

PROPOSED SCHEME OF STUDY FROM SPRING 2019 – ONWARDS
B.E. ELECTRICAL
AS PER HEC NCRC
NHU – NAZEER HUSSAIN UNIVERSITY, PAKISTAN

I SEMESTER (6 Courses + 4 Labs)			Pre-Requisite
Course Code	Course Title	Cr. Hr.	Course Title
HS-101	Functional English	2+0	None
NS-102	Calculus and Analytical Geometry	3+0	None
NS-105	Applied Physics	3+1	None
CS-102+103	Computing and Programming Fundamentals	3+1	None
EE-102	Linear Circuit Analysis	3+1	None
EE-105	Workshop Practice	0+1	None
Total Semester Credit Hours		14+4=18	
II SEMESTER (6 Courses + 2 Labs)			Pre-Requisite
Course Code	Course Title	Cr. Hr.	Course Title
HS-102	Islamic Studies / Ethics	2+0	None
ME-102	Thermodynamics (IDEE)	2+0	None
HS-104	Communication Skills	2+0	None
NS-204	Differential Equations	3+0	Calculus and Analytical Geometry
CS-104	Object Oriented Programming	3+1	Computing and Programming Fundamentals
EE-103	Electronic Devices and Circuits	3+1	None
Total Semester Credit Hours		15+2=17	
III SEMESTER (6 Courses + 3 Labs)			Pre-Requisite
Course Code	Course Title	Cr. Hr.	Course Title
HS-103	Pakistan Studies	2+0	None
NS-303	Complex Variables and Transforms	3+0	Differential Equations
EE-202	Electronic Circuit Design	3+1	Electronic Devices and Circuits
EE-201	Digital Logic Design	3+1	Electronic Devices and Circuits
EE-204	Electrical Network Analysis	3+1	Linear Circuit Analysis
EE-203	Computer Aided Engineering Drawing	0+1	None
Total Semester Credit Hours		14+4=18	
IV SEMESTER (5 Courses + 2 Labs)			Pre-Requisite
Course Code	Course Title	Cr. Hr.	Course Title
NS-103	Linear Algebra	3+0	Calculus and Analytical Geometry
EE-301	Probabilistic Methods in Engineering	3+0	Calculus & Analytical Geometry
EE-307	Electromagnetic Field Theory	3+0	Complex Variables and Transforms
EE-401	Microprocessor Based Systems and Applications	3+1	Digital Logic Design
TE-201	Signals and Systems	3+1	ENA, Complex Variables & Transforms
Total Semester Credit Hours		15+2=17	
V SEMESTER (5 Courses + 3 Labs)			Pre-Requisite
Course Code	Course Title	Cr. Hr.	Course Title
EE-206	Electrical Machines	3+1	Electrical Network Analysis
ME-201	Mechanical Engineering	2+0	None
EE-302	Power Electronics	3+1	Electronic Circuit Design
PE-302	Power Distribution and Utilization	3+0	Electrical Network Analysis
TE-301	Communication Systems	3+1	Signals and Systems, Probabilistic Methods in Engineering

Total Semester Credit Hours		14+3=17	
VI SEMESTER (5 Courses + 2/3 Labs)			Pre-Requisite
Course Code	Course Title	Cr. Hr.	Course Title
HS-201	Technical and Business Writing	3+0	None
EE-305	Instrumentation & Measurements	3+1	ENA, DLD
EE-3XX	Robotics	3+0	Linear Algebra
EE-304	Linear Control Systems	3+1	Signals and Systems
XX-XXX	Depth Elective – I:	3+X	As per HEC NCRC
Total Semester Credit Hours		15+2/3=17/18	
VII SEMESTER (5 Courses + 0/2 Labs)			Pre-Requisite
Course Code	Course Title	Cr. Hr.	Course Title
HS-401	Professional Ethics	3+0	None
MS-201	Engineering Economics and Management	3+0	None
XX-XXX	Depth Elective – II:	3+X	As per HEC NCRC
XX-XXX	Depth Elective – III:	3+X	As per HEC NCRC
EE-411	Final Year Project Part – I	0+3	None
Total Semester Credit Hours		12+3/5=15/17	
VIII SEMESTER (5 Courses + 0/1/2 Lab)			Pre-Requisite
Course Code	Course Title	Cr. Hr.	Course Title
HS-302	Organizational Behaviour	3+0	None
MS-401	Technopreneurship	3+0	None
XX-XXX	Depth Elective – IV:	3+X	As per HEC NCRC
XX-XXX	Depth Elective – V:	3+X	As per HEC NCRC
EE-412	Final Year Project Part – II	0+3	None
Total Semester Credit Hours		12+3/4=15/16	

Proposed Programme Summary – B.E. Electrical	
Duration of Programme	4 Year
Number of Semesters	8
Average number of courses per semester	5 or 6
Total Credit Hours	133 - 136
Total Number of Courses	41 + Final Year Project (Part – I and II)

Programme Comparison Summary HEC and NHU – B.E. Electrical		
Description	HEC	NHU
Duration of Programme:	4 Year	4 Year
Number of Semesters	8	8
Average number of courses per semester	5 or 6	5 or 6
Total Credit Hours	130 - 136	133 – 136
Total Number of Courses	42	41 + FYP Project (I & II)
Engineering Domain Courses	65% to 70%	70%
Non-Engineering Domain Courses	30% to 35%	30%

List of Courses

- Electronic Circuit Design
- Power Electronics
- Instrumentation and Measurements
- Integrated Electronics
- VLSI Design
- Industrial Electronics
- Solid State Devices
- Microelectronics Technology

