



## ESSENTIAL CORE AND COMPLEMENTARY SUBJECTS IN MEDICAL COLLEGE NURSING PROGRAMS: A SCIENTIFIC OVERVIEW

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**Abstract:** *Medical college programs for nurses must offer a robust curriculum that combines clinical skills with scientific knowledge. This article examines essential core subjects—Anatomy, Physiology, Microbiology, Pharmacology—and complementary fields—Medical Ethics, Biostatistics, Health Communication, and Evidence-Based Practice—vital for developing competent nursing professionals. The article details the relevance of each subject for enhancing nursing care quality, patient safety, and interprofessional collaboration.*

### **Introduction**

Nursing education in medical colleges plays a crucial role in shaping skilled healthcare professionals. A balanced curriculum must integrate core scientific disciplines with supporting fields to ensure comprehensive competency. This article explores major academic subjects necessary for nursing students, emphasizing their practical applications and pedagogical value.

### **Core Subjects**

#### **1. Anatomy**

Understanding the human body's structure—bones, muscles, organs—is fundamental for safe clinical practice. Detailed knowledge of anatomical systems guides procedures such as injections, catheter placements, and wound care.

#### **2. Physiology**

Physiology provides insight into how the body functions, including cardiovascular, respiratory, renal, and endocrine systems. Nurses must grasp normal mechanisms to recognize and manage patient dysfunction effectively.



### **3. Microbiology**

Microbiology education empowers nurses to understand pathogens, infection mechanisms, and sterile techniques. Mastery of this subject supports infection control protocols and appropriate use of antimicrobials to reduce hospital-acquired infections.

### **4. Pharmacology**

Pharmacology equips students with knowledge of drug classifications, mechanisms of action, dosages, side effects, and interactions. Nurses perform safe medication administration and patient education based on this foundational subject.

### **Complementary (Supporting) Subjects**

#### **5. Medical Ethics**

Ethics courses address moral principles in healthcare—patient autonomy, confidentiality, informed consent. Nurses face frequent ethical dilemmas; ethical education fosters professional responsibility and compassionate care.

#### **6. Biostatistics**

Basic statistical skills enable nurses to interpret research, assess clinical data, and support evidence-based decisions. Understanding measures such as mean, median, incidence, and prevalence is essential for quality improvement initiatives.

#### **7. Health Communication**

Effective communication underpins rapport with patients, families, and healthcare teams. Courses focus on verbal and nonverbal skills, cultural sensitivity, and delivering difficult news—key to improving patient outcomes and satisfaction.

#### **8. Evidence-Based Practice (EBP)**

EBP training bridges research and clinical application. Nurses learn to critically appraise scientific literature, integrate best evidence with clinical judgement, and apply findings to practice—enhancing care quality and innovation.

### **Curriculum Integration and Clinical Application**

- **Interdisciplinary Projects:** Example: case study combining physiology and pharmacology to tailor medication plans.
- **Simulation Labs:** Integrate anatomy and procedural skills in controlled settings.



- **Research Assignments:** Use biostatistics and EBP to investigate clinical questions and propose improvements.
- **Ethics Rounds:** Debate real-life scenarios to foster moral reasoning and ethical decision-making.

## Discussion

A nursing curriculum grounded in core scientific subjects and enriched by complementary disciplines produces well-rounded professionals. Anatomical and physiological knowledge strengthens clinical reasoning, while microbiology and pharmacology ensure safe technical practice. Complementary fields foster ethical, communicative, and analytical capacities essential in complex healthcare environments. Integrating these domains prepares nurses for both current challenges and future demands.

## Conclusion

Medical technical schools seeking to educate competent and ethical nurses should adopt an integrated curriculum featuring both core and supporting subjects. The synergy of scientific knowledge and professional skills promotes high-quality, evidence-based, and patient-centered care.

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