of infection control and biomedical waste management.
- CO7. Identify and meet the comfort needs of the patients.
- CO8. Perform admission, transfer, and discharge of a patient under supervision applying the knowledge.
- CO9. Demonstrate understanding and application of knowledge in caring for patients with restricted mobility.
- CO10. Perform first aid measures during emergencies.
- CO11. Identify the educational needs of patients and demonstrate basic skills of patient education.



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**N-NF (II)125-NURSING FOUNDATION - II (including Health Assessment Module)**

- CO1.Develop understanding about fundamentals of health assessment and perform health assessment in supervised clinical settings.
- CO2.Demonstrate fundamental skills of assessment, planning, implementation and evaluation of nursing care using Nursing process approach in supervised clinical settings
- CO3.Assess the Nutritional needs of patients and provide relevant care under supervision
- CO4.Identify and meet the hygienic needs of patients
- CO5.Identify and meet the elimination needs of patient
- CO6.Interpret findings of specimen testing applying the knowledge of normal values
- CO7.Promote oxygenation based on identified oxygenation needs of patients under supervision
- CO8.Review the concept of fluid, electrolyte balance integrating the knowledge of applied physiology
- CO9.Apply the knowledge of the principles, routes, effects of administration of medications in administering medication
- CO10.Calculate conversions of drugs and dosages within and between systems of measurements
- CO11.Demonstrate knowledge and understanding in caring for patients with altered functioning of sense organs and unconsciousness
- CO12.Explain loss, death and grief
- CO13. Describe sexual development and sexuality
- CO14.Identify stressors and stress adaptation modes
- CO15.Integrate the knowledge of culture and cultural differences in meeting the spiritual needs
- CO16.Explain the introductory concepts relevant to models of health and illness in patient care



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## **HNIT 145-HEALTH/NURSING INFORMATICS AND TECHNOLOGY**

CO1.Develop a basic understanding of computer application in patient care and nursing practice.

CO2.Apply the knowledge of computer and information technology in patient care and nursing education, practice, administration and research.

CO3.Describe the principles of health informatics and its use in developing efficient healthcare.

CO4.Demonstrate the use of information system in healthcare for patient care and utilization of nursing data.

CO5.Demonstrate the knowledge of using Electronic Health Records (EHR) system in clinical practice.

CO6.Apply the knowledge of interoperability standards in clinical setting.

CO7.Apply the knowledge of information and communication technology in public health promotion.

CO8.Utilize the functionalities of Nursing Information System (NIS) system in nursing.

CO9.Demonstrate the skills of using data in management of health care.

CO10.Apply the knowledge of the principles of digital ethical and legal issues in clinical practice.

CO11.Utilize evidence-based practices in informatics and technology for providing quality patient care.

CO12.Update and utilize evidence-based practices in nursing education, administration, and practice.





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**COURSE OUTCOME(COs):**

**B.SC (N) 3<sup>rd</sup> SEMESTER**

**MICR 201-APPLIED MICROBIOLOGY AND INFECTION  
CONTROL INCLUDING SAFETY**

**SECTION A: APPLIED MICROBIOLOGY**

- CO1. Identify the ubiquity and diversity of microorganisms in the human body and the environment.
- CO2. Classify and explain the morphology and growth of microbes.
- CO3. Identify various types of microorganisms.
- CO4. Explore mechanisms by which microorganisms cause disease.
- CO5. Develop understanding of how the human immune system counteracts infection by specific and non-specific mechanisms.
- CO6. Apply the principles of preparation and use of vaccines in immunization.
- CO7. Identify the contribution of the microbiologist and the microbiology laboratory to the diagnosis of infection.

