

**Bachelor of Science in Software Engineering**  
**BSSE**  
**Scheme of Studies**  
**Fall 2014**  
**(134 Cr. Hrs)**

**Software Engineering- Computing Core Courses (44 Credit Hours)**

Sr#	Code	Course Title	Cr.Hrs.	Contact Hrs
1	CS102	Introduction to Computing	4 (3,1)	3+3 = 6
2	CS111	Programming Fundamentals	4 (3,1)	3+3 = 6
3	SE101	Object Oriented Programming	4 (3,1)	3+3 = 6
4	CS291	Discrete Structures	3 (3,0)	3+0 = 3
5	CS212	Data Structure and Algorithms	3 (2,1)	3+1.5 = 4.5
6	CS221	Digital Logic and Design	3 (2,1)	3+1.5 = 4.5
7	CS224	Operating Systems	4 (3,1)	3+1.5 = 4.5
8	CS242	Introduction to Database Systems	4 (3,3)	3+3 = 6
9	SE203	Introduction to Software Engineering	3 (3,0)	3+0 = 3
10	CS372	Computer Communications and Networks	3 (2,1)	3+1.5 = 4.5
11	SE431	Human Computer Interaction	3 (3,0)	3+0 = 3
12	CS400	Senior Design Project	6 (0,6)	0+6 = 6

1 Credit hour of Lab =3 contact hours

**Software Engineering –Core Courses (18 Credit Hours )**

#	Code	Course Title	Cr.Hrs.	Contact Hrs
13	SE301	Software Construction	3(2,1)	3+1.5 = 4.5
14	SE311	Software Requirements Engineering	3(2,1)	3+1.5 = 4.5
15	SE331	Software Design And Architecture	3(2,1)	3+1.5 = 4.5
16	SE471	Software Quality Engineering	3(2,1)	3+1.5 = 4.5
17	SE461	Software Project Management	3(3,0)	3+0 = 3
18		Formal Methods in Software Engineering	3(3,0)	3+0 = 3

**Software Engineering Elective Courses (21 Credit hours )**

Tentative list of elective courses is given as follows:

#	Code	Course Title	Cr.Hrs.	Contact Hrs
1	SE	Software Metrics	3(3,0)	3+0 = 3
2	SE	Software Engineering Economics	3(3,0)	3+0 = 3
3	MG	Information System Audit	3(3,0)	3+0 = 3
4	CS	Business Process Automation	3(3,0)	3+0 = 3
5	CS	Design Patterns	3(3,0)	3+0 = 3

6	SE	Software Testing	3(2,1)	3+1.5 = 4.5
7	SE	Personal Software Process (PSP) and Team Software Process (TSP)	3(3,0)	3+0 = 3
8	SE	Enterprise System Development	3(3,0)	3+0 = 3
9	CS	Real-Time Systems	3(3,0)	3+0 = 3
10	CS	Data Warehousing and Data Mining	3(3,0)	3+0 = 3
11	CS	Data Security and Encryption	3(3,0)	3+0 = 3
12	CE	Microprocessor Interfacing	3(3,0)	3+0 = 3
13	CS	Principles of Programming Languages	3(3,0)	3+0 = 3
14	CS	Computer Graphics	3(2,1)	3+1.5 = 4.5
15	CS	Artificial Neural Networks	3(3,0)	3+0 = 3
16	CS	Advance Database Management Systems	3(2,1)	3+1.5 = 4.5
17	SE241	Advanced Computer Programming	3(2,1)	3+1.5 = 4.5
18	CS	Bio-Informatics	3(3,0)	3+0 = 3
19	SE321	Object oriented analysis and Design	3(3,0)	3+0 = 3
20	CS322	Computer Organization and Assembly Language	3(2,1)	3+1.5 = 4.5
21	CS314	Theory of Automata & Formal Languages	3(3,0)	3+0 = 3
22	CS213	Design and Analysis of Algorithms	3(3,0)	3+0 = 3
23	CS451	Artificial Intelligence	3(2,1)	3+1.5 = 4.5
24	CS321	Computer Architecture	3(2,1)	3+1.5 = 4.5
25	CS411	Compiler Construction	3(2,1)	3+1.5 = 4.5
26		Software Development Technologies	3(2,1)	3+1.5 = 4.5

## General Courses (40%)

### Group A: University Required Courses (24 Credit Hours)

#	Code	Course Title	Cr.Hrs.	Contact Hrs
1	GC101	Understanding Quran I	3(3,0)	3+0 = 3
2	GC102	English I (English Composition & Comprehension )	3(3,0)	3+0 = 3
3	GC103	Understanding Quran II	3(3,0)	3+0 = 3
4	GC104	English II (Communication Skills)	3(3,0)	3+0 = 3
5	GC105	Basic Of Academic Writing	3(3,0)	3+0 = 3
6	GC106	Islamic World View & Civilization – I	3(3,0)	3+0 = 3
7	GC107	Islamic World View & Civilization – II	3(3,0)	3+0 = 3
8	GC109	Pakistani Culture & Society	3(3,0)	3+0 = 3

