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2020

Program Specification

Program Name: Computer Engineering and Networks	
Qualification Level : Bachelor (level 6)	
Department: Software Engineering	
College: College of Computer and Information Sciences (CIS college)	
Institution: Jouf University	

Content

A. Program Identification and General Information

Program Main Location:
Main Campus Sakaka - Jouf University

2. Branches Offering the Program:

None

3. Reasons for Establishing the Program:

(Economic, social, cultural, and technological reasons, and national needs and development, etc.)

Economic reasons:

- Shortage of professional Saudi who hold a bachelor's degree in Software Engineering and Networks.
- To meet the demands of the industry for qualified Software Engineering and Networks professionals.

Social and cultural reasons:

- Improve the quality of digital services provided to the community.
- Achieve the national vision by increasing the Saudi work force in the field of Software Engineering and Networks (Saudization)

Technological reasons:

- Software engineering is the discipline that embodies the science and technology of design, construction, implementation, and maintenance of software and hardware components of modern computing systems and computer-controlled equipment. All these items help the society to be up to date in computer fields and keep up with rapid advances in technology.

National policy developments:

- In parallel with the goals of the National Transformation Program 2020 and Vision 2030 to strengthen the governance of digital transformation.

4. Total Credit Hours for Completing the Program:

137 credit hours. (2)

206 credit hours (3)

5. Professional Occupations/Jobs:

- Software engineer

- Programs developer

- Computer software engineer

- Software Tester

- IT Project Manager

- Information Systems Analyst

- Information security specialist

- Computer research specialist programmer

- Computer game programmer

- Computer game designer

- IT Service Support Specialist

6. Major Tracks/Pathways (if any)**:**

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N/A

7. Intermediate Exit Points/Awarded Degree (if any)**:**

N/A

Intermediate exit points/awarded degree	Credit hours
N/A	N/A

B. Mission, Goals, and Learning Outcomes

1. Program Mission:

Preparing qualified scientific cadres in the various fields of software engineering through education and innovative scientific research that develops the creative methodology and analytical capabilities and contributes to the service of the community.

2. Program Goals:

G.1 To develop the competitive capabilities of graduates in a way that contributes to build effective information technologies.

G.2 To continuous development of the performance of faculty members in the fields of software engineering.

G.3 To effective contribution to scientific research and the discovery of modern knowledge and methods in software engineering.

G.4 To providing community services and consulting in the field of software engineering.

G.5 To successfully engage in lifelong learning and demonstrate the ability to adapt to rapidly changing technologies in the field of software engineering.

3. Relationship between Program Mission and Goals and the Mission and Goals of the University /College.

The SWE Program mission is aligned with the missions of College and University.

Program Mission:	**College Mission:**	**Jouf University's Mission**
Preparing qualified scientific cadres in the various fields of software engineering through education and innovative scientific research that develops the creative methodology and analytical capabilities and contributes to the service of the community.	Preparing qualified scientific cadres in the various fields of computing through innovative education and scientific research, and develop their creative and analytical abilities that can serve the society.	Providing distinguished educational and research outputs for the development of society.

Alignment between the program mission and the missions of the College and University

	Main Elements of the Mission of CIS College			**Main Elements of the Mission of Jouf University**	
The Mission of the SWE Program is:	Preparing qualified scientific cadres in the various fields of computing	innovative education and scientific research, and develop their creative and analytical abilities	that can serve the society.	Providing distinguished educational and research outputs	for the development of society

Preparation of qualified scientific cadres in the various fields of software engineering	√			√	
innovative education and scientific research, which develop their creative and analytical abilities		√		√	
contributes to the service of the community.			√		√

The SWE program administration was aware that the developed Program Goals serve the program mission. The program goals are strongly consistent with the program mission, and are stated with sufficient clarity to effectively guide planning and decision-making.