**SECTION B: INFECTION CONTROL & SAFETY**

- CO1. Develop knowledge and understanding of Hospital acquired Infections (HAI) and effective practices for prevention.
- CO2. Integrate the knowledge of isolation (Barrier and reverse barrier) techniques in implementing various precautions.
- CO3. Demonstrate and practice steps in Hand washing and appropriate use of different types of PPE.
- CO4. Illustrate various disinfection and sterilization methods and techniques.
- CO5. Demonstrate knowledge and skill in specimen collection, handling and transport to optimize the diagnosis for treatment.



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CO6. Incorporate the principles and guidelines of Bio Medical waste management.

CO7. Apply the principles of Antibiotic stewardship in performing the nurses 'role.

CO8. Identify patient safety indicators and perform the role of nurse in the patient safety audit process.

CO9. Apply the knowledge of International Patient Safety Goals (IPSG) in the patient care settings.

CO10. Identify employee safety indicators and risk of occupational hazards.

CO11. Develop understanding of the various safety protocols and adhere to those protocols.

### **N-AHN (1)215-ADULT HEALTH NURSING - I WITH INTEGRATED PATHOPHYSIOLOGY (including BCLS module)**

CO1. Explain the etiology, pathophysiology, manifestations, diagnostic studies, treatments and complications of common medical and surgical disorders.

CO2. Perform complete health assessment to establish a data base for providing quality patient care and integrate the knowledge of anatomy, physiology and diagnostic tests in the process of data collection.

CO3. Identify nursing diagnoses, list them according to priority and formulate nursing care plan.

CO4. Perform nursing procedures skillfully and apply scientific principles while giving comprehensive nursing care to patients.

CO5. Integrate knowledge of pathology, nutrition and pharmacology in caring for patients experiencing various medical and surgical disorders.

CO6. Identify common diagnostic measures related to the health problems with emphasis on nursing assessment and responsibilities.



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CO7.Demonstrate skill in assisting/performing diagnostic and therapeutic procedures.

CO8.Demonstrate competencies/skills to patients undergoing treatment for medical surgical disorders.

CO9.Identify the drugs used in treating patients with medical surgical conditions.

CO10.Plan and give relevant individual and group education on significant medical surgical topics.

CO11.Maintain safe environment for patients and the health care personnel in the hospital.

CO12.Integrate evidence-based information while giving nursing care to patients.

## **COURSE OUTCOME(COs):**

### **B.SC (N) 4<sup>th</sup> SEMESTER**

#### **PHAR (I & II ) 205-PHARMACOLOGY – I & II**

CO1.Describe pharmacodynamics and pharmacokinetics.

CO2.Review the principles of drug calculation and administration.

CO3.Explain the commonly used antiseptics and disinfectants.

CO4.Describe the pharmacology of drugs acting on the GI system.

CO5.Describe the pharmacology of drugs acting on the respiratory system.

CO6.Describe drugs used in the treatment of cardiovascular and blood disorders.

CO7.Explain the drugs used in the treatment of endocrine system disorders.

CO8.Describe the drugs acting on skin and drugs used to treat communicable diseases.

CO9.Explain the drugs used in the treatment of ear, nose, throat and eye disorders.

CO10.Explain the drugs used in the treatment of urinary system disorders.

CO11.Describe the drugs used in the treatment of nervous system disorders.



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CO12.Explain the drugs used for hormonal replacement and for the pregnant women during antenatal, intra natal and postnatal period.

CO13.Explain the drugs used to treat emergency conditions and immune disorders.

CO14.Discuss the role and responsibilities of nurses towards safe administration of drugs used to treat disorders of various systems with basic understanding of pharmacology.

CO15.Demonstrate understanding about the drugs used in alternative system of medicine.

CO16.Demonstrate understanding about the fundamental principles of prescribing.

#### **PATH (I & II ) 210 -PATHOLOGY – I & II (INCLUDING GENETICS)**

CO1.Apply the knowledge of pathology in understanding the deviations from normal to abnormal pathology.

CO2.Rationalize the various laboratory investigations in diagnosing pathological disorders.

CO3.Demonstrate the understanding of the methods of collection of blood, body cavity fluids, urine and feces for various tests.

