

**INFORMATION TECHNOLOGY CENTRE
FACULTY OF AGRICULTURAL SOCIAL SCIENCES
SINDH AGRICULTURE UNIVERSITY, TANDO JAM**

**Adaptation of HEC Graduation Education Policy-2023
Revision/Amendment of Scheme of Studies of Software Engineering according to
UEP-2023 and NCEAC 2023
BSSE Four Years (8 semester) Degree Program
HEC Undergraduate Policy 2023**

Program structure

Program Nomenclature	BSSE
Degree completion requirements	130-133 Credit Hours.

General Education Courses

Course Code	Course Title	Credit Hrs.
EP-301	Entrepreneurship	2(2-0)
IS/ EB-301	Islamic Studies/Ethics (optional for Non-Muslim Students)	2(2-0)
BE-301	Natural Science (Applied Physics)	3(3-0)
ENG-301	Functional English	3(3-0)
PS-302	Ideology and Constitution of Pakistan	2(2-0)
RS-402	Civic and Community Engagement	2(2-0)
ENG-302	Expository Writing	3(3-0)
SE-407	Quantitative Reasoning-I (Discrete Structures)	3(3-0)
ICT-301	Application of Information and Communication Technology	3(2-1)
SE-410	Arts and Humanities (Professional Practices)	2 (2-0)
SE-408	Social Sciences (Organizational Behaviour)	2(2-0)
Math-301	Quantitative Reasoning-II (Calculus and Analytic Geometry)	3(3-0)
TOTAL CREDIT HOURS.		30(29+1)

Major/ Computing Core Courses

Course Code	Course Title	Credit Hrs.
SE-301	Programming Fundamentals	4 (3-1)
SE-302	Object Oriented Programming	4 (3-1)
SE-304	Database Systems	4 (3-1)
SE-306	Digital Logic Design	3 (2-1)
SE-401	Data Structures	4 (3-1)
SE-403	Computer Networks	3 (2-1)
SE-405	Software Engineering	3 (3-0)
SE-402	Computer Organization & Assembly Language	3 (2-1)
SE-501	Operating Systems	3 (2-1)
SE-502	Information Security	3 (2-1)
SE-601	Analysis of Algorithms	3 (3-0)
SE-602	Artificial Intelligence	3 (2-1)
SE-607	Final Year Project	6(0-6)
TOTAL CREDIT HOURS.		46(30+16)

Domain Core Courses

Course Code	Course Title	Credit Hrs.
SE-506	Domain Core 1 (Software Requirement Engineering)	3 (2-1)
SE-406	Domain Core 2 (Software Construction and Development)	3 (2-1)

SE-404	Domain Core 3 (Software Design & Architecture)	3 (3-0)
SE -503	Domain Core 4 (Software Project Management)	3 (2-1)
SE-505	Domain Core 5 (Software Quality Engineering)	3 (2-1)
SE-504	Domain Core 6 (Parallel & Distributed Computing)	3 (2-1)
TOTAL CREDIT HOURS.		18(13+5)

Domain Elective Courses

Course Code	Course Title	Credit Hrs.
SE-508	Domain Elective1 (Data Science)	3 (2-1)
SE-507	Domain Elective2 (HCI & Computer Graphics)	3 (2-1)
SE-509	Domain Elective3 (Mobile Application Development)	3 (2-1)
SE-510	Domain Elective4 (Web Technologies)	3 (2-1)
SE-512	Domain Elective5 (Computer Architecture)	3 (2-1)
SE-603	Domain Elective 6 (Advanced Database Management)	3 (2-1)
SE-605	Domain Elective 7 (Web Engineering)	3 (2-1)
TOTAL CREDIT HOURS.		21(14+7)

Mathematics & Supporting Courses

Course Code	Course Title	Credit Hrs.
Math-302	Multivariable Calculus	3 (3-0)
Math-401	Linear Algebra	3 (3-0)
STAT-501	Probability & Statistics	3 (3-0)
ENG-601	Technical & Business Writing	3 (3-0)
TOTAL CREDIT HOURS.		12(12+0)

Elective Supporting Courses

Course Code	Course Title	Credit Hrs.
BE-601	Elective Supporting (GIS-Geographic Information System)	3 (2-1)
TOTAL CREDIT HOURS.		3(2+1)

Course Code	Course Title	Credit Hrs.
SE-606	Internship/Field Experience	3(0-3)
TOTAL CREDIT HOURS.		03(0-03)

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List of Courses to be studied in Four Years (Eight Semester)