The table 1.2 shows the congruence of program goals with the program mission. From the table, it is evident that:

- Goals number 1, 2,3 and 5 are strongly congruent with the sections of the mission statement relating to "Preparation of qualified scientific cadres in the various fields of computer engineering and networks" and " innovative education and scientific research ".
- Goals number 4 corresponding to the community development is strongly congruent with the section of the mission statement concerned with the society service.

These Program Goals were proposed to the Software Engineering Department Council after an elaborate discussion of an initial set of Program Goals that were proposed by a departmental subcommittee commissioned for this task. Moreover, the Software Engineering department council has discussed and ratified an assessment strategy in the frame of the operational plan to evaluate the extent to which the SWE program achieves these Program Goals.

College Goals (CG):

CG1- Maintain excellent and high-quality education in order to obtain academic accreditation.
CG2- Prepare highly qualified graduates in various fields of computer and information sciences.
CG3- Ongoing development of faculty members' skills.
CG4- Publish rigorous and high-quality scientific research.
CG5- Establish national and international partnerships to support continuous development throughout the college
CG6- Enhance the role of the faculty in serving the community.

Jouf University's Goals (UG):

UG1-Compatibility of university performance with NCAAA standards
UG2-Development of student affairs
UG3-Assurance of quality and development
UG4-Having a complete university strategic plan
UG5-Diversity in university resources according to the diversity of community programs
UG6-Completion of university infrastructure and technology
UG7-University Attractive Environment

UG8-Compatibility of specializations with the market

UG9-Quality of the educational process and all its properties

UG10-Continuous training and rehabilitation of human forces

UG11-Readiness of labs

UG12-Enhancing research partnership

UG13-Compatibility of research according to scientific standards

UG14-Diversity and excellence of postgraduate programs

UG15-Positive effective presence for the university

UG16-Enhancing social partnership

The table below show that the SWE program goals are well aligned with the goals of the college and university:

SWE Goals	CIS College Goals						Jouf University Goals																
	CG1	CG2	CG3	CG4	CG5	CG6	UG1	UG2	UG3	UG4	UG5	UG6	UG7	UG8	UG9	UG10	UG11	UG12	UG13	UG14	UG15	UG16
G.1.	√	√					√	√							√					√		
G.2.			√					√														
G.3.				√														√	√			
G.4.	√					√					√										√	
G.5.					√										√							

The table below show that the SWE program goals are well aligned with the SWE program Mission:

The consistency of the program goals with the SWE program Mission

Program Goals	CEN program Mission		
	Preparation of qualified scientific cadres in the various fields of software engineering	innovative education and scientific research, which develop their creative and analytical abilities	contributes to the service of the community.
To develop the competitive capabilities of graduates in a way that contributes to build effective information technologies.	√		
To continuous development of the performance of faculty members in the fields of software engineering.		√	
To effective contribution to scientific research and the discovery of modern knowledge and methods in software engineering.		√	
To providing community services and consulting in the field of software engineering.			√

To successfully engage in lifelong learning and demonstrate the ability to adapt to rapidly changing technologies in the field of software engineering.	√		

- Graduate Attributes of the Software engineering program:

P1 The ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

P2 The ability to apply engineering design to produce software solutions that meet the needs of different sectors, such as the public health, safety, and entertainment sector, considering global, cultural, social, environmental, and economic factors.

P3 The ability to recognize ethical and professional responsibilities within engineering positions and build wise decisions, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

P4 The ability to work effectively in a team whose members provide leadership, create a collaborative and inclusive environment, set goals, plan tasks, and achieve goals.

P5 The ability to develop and conduct engineering experiments, analyze, and interpret data, and use engineering judgment to draw conclusions.

P6 The ability to acquire and apply new knowledge, using appropriate learning strategies.

P7 The ability to pursue postgraduate studies and succeed in academic and research careers.

- Graduate Attributes of the Jouf University:

U1 Possesses a comprehensive and consistent structure of knowledge and understanding of the theories involved Principles and concepts in the field of specialization

U2 Mastery of accurate and advanced knowledge in the field of specialization, which qualifies him to meet the demands of the labor market.