CO4.Apply the knowledge of genetics in understanding the various pathological disorders.

CO5.Appreciate the various manifestations in patients with diagnosed genetic abnormalities.

CO6.Rationalize the specific diagnostic tests in the detection of genetic abnormalities.

CO7.Demonstrate the understanding of various services related to genetic.

CO8.Apply the knowledge of pathology in understanding the deviations from normal to abnormal pathology

CO9.Rationalize the various laboratory investigations in diagnosing pathological disorders

CO10.Demonstrate the understanding of the methods of collection of blood, body cavity fluids, urine and feces for various tests



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CO11. Apply the knowledge of genetics in understanding the various pathological disorders

CO12. Appreciate the various manifestations in patients with diagnosed genetic abnormalities

CO13. Rationalize the specific diagnostic tests in the detection of genetic abnormalities.

CO14. Demonstrate the understanding of various services related to genetics.

**N-AHN(II)225-ADULT HEALTH NURSING - II WITH INTEGRATED  
PATHOPHYSIOLOGY including Geriatric Nursing AND PALLIATIVE  
CARE MODULE**

CO1. Explain the etiology, pathophysiology, manifestations, diagnostic studies, treatments and complications of selected common medical and surgical disorders.

CO2. Perform complete health assessment to establish a data base for providing quality patient care and integrate the knowledge of diagnostic tests in the process of data collection.

CO3. Identify diagnoses, list them according to priority and formulate nursing care plan.

CO4. Perform nursing procedures skillfully and apply scientific principles while giving comprehensive nursing care to patients.

CO5. Integrate knowledge of anatomy, physiology, pathology, nutrition and pharmacology in caring for patients experiencing various medical and surgical disorders.

CO6. Identify common diagnostic measures related to the health problems with emphasis on nursing assessment and responsibilities.

CO7. Demonstrate skill in assisting/performing diagnostic and therapeutic procedures.

CO8. Demonstrate competencies/skills to patients undergoing treatment for medical surgical disorders.



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CO9. Identify the drugs used in treating patients with selected medical surgical conditions.

CO10. Plan and provide relevant individual and group education on significant medical surgical topics.

CO11. Maintain safe environment for patients and the health care personnel in the hospital.

### **PROF 230-PROFESSIONALISM, PROFESSIONAL VALUES & ETHICS INCLUDING BIOETHICS**

CO1. Describe profession and professionalism.

CO2. Identify the challenges of professionalism.

CO3. Maintain respectful communication and relationship with other health team members, patients and society.

CO4. Demonstrate professional conduct.

CO5. Describe various regulatory bodies and professional organizations related to nursing.

CO6. Discuss the importance of professional values in patient care.

CO7. Explain the professional values and demonstrate appropriate professional values in nursing practice.

CO8. Demonstrate and reflect on the role and responsibilities in providing compassionate care in the healthcare setting.

CO9. Demonstrate respect, human dignity and privacy and confidentiality to self, patients and their caregivers and other health team members.

CO10. Advocate for patients' wellbeing, professional growth and advancing the profession.

CO11. Identify ethical and bioethical concerns, issues and dilemmas in nursing and healthcare.



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CO12. Apply knowledge of ethics and bioethics in ethical decision making along with health team members.

CO13. Protect and respect patient 's rights.

#### **COURSE OUTCOME(COs):**

#### **B.SC (N) 5<sup>th</sup> SEMESTER**

#### **N-COMH (I) 310-COMMUNITY HEALTH NURSING – I including Environmental Science & Epidemiology**

CO1. Explore the evolution of public health in India and community health nursing

CO2. Explain the concepts and determinants of health

CO3. Identify the levels of prevention and health problems of India

CO4. Develop basic understanding about the health care planning and the present health care delivery system in India at various levels

CO5. Locate the significance of primary health care and comprehensive primary health care as part of current health care delivery system focus