- Optoelectronics
- Digital System Design
- Introduction to Nanotechnology
- Digital Signal Processing
- Wave Propagation and Antennas
- Digital Control Systems
- RF and Microwave Engineering
- Biomedical Instrumentation
- Data Communication
- Medical Robotics
- Computer Communication Networks
- Operating Systems
- Digital Signal Processing
- Digital Image Processing
- Data Communication
- Computer Graphics
- Computer Vision
- Image & Video Coding
- Digital Control
- Internet of Things (IoT)
- Network Protocols and Standards
- Network Security
- Network and System Programming
- Computer Organization
- Computer Architecture
- Digital Systems Design
- Embedded Systems
- Parallel Processing
- Computer Communication Networks
- Electronic Circuit Design
- Digital Communications
- Antennas and Wave Propagation
- Digital Signal Processing
- Instrumentation and Measurements
- Transmission and Switching systems
- Wireless and Mobile Communications
- Data Communication
- Satellite Communication
- Optical Communication
- RF and Microwave Engineering
- Navigation and Radar Systems
- Digital Image Processing
- Emerging Wireless Technologies and RF Planning
- Telecommunication policies and standards
- Power System Analysis
- Power Distribution and Utilization
- Instrumentation and Measurements
- Advanced Electrical Machines
- Power Generation
- Electrical Power Transmission
- Power Electronics
- Power System Protection
- Power System Operation & Control
- Electrical Machine Design and Maintenance
- High Voltage Engineering
- Renewable Energy Systems
- Digital Signal Processing
- Industrial Drives
- FACTS and HVDC Transmission
- Data Communication
- Smart Grid

BS (ELECTRONIC SYSTEMS)
 Program as per Higher Education Commission (HEC) NCRC
 NAZEER HUSSAIN UNIVERSITY, PAKISTAN

I SEMESTER			Pre-Requisite
Code	Course Title	Cr. Hr.	Course Title
NS-102	Calculus & Analytical Geometry	3+0	None
CS-102	Introduction to Computing	2+1	None
NS-105	Applied Physics	3+1	None
HS-101	Functional English	3+0	None
HS-102	Islamic studies / Ethical Behavior	2+0	None
Total Semester Credits		13+2=15	
II SEMESTER			Pre-Requisite
Code	Course Title	Cr. Hr.	Course Title
NS-103	Linear Algebra	3+0	None
CS-102	Programming Fundamentals	2+1	None
EE-102	Linear Circuit Analysis	3+1	None
HS-104	Communication Skills	3+0	None
HS-103	Pakistan Studies	2+0	None
EE-105	Workshop Practice	0+1	None
Total Semester Credits		13+3=17	
III SEMESTER			Pre-Requisite
Code	Course Title	Cr. Hr.	Course Title
EE-103	Electronic Devices & Circuits	3+1	Linear Circuit Analysis
CS-201	Data Structures and Algorithms	2+1	Programming Fundamentals
EE-201	Digital Logic Design	2+1	None
NS-203	Multivariable Calculus	3+0	Calculus and Analytical Geometry
HS-203	Technical Report Writing	3+0	None
Total Semester Credits		13+3=16	
IV SEMESTER			Pre-Requisite
Code	Course Title	Cr. Hr.	Course Title
NS-204	Differential Equations	3+0	Calculus and Analytical Geometry
EE-204	Electrical Network Analysis	3+1	Linear Circuit Analysis
EE-307	Electromagnetic Field Theory	3+0	Multivariable Calculus
EE-401	Microprocessor Based Systems & Applications	2+1	Digital Logic Design
NS-303	Complex Variables & Transforms	3+0	Calculus and Analytical Geometry
EE-203	Computer Aided Drawing	0+1	None
Total Semester Credits		14+3=17	

V SEMESTER			Pre-Requisite
Code	Course Title	Cr. Hr.	Course Title
TE-201	Signals & Systems	3+1	ENA, Complex Variable and Transform
MS-201	Engineering Economics & Management	3+0	None
CS-305	Data Communications & Computer Networks	2+1	None
EE-308	Probabilistic Methods	3+0	Calculus and Analytical Geometry
EE-305	Instrumentation & Measurements	3+1	ENA, DLD
	Total Semester Credits	14+3=17	
VI SEMESTER			Pre-Requisite
Code	Course Title	Cr. Hr.	Course Title
EE-202	Electronic Circuit Design	3+1	Electronic Devices and Circuits
EE-304	Linear Control Systems	3+1	Signals and Systems
EE-402	Digital Signal Processing	3+0	Signals and Systems
TE-301	Communication Systems	3+1	Signals and Systems, Probabilistic Methods
XX-XXX	Elective – I	3+0	As per HEC NCRC
	Total Semester Credits	15+3=18	
VII SEMESTER			Pre-Requisite
Code	Course Title	Cr. Hr.	Course Title
EE-302	Power Electronics	3+1	Electronic Circuit Design
XX-XXX	Elective – II	3+0	As per HEC NCRC
XX-XXX	Elective – III	3+1	As per HEC NCRC
XX-XXX	Elective – IV	3+0	As per HEC NCRC
EE-411	Final Year Project Part-I	0+3	--
	Total Semester Credits	12+5=17	
VIII SEMESTER			Pre-Requisite
Code	Course Title	Cr. Hr.	Course Title
MS-402	Technopreneurship	2+0	None
XX-XXX	Elective – V	3+1	As per HEC NCRC
XX-XXX	Elective – VI	3+1	As per HEC NCRC
EE-412	Final Year Project Part-II	0+3	--
	Total Semester Credits	8+5=13	

Total Credit Hours of 4-Year BS (Electronic Systems) Program = 130 Credits Hours