

# FAST-NUCES ENGINEERING PROGRAMS

## SECTION 1: DEAN'S MESSAGE AND OVERVIEW

### Dean's Message

The National University of Computer and Emerging Sciences stands among the top-tier prestigious universities in Pakistan. The engineering programs are accredited by the Pakistan Engineering Council (PEC) and have achieved Level-II accreditation under the Washington Accord. Graduates are placed globally in reputable organizations such as Amazon, Vodafone, Huawei, IBM, and Samsung.

### Program Availability

- Electrical Engineering: Offered at all five campuses.
- Civil Engineering: Exclusively available at the Lahore campus.
- Levels: Bachelor of Science (BS), Master of Science (MS), and Doctorate (PhD).

## SECTION 2: BS PROGRAMS IN ENGINEERING ADMISSION DETAILS

### Admission Test Options

Applicants must select only one of the following:

- FAST-NUCES Admission Test
- SAT
- NTS NAT-IE (NTS tests from specific universities are not acceptable)

### Eligibility Criteria

- SSC (Matric) or equivalent: 60% minimum marks.
- HSSC (FSC) or equivalent: 60% minimum marks.
- Subject Requirement: Pre-Engineering (Chemistry, Mathematics, Physics) OR ICS (Computer Science, Mathematics, Physics).
- Pre-Medical Students: Eligible if they have passed additional math or are waiting for results.

### Selection Criteria Weightage

- Admission Test Marks: 33%
- HSSC/Equivalent Marks: 50%
- SSC/Equivalent Marks: 17%

## SECTION 3: BACHELOR OF SCIENCE (COMPUTER ENGINEERING)

### Program Mission

To prepare competent Computer Engineering graduates conscious of professional ethical and social responsibilities for productive engineering careers in industry, academia, and research both locally and abroad.

### Program Educational Objectives (PEOs)

- Creativity: Apply cutting-edge engineering practices to develop sustainable solutions for complex problems under limited resources.
- Conduct: Uphold responsible, professional, and ethical conduct with interpersonal skills.
- Leadership: Emerge as team leaders in their domain and support economic development.
- Versatility: Practice in a broad range of industries and adapt to new technologies.

### Award of Degree

- Passed courses totaling at least 140 credit hours.
- Obtained a CGPA of at least 2.00.

### Career Opportunities

Graduates can pursue careers in the telecom industry, electronics, power sector, embedded

system design, and software programming.

#### Curriculum Highlights

- Core Computing: Programming, Data Structures, Operating Systems, Databases, Software Engineering.
- Core Engineering: Circuit Analysis, Digital Logic Design, Signals and Systems, Microprocessor Interfacing, Digital Signal Processing.
- Depth Electives: IoT, Embedded System Design, AI and Machine Learning, Network Security, Blockchain, Robotics.
- Multi-Disciplinary Electives: Mobile App Development, Virtual Reality, Software Quality Assurance.

### SECTION 4: BACHELOR OF SCIENCE (CIVIL ENGINEERING)

#### Program Mission

To develop highly competent graduates with sound engineering knowledge, social responsibility, and lifelong learning skills.

#### Program Educational Objectives (PEOs)

- Successfully engage in contemporary Civil Engineering practice to solve real-world problems.
- Pursue professional growth through continuous learning.
- Maintain high ethical standards in professional practice.
- Attain increasing levels of responsibility with interpersonal and communication skills.

#### Award of Degree

- Earned at least 140 credit hours through core and elective courses.
- Obtained a CGPA of at least 2.00.

#### Career Opportunities

Work in the construction industry as well as relevant business, management, and finance sectors to design and build sustainable civil infrastructures.

#### Curriculum Highlights

- Core Courses: Engineering Materials, Surveying, Mechanics of Solids, Fluid Mechanics, Soil Mechanics, Structural Analysis, Reinforced Concrete Design, Environmental Engineering, Transportation Planning.
- Electives: Architecture and Town Planning, Hydraulic Engineering, Irrigation and Drainage, Construction Management.
- Humanities/Social Sciences: Sociology, Engineering Economics, Engineering Law, Foreign Languages.

### SECTION 5: BACHELOR OF SCIENCE (ELECTRICAL ENGINEERING)

#### Program Mission

To develop a nurturing environment for quality engineering education through discovery and innovation, emphasizing practical application and hands-on experience.

#### Program Educational Objectives (PEOs)

- Creativity: Apply engineering practices to develop sustainable solutions.
- Conduct: Uphold professional and ethical conduct.
- Leadership: Emerge as team leaders supporting service and economic development.
- Versatility: Practice in diverse industries and embrace new technologies.

#### Award of Degree

- Passed courses totaling at least 140 credit hours.
- Obtained a CGPA of at least 2.00.

### Specialization Streams

- Computer Engineering: Data Communication, Operating Systems, VLSI Design, IoT, Embedded Systems.
- Electronics: Electronic Circuit Design, Power Electronics, Instrumentation, Digital Signal Processing, Industrial Automation.
- Electric Vehicles: Power Distribution, Power System Analysis, Power Generation, Renewable Energy Systems, Electric Power Transmission.

## SECTION 6: MS PROGRAMS IN ENGINEERING ADMISSION DETAILS

### Admission Test Options

Applicants must select only one:

- FAST-NUCES Admission Test
- GRE General
- NTS GAT-A General

### Eligibility Criteria

- Education: Bachelor of Science in relevant field or equivalent (16 years of education) from a recognized university.
- Performance: Minimum 60% marks or CGPA of at least 2.00 on a scale of 4.00.

### Selection Criteria Weightage

- Admission Test Marks: 50%
- Past Academic Record (Bachelor): 50%

## SECTION 7: MASTER OF SCIENCE (CIVIL ENGINEERING)

### Program Mission

To develop highly competent graduates with advanced engineering knowledge and research skills for professional excellence.

### Specialization Areas

- Structural Engineering
- Hydraulics and Water Resources Engineering
- Geotechnical Engineering
- Transportation Engineering
- Construction Management

### Award of Degree

- Completed 30 credit hours as per study plan.
- Obtained a CGPA of at least 2.50.

### Study Plan Structure

- Research-Based: Core Courses (9 CH), Electives (12 CH), Thesis (6 CH), Elective (3 CH).
- Coursework-Based: Core Courses (12 CH), Electives (15 CH), Elective (3 CH).

## SECTION 8: MASTER OF SCIENCE (ELECTRICAL ENGINEERING)

### Program Mission

To attain theoretical and practical depth in a specific area of interest and enhance critical thinking and intuitive abilities.

### Program Educational Objectives (PEOs)

- Provide advanced learning in a discipline of Electrical Engineering.
- Enhance skills in problem-solving, mathematical modeling, and leadership.

#### Award of Degree

- Passed courses totaling at least 30 credit hours (including three core courses).
- Obtained a CGPA of at least 2.50.

#### Study Plan Structure

- Research-Based: Core Courses (9 CH), Electives (12 CH), Thesis (6 CH), Elective (3 CH).
- Coursework-Based: Core Courses (12 CH), Electives (15 CH), Elective (3 CH).

#### Core and Elective Topics

- Topics include Engineering Optimization, Computational Statistics, Internet of Things, Advanced Machine Learning, Deep Learning, Advanced Computer Networks, and Advanced Control Systems.