CO6. Discuss health care policies and regulations in India

CO7. Demonstrate understanding about an overview of environmental science, environmental health and sanitation

CO8. Demonstrate skill in nutritional assessment for different age groups in the community and provide appropriate nutritional counseling

CO9. Provide health education to individuals and families applying the principles and techniques of behavior change appropriate to community settings





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- CO10. Describe community health nursing approaches and concepts
- CO11. Describe the role and responsibilities of community health nursing personnel
- CO12. Utilize the knowledge and skills in providing comprehensive primary health care across the life span at various settings
- CO13. Make effective home visits applying principles and methods used for home visiting
- CO14. Use epidemiological approach in community diagnosis
- CO15. Utilize the knowledge of epidemiology, epidemiological approaches in caring for people with communicable and non-communicable diseases
- CO16. Investigate an epidemic of communicable diseases
- CO17. Assess, diagnose, manage and refer clients for various communicable and non-communicable diseases appropriately at the primary health care level
- CO18. Identify and perform the roles and responsibilities of nurses in implementing various national health programs in the community for the prevention, control and management of communicable and non-communicable diseases particularly in screening, identification, primary management and referral to a health facility/First Referral Unit (FRU).

### **EDUC 315-EDUCATIONAL TECHNOLOGY/NURSING EDUCATION**

- CO1. Develop basic understanding of theoretical foundations and principles of teaching and learning
- CO2. Identify the latest approaches to education and learning
- CO3. Initiate self-assessment to identify one's own learning styles



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CO4.Demonstrate understanding of various teaching styles that can be used, based on the learners 'r e a d i n e s s' and generational needs

CO5.Develop understanding of basics of curriculum planning, and organizing

CO6.Analyze and use different teaching methods effectively that are relevant to student population and settings

CO7.Make appropriate decisions in selection of teaching learning activities integrating basic principles.

CO8.Engage in team learning and collaboration through inter professional education

CO9.Integrate the principles of teaching and learning in selection and use of educational media/technology

CO10.Apply the principles of assessment in selection and use of assessment and evaluation strategies

CO11.Construct simple assessment tools/tests integrating cognitive, psychomotor and affective domains of learning that can measure knowledge and competence of students

CO12.Develop basic understanding of student guidance through mentoring and academic advising

CO13.Identify difficult situations, crisis and disciplinary/grievance issues experienced by students and provide appropriate counseling

CO14.Engage in ethical practice in educational as well as clinical settings based on values, principles and ethical standards

CO15.Develop basic understanding of evidence-based teaching practices

## **N-FORN 320- INTRODUCTION TO FORENSIC NURSING AND INDIAN LAWS**

CO1.Identify forensic nursing as an emerging specialty in healthcare and nursing practice.



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CO2.Explore the history and scope of forensic nursing practice

CO3.Identify forensic team, role and responsibilities of forensic nurse in total care of victim of violence and in preservation of evidence.

CO4.Develop basic understanding of the Indian judicial system and legal procedures.

#### **COURSE OUTCOME(COs):**

#### **B.SC (N) 6<sup>th</sup> SEMESTER**

#### **N-CHN (I &II) 301-CHILD HEALTH NURSING – I & II**

CO1.Develop understanding of the history and modern concepts of child health and child-care.

CO2.Explore the national child welfare services, national programs and legislation in the light of National Health Policy 2017.

CO3.Describe the role of preventive pediatrics and perform preventive measures towards accidents.

CO4.Participate in national immunization programs/Universal Immunization Program (UIP).

CO5.Identify the developmental needs of children and provide parental guidance.

CO6.Describe the principles of child health nursing and perform child health nursing procedures.

CO7.Demonstrate competencies in newborn assessment, planning and implementation of care to normal and high-risk newborn including neonatal resuscitation.

CO8.Apply the principles and strategies of Integrated management of neonatal and childhood illness (IMNCI).

CO9.Apply the knowledge of pathophysiology and provide nursing care to children with respiratory system disorders.