U3 Knowledge and understanding of research methodology and survey methods

U4 Possess the ability to apply the knowledge, concepts and theories studied in Specialization to address issues and problems.

U5 Critical evaluation of complex knowledge, and its use to provide innovative solutions to Contemporary issues and problems

U6 Practicing methods of investigation and research on issues and problems.

U7 The use of advanced and specialized tools, machines, materials, and devices in dealing with practical activities related to specialization, work and profession

U8 Perform a set of complex practical tasks and procedures in a specific field, related to the field of specialization or work profession.

U9 Communicate in different ways with individuals and groups to share knowledge and skills specialized.

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U10 The ability to choose and use a variety of digital technology and information and communication technology tools and applications to serve the field and support and enhance research and specialized projects.

U11 Commitment to integrity, professional and academic ethics, and a commitment to responsible citizenship

U12 Self-evaluation of the level of learning and the way of thinking and dealing with related issues

Relationship with aspects of specialization and society

U13 Mastering self-learning skills and taking responsibility for professional development in the field of specialization.

U14 The ability to socially adapt and work in a team with high flexibility.

U15 Serving the community through active involvement in community issues that establish the values and principles of the community

**Alignments of Graduate Attributes of SWE Program
with Graduate Attributes of the Jouf University**

Graduate Attributes of SWE Program	Graduate Attributes of the Jouf University
P1.	U1, U2, U4, U5, U6, U8
P2.	U15, U10
P3.	U11, U13
P4.	U9, U14
P5.	U4, U5, U10, U13
P6.	U7, U10, U12, U13
P7.	U3, U6, U10

The graduate Attributes of the SWE Program are in line with the University Graduate Attributes according to the alignment shown by the above table.

5. Program learning Outcomes*

Software Engineering Graduates will be able to:

Knowledge and understanding	
K1	Demonstrate sound knowledge of the computing requirements to solve computer-based problems and state them in appropriate forms
K2	Define the essentials of analysis, design, implementation, and evaluation of computer-based system, process, component, or program to meet desired needs
K3	Demonstrate sound knowledge of mathematics, science, engineering and design appropriate to the discipline

Skills	
S1	Apply the analysis, design principles, concepts of computing, management processes and mathematical problems solving appropriate to the software engineering.
S2	Implement and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
S3	Use the techniques, skills, and modern tools necessary for software engineering practices.

S4	Communicate effectively with a range of audiences.
Values	
V1	Recognize ethical and professional responsibilities in software engineering situations including informed judgments with consideration of global, economic, environmental, and societal contexts.
V2	Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
V3	Demonstrate an ability of self-learning and continuing professional development.

* Add a table for each track and exit Point (if any)

Alignments of Graduate Attributes of SWE Program with Program Outcomes and Program Goals:

Graduate Attributes	Program Outcomes	Program Goals
P1.	K1, K2, K3, S2, S3	G 1. G 2. G 3.
P2.	K1, K2, S1, S2	G 3.
P3.	V1	G 4.
P4.	S4, V2	G 1.
P5.	S1,S3	G 1. , G2 , G 4.
P6.	S3	G 1 , G 3.
P7.	V3.	G 1 , G 3.

The department of Software engineering and the SWE program operate smoothly and efficiently, with an emphasis on aligning our operations and activities with proactive planning to achieve our goals and attain skills in computer engineering and Networks area. The objectives of SWE program contribute to economic growth of knowledge in Software engineering for Saudi society.

The learning outcomes and objectives should be aligned to each other, since learning outcomes can be derived or written based on learning objectives. In fact, our program focuses on the design, analysis, and application of software engineering. Our program sustains and strengthens its teaching and research to provide students with inspiration and quality education in the theory and practice of software engineering.