### Group B: Outside Department / Faculty Courses (27 Credit Hours )

#	Code	Course Title	Cr.Hrs.	Contact Hrs
1	Math 110	Calculus And Analytical Geometry	3(3,0)	3+0 = 3
2	Math 121	Liner Algebra	3(3,0)	3+0 = 3
3	ST301	Probability & Statistic	3(3,0)	3+0 = 3
4	Math 352	Multivariate Calculus	3(3,0)	3+0 = 3
5	Math 401	Numerical Computing	3(3,0)	3+0 = 3
6	GC108	Professional And Ethical Issues	3(3,0)	3+0 = 3
7	GC191	Basic Electronic	3(3,0)	3+0 = 3
8	GC151	Introduction To Finance	3(3,0)	3+0 = 3

9	GC152	Introduction To Management	3(3,0)	3+0 = 3
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## Tentative Semester Wise Course Offering (BSSE)

Tentative scheme of studies of **BS Software Engineering (134 Cr. Hrs)** for FALL 2013 and onwards in semester wise format is given as under:

### 1<sup>st</sup> Semester

Course Code	Pre-Req	Course Title	Credit Hrs	Contact Hrs
CS 102	-	Introduction to Computing	4 (3,1)	6
MATH 110	-	Calculus & Analytical Geometry	3 (3,0)	3
GC 102	-	English I (English Composition & Comprehension)	3 (3,0)	3
GC 191	-	Basic Electronics	3 (3,0)	3
CS 111	-	Programming Fundamentals	4 (3,1)	6
<b>Total Credit Hrs</b>			<b>17</b>	<b>21</b>

### 2<sup>nd</sup> Semester

Course Code	Pre-Req	Course Title	Credit Hrs	Contact Hrs
CS 291	-	Discrete Structures	3 (3,0)	3
SE 101	CS 111	Object Oriented Paradigm	4 (3,3)	6
GC 104	-	English II (Communication Skills)	3 (3,0)	3
ST 301	-	Probability & Statistics	3 (3,0)	3
GC 101	-	Understanding Quran I	3 (3,0)	3
<b>Total Credit Hrs</b>			<b>16</b>	<b>18</b>

### 3<sup>rd</sup> Semester

Course Code	Pre-Req	Course Title	Credit Hrs	Contact Hrs
CS 221	GC191	Digital Logic and Design	3 (3,0)	3
GC 105	-	English-III (Basics of Academic Writing)	3 (3,0)	3
CS 212	CS 103	Data Structure & Algorithms	3 (2,1)	4.5
GC 103	-	Understanding Quran II	3 (3,0)	3
GC 151	-	Introduction to Finance	3 (3,0)	3
SE 202	SE 101	Introduction to Software Engineering (SE-I)	3 (3,0)	3
<b>Total Credit Hrs</b>			<b>18</b>	<b>18</b>

### 4<sup>th</sup> Semester

Course Code	Pre-Req	Course Title	Credit Hrs	Contact Hrs
CS 224	-	Operating System	4 (3,1)	4.5
CS 242	CS 212	Introduction to Database Systems	4 (3,1)	6
GC 106	-	Islamic World View & Civilization-I	3 (3,0)	3
MATH 352	MATH110	Multivariate Calculus	3 (3,0)	3
SE 302	SE 202	Software Construction	3 (3,0)	3
<b>Total Credit Hrs</b>			<b>17</b>	<b>19.5</b>

**5<sup>th</sup> Semester**

Course Code	Pre-Req	Course Title	Credit Hrs	Contact Hrs
	-	Formal Methods in Software Engineering	3 (3,0)	3
CS 372	-	Computer Communications & Networks	3 (2,1)	4.5
MATH 121	-	Linear Algebra	3 (3,0)	3
GC 107	-	Islamic World View & Civilization-II	3 (3,0)	3
SE 311	SE 302	Software Requirements Engineering	3 (2,1)	4.5
SE 321	SE 302	Elective – I - Object Oriented Analysis & Design	3 (3,0)	3
<b>Total Credit Hrs</b>			<b>18</b>	<b>21</b>

**6<sup>th</sup> Semester**

Course Code	Pre-Req	Course Title	Credit Hrs	Contact Hrs
SE 331		Software Design and Architecture	3 (2,1)	4.5
SE 471	SE 311	Software Quality Assurance	3 (2,1)	4.5
GC 152	-	Introduction to Management	3 (3,0)	3
-	-	Elective – II – Advanced Computer Programming	3 (2,1)	4.5
-	-	Elective – III	3 (3,0)	3
-	-	Elective – IV	3 (3,0)	3
<b>Total Credit Hrs</b>			<b>18</b>	<b>22.5</b>

**7<sup>th</sup> Semester**

Course Code	Pre-Req	Course Title	Credit Hrs	Contact Hrs
SE 461	SE 202	Software Project Management	3 (3,0)	3
SE 431	-	Human Computer Interaction	3 (3,0)	3
MATH 401	MATH110	Numerical Computing	3 (3,0)	3
-	-	Elective – V	3 (3,0)	3
-	-	Elective – VI	3 (3,0)	3
-	-	Elective – VII	3 (3,0)	3
<b>Total Credit Hrs</b>			<b>18</b>	<b>18</b>

**8<sup>th</sup> Semester**

Course Code	Pre-Req	Course Title	Credit Hrs	Contact Hrs
SE 400		Software Project	6 (0-6)	6
GC 109	-	Pakistan Culture & Society	3 (3-0)	3
GE 108	-	Professional Practices	3 (3-0)	3
<b>Total Credit Hrs</b>			<b>12</b>	<b>12</b>