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- CO10. Identify and meet childhood emergencies and perform child CPR.
- CO11. Perform assessment of children: health, developmental & anthropometric.
- CO12. Provide nursing care to children with various medical disorders.
- CO13. Provide pre & postoperative care to children with common pediatric surgical conditions/ malformation.
- CO14. Perform immunization as per NIS.
- CO15. Provide nursing care to critically ill children.
- CO16. Give health education/nutritional education to parents.
- CO17. Counsel parents according to identified counseling needs.

## **N-MHN (I & II) 305-MENTAL HEALTH NURSING – I & II**

- CO1. Trace the historical development of mental health nursing and discuss its scope.
- CO2. Identify the classification of the mental disorders.
- CO3. Develop basic understanding of the principles and concepts of mental health nursing.
- CO4. Apply the Indian Nursing Council practice standards for psychiatric mental health nursing in supervised clinical settings.
- CO5. Conduct mental health assessment.
- CO6. Identify and maintain therapeutic communication and nurse patient relationship.
- CO7. Demonstrate knowledge of the various treatment modalities and therapies used in mental disorders.
- CO8. Apply nursing process in delivering care to patients with mental disorders.
- CO9. Provide nursing care to patients with schizophrenia and other psychotic disorders based on assessment findings and treatment/therapies used.
- CO10. Provide nursing care to patients with mood disorders based on assessment findings and treatment/therapies used.
- CO11. Provide nursing care to patients with neurotic disorders based on assessment findings and treatment/ therapies used.



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CO12. Assess patients with mental health problems/disorders

CO13. Observe and assist in various treatment modalities or therapies

CO14. Counsel and educate patients and families

CO15. Perform individual and group psychoeducation

CO16. Provide nursing care to patients with mental health problems/disorders

CO17. Motivate patients in the community for early treatment and follow up

CO18. Observe the assessment and care of patients with substance abuse disorders in de-addiction center.

### **NMLE 330-NURSING MANAGEMENT AND LEADERSHIP**

CO1. Analyze the health care trends influencing development of nursing services and education in India.

CO2. Describe the principles, functions and process of management applied to nursing.

CO3. Develop basic understanding and beginning competencies in planning and organizing nursing services in a hospital.

CO4. Apply the concept of human resource management and identify the job description for all categories of nursing personnel including in service education.

CO5. Discuss the principles and methods of staffing and scheduling in an individual hospital/nursing unit.

CO6. Develop skill in management of materials and supplies including inventory control.

CO7. Develop team working and inter professional collaboration competencies.

CO8. Identify effective leadership styles and develop leadership competencies.

CO9. Utilize the knowledge of principles and line of control and participate in quality management and evaluation activities.

CO10. Utilize the knowledge related to financial planning in nursing services and education during budgetary process.



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CO11. Apply the knowledge of nursing informatics in maintenance of records and reports relevant to patient information, nursing care and progress.

CO12. Demonstrate understanding of the INC guidelines for establishment and accreditation of educational institutions in terms of faculty norms, physical infrastructure and clinical facilities.

CO13. Demonstrate beginning competencies in planning, organizing and staffing at college including implementation and evaluation of curriculum.

CO14. Identify the legal issues and laws relevant to nursing practice and education.

CO15. Apply the knowledge and utilize the various opportunities for professional advancement.

## **COURSE OUTCOME(COs):**

### **B.SC (N) 7<sup>th</sup> SEMESTER**

#### **N-COMH (II) 401-COMMUNITY HEALTH NURSING – II**

CO1. Demonstrate beginning practice competencies/skills relevant to provide comprehensive primary health care/community-based care to clients with common diseases and disorders including emergency and first aid care at home/clinics/centres as per predetermined protocols/drug standing orders approved by MOH&FW

CO2. Provide maternal, newborn and child care, and reproductive health including adolescent care in the urban and rural health care settings