C. Curriculum
1. Curriculum Structure

Program Structure	Required/ Elective	No. of courses	Credit Hours	Percentage
Institution Requirements	Required	15	63	32.03%
	Elective	1	3	1.45%
College Requirements	Required	16	81	39.32%
	Elective	--	--	
Program Requirements	Required	8	35	16.10%
	Elective	3	15	7.28%
Project	Required	2	7	3.40%
Field Experience/ Internship	Required	1	2	0.97%
Others	N/A	N/A	N/A	0.00%
Total		46	206	100.00%

2. Program Study Plan

Level	Course Code	Course Title	Required/ Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College or Department)
1	ENGL 0001	English Language (1)	Required	-----	6	University
	CIS 0101	Computer skills	Required	-----	4	University
	EDU 0101	University Life Skills	Required	-----	3	University
2	ENGL 0002	English Language (2)	Required	ENGL 001	6	University
	CIS 0102	Problem Solving and Programming	Required	CIS 101	5	College
	MTH 0101	Introductory Mathematics	Required	-----	4	College
3	ENGL 0003	English Language (3)	Required	ENGL 002	6	University
	CHM 0103	Principle of Chemistry	Required	-----	4	College
	MTH 0102	Differential Calculus	Required	MTH 101	4	College
4	ISL 0101	Fundamentals of Islamic Culture	Required		3	University
	CIS 0203	Computer programming (1)	Required	CIS 102	6	College
	CIS 0211	Discrete Mathematics	Required	MTH 102	4	University
	MTH 0203	Integral Calculus	Required		5	College
5	PHS 0101	General Physics (1)	Required	MTH 102	6	University
	CNE 0261	Logic Design	Required	CIS 203	6	College
	CIS 0204	Computer programming (2)	Required	CIS 204	6	College
6	ARB 0100	Arabic Language Skills	Required		3	University
	PHS 0202	General Physics (2)	Required	PHS 101	6	University
	SWE 0201	Introduction to Software Eng.	Required	CIS 203	4	Department
	MTH 0204	Advanced Calculus	Required	MTH 203	5	College
7	ISL 0100	Studies in the Biography of the Prophet or Contemporary Issues or The Role of Women in Development	Required		3	University
	or ISL 0108					University
	or ISL 0109					University
	MTH 0285	Principles of Linear Algebra	Required	MTH 203	4	University

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	SWE 0321	Software Requirement Engineering	Required	SWE 201	5	Department
	CIS 0205	Data structures	Required	CIS 203	6	College
8	CIS 0343	Computer organization	Required	CNE 261	5	College
	MTH 0281	Probabilities and Statistics	Required	MTH 203	4	College
	SWE 0342	Software Project Management	Required	SWE 201	4	Department
	SWE 0322	Software Design and Architecture	Required	SWE 321	5	Department
9	ISL 0100 or ISL 0108 or ISL0109	Studies in the Biography of the Prophet or Contemporary Issues or The Role of Women in Development	Required		3	University University University
	CIS 0322	Concepts of Database Systems	Required	CIS 205	6	College
	CIS 0342	Operating Systems	Required	CIS 205	5	College
	SWE 0341	Software Testing and Quality Assurance	Required	SWE 321	4	Department
	SWE 0391	Complete 135 hours from the program			2	Department
10	ARB 0102	Writing Skills	Required	ARB 100	3	University
	SWE 0441	Software Maintenance and Evolution	Required	SWE 341	5	Department
	CNE 0463	Computer Networks	Required	CIS 342	5	College
	CIS 0414	Design and Analysis of Algorithms	Required	CIS 205	5	College
11	ISL 0107	Professional Ethics	Required		3	University
	BUS 0101or EDU 0102	University Elective topic	Required		3	University
	SWE 0491	Graduation Project (1)	Required	Complete 135 credit hours	3	Department
	SWE 0421	User Interface Design	Required	SWE 201	4	Department
	SWE XXX	SWE Elective (1)	Elective		5	Department
12	SWE 0481	Software security	Required	CNE 463	4	Department
	SWE 0492	Graduation Project (2)	Required	SWE 491	4	Department
	SWE XXX	SWE Elective (2)	Elective		5	Department
	SWE XXX	SWE Elective (3)	Elective		5	Department