#		Pre-Reqs	Course Title	Domain	Cr hr (Cont Hr)
Semester 1					
BSSE. P-I					
1	SE-301		Programming Fundamentals	Core	4 (3-1)
2	ICT-301		Application of Information & Communication Technologies	GER	3 (2-1)
3	BE-301		Natural Science (Applied Physics)	GER	3 (2-1)
4	ENG-301		Functional English	GER	3 (3-0)
5	IS/EB-301		Islamic Studies /Ethics(optional for non-Muslim students)	GER	2 (2-0)
6	Math-301		QR 2 (Calculus and Analytic Geometry)	GER	3 (3-0)
				Total Cr Hrs	18 (15-3)
Semester 2					
7	SE-302	PF	Object Oriented Programming	Core	4 (3-1)
8	SE-304		Database Systems	Core	4 (3-1)
9	SE-306		Digital Logic Design	Core	3 (2-1)
10	Math-302	CAG	Multivariable Calculus	Maths and Support	3 (3-0)
11	Eng-302	ECC	Expository Writing	GER	3 (3-0)
12	PS-302		Ideology and Constitution of Pakistan	GER	2 (2-0)
				Total Cr Hrs	19 (16-3)
BSSE P-II					
Semester 3					
13	SE-401	OOP	Data Structures	Core	4 (3-1)
14	SE-403		Computer Networks	Core	3 (2-1)
15	SE-405		Software Engineering	Core	3 (3-0)
16	Math-401	CAG	Linear Algebra	Maths and Support	3 (3-0)
17	SE-407	PF	QR1 (Discrete Structures)	GER	3 (3-0)
18	SE-409		Entrepreneurship	GER	2 (2-0)
				Total Cr Hrs	18 (16-2)
Semester 4					
19	SE-402	DLD	Computer Organization & Assembly Language	Core	3 (2-1)
20	SE-404		Domain Core 1 (Software Design & Architecture)	Domain Core	3 (3-0)
21	SE-406		Domain Core 3 (Software Construction and Development)	Domain Core	3 (2-1)
22	SE-408		Social Science (Organizational Behaviors)	GER	2 (2-0)
23	RS-402		Civics and Community Engagement	GER	2 (2-0)
24	SE-410		Arts & Humanities (Professional Practices)	GER	2 (2-0)
				Total Cr Hrs	15 (13-2)
BSSE P-III					
Semester 5					
25	SE-501		Operating Systems	Core	3 (2-1)

26	STAT-501		Probability & Statistics	Maths and Support	3 (3-0)
27	SE-503		Domain Core 4 (Software Project Management)	Domain Core	3 (2-1)
28	SE-505		Domain Core 5 (Software Quality Engineering)	Domain Core	3 (2-1)
29	SE-507		Domain Elective2 (HCI & Computer Graphics)	Domain Elective	3 (2-1)
30	SE-509		Domain Elective3 (Mobile Application Development)	Domain Elective	3 (2-1)
				Total Cr Hrs	18 (13-5)
Semester 6					
31	SE-502		Information Security	Core	3 (2-1)
32	SE-504		Domain Core 6 (Parallel & Distributed Computing)	Domain Core	3 (2-1)
33	SE-506		Domain Core 7 (Software Requirement Engineering)	Domain Core	3 (2-1)
34	SE-508		Domain Elective1 (Data Science)	Domain Elective	3 (2-1)
35	SE-510		Domain Elective5 (Web Technologies)	Domain Elective	3 (2-1)
36	SE-512		Domain Elective 7 (Computer Architecture)	Domain Elective	3 (2-1)
				Total Cr Hrs	18 (12-6)
BSSE P-IV					
Semester 7					
37	SE-601	DS	Analysis of Algorithms	Core	3 (3-0)
38	SE-603		Domain Elective 6 (Advanced Database Management)	Domain Elective	3 (2-1)
39	BE-601		Elective Supporting (GIS-Geographic Information System)	Elective Support	3 (2-1)
40	ENG-601	ECC	Technical & Business Writing	Maths and Support	3 (3-0)
41	SE-607		Final Year Project	Core	6(0-6)
				Total Cr Hrs	18 (10-8)
Semester 8					
42	SE-602		Artificial Intelligence	Core	3 (2-1)
43	SE-604		Domain Core 2 (Software Verification and Validation)	Domain Elective	3 (2-1)
44	SE-606		Internship/Field Experience		3(0-3)
				Total Cr Hrs	9(4-5)

Summary

General Education Courses	Cr. hrs.	= 30
Major/Computing Core Courses	Cr. hrs	= 46
Domain Core Courses	Cr. hrs.	= 18
Domain Elective Courses	Cr. hrs	= 21
Mathematics and Supporting Courses	Cr. Hrs	=12
Elective Supporting Courses	Cr.hrs	=03
Internship:	Cr.hrs	=03
Degree Total:		=133