



National University of Sciences and Technology

Course Description

Course Title	Course Code	Credit Hours
Immunization and Vaccine Development	IBT-827	3 – 0

TEXT BOOK:

- Recombinant vectors in vaccine development by Fred Brown. Albany NY, USA, May 23-26, 1993
- The Vaccine book by Barry R. Bloom 2nd edition (July 25, 2016) (latest edition).
- Vaccines by Plotkin Orenstein 8th Edition - December 21, 2022(latest edition).
- Mass vaccine global aspect-progress and obstacles by Plotkin 2006.
- Pre-clinical and Clinical development of new vaccines by Fred Brown 1997.
- Journals Recommended: Vaccine, Journal of Antimicrobial Chemotherapy, Clinical Immunology and Immunopathology, Medical Microbiology and Immunology.

REFERENCE BOOK

- N/a

COURSE OBJECTIVES:

- Understand how vaccines work immunologically and epidemiologically.
- Know the different types of vaccines and guidelines for current vaccination practices.
- Know the rules and regulations for testing new vaccines and key developmental stages
- such as pre-clinical and clinical (Phase I-IV) vaccine trials.

COURSE OUTLINES

- Introduction, history and types of vaccines
- Viral proteins as potential targets for vaccine.
- Role of multinational companies in vaccines production.
- DNA, Peptide, Subunit and Recombinant vaccines.
- Adjuvants in vaccines.
- Animal models of vaccine testing
- Cost-effective approaches for production of new vaccines. Demand and supply of vaccines.
- Human testing and efficacy of vaccines: ethical issues. Launching of vaccine and clinical trials.
- Recommendations of the Advisory Committee on Immunization Practices (ACIP). Vaccine Safety.
- Quadrivalent vaccine against human papillomavirus to prevent high-grade cervical lesions.
- Understanding the demand and supply of popular vaccine.
- Anti-rabies immunoglobulin preparation based on F(ab')₂ fragments.
- Effect of Panavir/Zanamivir on influenza A virus reproduction.

ASSESSMENTS

Description	Percentage Weightage (%)
Assignments	05-10%
Quizzes	10-15%
Mid Semester Exams	30-40%
End Semester Exam	40-50%