CO3. Describe the methods of collection and interpretation of demographic data

CO4. Explain population control and its impact on the society and describe the approaches towards limiting family size

CO5. Describe occupational health hazards, occupational diseases and the role of nurses in occupational health programs

CO6. Identify health problems of older adults and provide primary care, counseling and supportive health services



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CO7.Participate in screening for mental health problems in the community and providing appropriate referral services

CO8.Discuss the methods of data collection for HMIS, analysis and interpretation of data

CO9.Discuss about effective management of health information in community diagnosis and intervention

CO10.Describe the management system of delivery of community health services in rural and urban areas

CO11.Describe the leadership role in guiding, supervising, and monitoring the health services and the personnel at the PHCs, SCs and community level including financial management and maintenance of records & reports

CO12.Describe the roles and responsibilities of Mid-Level Health Care Providers (MHCPs) in Health Wellness Centers (HWCs)

CO13.Identify the roles and responsibilities of health team members and explain their job description

CO14.Demonstrate initiative in preparing themselves and the community for disaster preparedness and management

CO15.Demonstrate skills in proper bio-medical waste management as per protocols

CO16.Explain the roles and functions of various national and international health agencies

## **NRTS 405-NURSING RESEARCH AND STATISTICS**

CO1.Identify research priority areas

CO2.Formulate research questions/problem statement/hypotheses

CO3.Review related literature on selected research problem and prepare annotated bibliography

CO4.Prepare sample data collection tool

CO5.Analyze and interpret the given data





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CO6.Practice computing, descriptive statistics and correlation

CO7.Draw figures and types of graphs on given select data

CO8.Develop a research proposal

CO9.Plan and conduct a group/individual research project

## **N-MIDW/OBGN I & II 335 & 410 MIDWIFERY/OBSTETRICS AND GYNECOLOGY (OBG) N**

CO1.Demonstrate professional accountability for the delivery of nursing care as per INC standards/ICM competencies that are consistent with moral, altruistic, legal, ethical, regulatory and humanistic principles in midwifery practice.

CO2.Communicate effectively with individuals, families and professional colleagues fostering mutual respect and shared decision making to enhance health outcomes.

CO3.Recognize the trends and issues in midwifery and obstetrical nursing.

CO4.Review and describe the anatomy and physiology of human reproductive system and conception.

CO5.Describe and apply physiology in the management of normal pregnancy, birth and puerperium.

CO6.Demonstrate competency in providing respectful and evidence based maternity care for women during the antenatal, intranatal and postnatal period.

CO7.Uphold the fundamental human rights of individuals when providing midwifery care.

CO8.Promote physiologic labour and birth, and conduct normal childbirth.

CO9.Provide evidence based essential newborn care.

CO10.Apply nursing process approach in caring for women and their families.

CO11.Describe the methods of contraception and role of nurse/midwife in family welfare services.



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CO12. Recognize the importance of and actively participate in family welfare programs.

CO13. Provide youth friendly health services and care for women affected by gender based violence.

CO14. Identify, stabilize and refer antenatal women with complications

CO15. Provide care to antenatal women with complications

CO16. Provide post abortion care & counselling

CO17. Assist in the conduction of abnormal vaginal deliveries and caesarean section.

CO18. Demonstrate skills in resuscitating the newborn

CO19. Assist and manage complications during labour

CO20. Identify postnatal and neonatal complications, stabilize and refer them

CO21. Provide care for high risk antenatal, intranatal and postnatal women and their families using nursing process approach

CO22. Provide care for high risk newborn

CO23. Assist in advanced clinical procedures in midwifery and obstetric nursing

CO24. Provide care for women during their non-childbearing period.

CO25. Assess and care for women with gynecological disorders

CO26. Demonstrate skills in performing and assisting in specific gynecological procedures Counsel and care for couples with infertility.

## **COURSE OUTCOME(COs):**

### **B.SC (N) 8<sup>th</sup> SEMESTER**

#### **Six months' internship**