* Include additional levels if needed
** Add a table for each track (if any)

Software Engineering Electives

Code			Name	CH	Prerequisite
1	CIS	434	Cloud Computing	5	Complete 135 credit hours
2	CIS	313	Artificial Intelligence	5	CIS 205
3	CIS	463	Bioinformatics	5	Complete 135 credit hours
4	CIS	462	Natural Language Processing	5	Complete 135 credit hours
5	IS	427	Fundamentals of Big Data	5	Complete 135 credit hours
6	IS	472	Enterprise Resource Planning Systems	5	Complete 135 credit hours
7	CNE	484	Digital Image Processing	5	CIS 205
8	CNE	478	Intelligent Systems & Robotics	5	Complete 135 credit hours
9	SWE	493	Selected Topics	5	Complete 135 credit hours
10	SWE	411	Web Application Development	5	CIS 204
11	SWE	422	Software Reuse	5	SWE 322
12	SWE	442	Software Configuration Management	5	Complete 135 credit hours
13	SWE	423	Design Patterns	5	SWE 322

* Include additional levels if needed
** Add a table for each track (if any)

University Compulsory Courses (43 Hours)

Course Code	Course Name	Level
ENGL 0001	English Language (1)	
EDU 0101	University Life Skills	1
CIS 0101	Computer skills	
ENGL 0002	English Language (2)	2
ARB 0100	Arabic Language Skills	5

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ISL 0107	Professional Ethics	6
ISL 0101	Fundamentals of Islamic Culture	4
ENGL 0003	English Language (3)	3
ARB 0102	Writing Skills	10
The student select two courses from Those Three Islamic courses		
ISL 0100	Studies in the Biography of the Prophet	9,7
ISL 0108	Contemporary Issues	
ISL 0109	The Role of Women in Development	

University Elective Courses (select 3 Hours)

Course Code	Course Name	Level
EDU 0102	Volunteer Work	11
BUS 0101	Entrepreneurship	

College Compulsory Courses (101 Hours)

No.	Course Code	Course Name	Level
1	MTH 0101	Introductory Mathematics	2
2	CIS 0102	Problem Solving and Programming	
3	MTH 0102	Differential Calculus	3
4	CHM 0103	Chemistry	
5	MTH 0203	Integral Calculus	4
6	CIS 0203	Computer programming (1)	
7	CIS 0211	Discrete Mathematics	
8	PHS 0101	General Physics (1)	5
9	CNE 0261	Logic Design	
10	CIS 0204	Computer programming (2)	
11	PHS 0202	General Physics (2)	6
12	MTH 0204	Advanced Calculus	
13	MTH 0285	Principles of Linear Algebra	7
14	CIS 0205	Data structures	
15	MTH 0281	Probabilities and Statistics	8
16	CIS 0343	Computer organization	
17	CIS 0322	Concepts of Database Systems	9
18	CIS 0342	Operating Systems	
19	CIS 0414	Design and Analysis of Algorithms	10
20	CNE 0463	Computer Networks	

Field training

The student must finish a number of weeks in field training. Where to practice experience activity, is defined by the department in advanced. Teaching staff supervise students through their Field training.

In addition, the field trainer sends report to the department about student progress. At the end of the training, the student conducts a presentation about what he learned in the training The student has to finish 110 credit hours before starting the field training.

3. Course Specifications

Insert hyperlink for all course specifications using NCAAA template

https://drive.google.com/drive/folders/19TPFRkzRbRJxqTBRUIEvDlQpjxQrvqu0?usp=sharing

4. Program learning Outcomes Mapping Matrix

Align the program learning outcomes with program courses, according to the following desired levels of performance (**I = Introduced   P = Practiced M = Mastered**)

Mapping Matrix of the program learning outcomes with College/University and some Department courses (non-specialized courses)

Course code & No.		Program Learning Outcomes									
		Knowledge and understanding			Skills				Values		
		K1	K2	K3	S1	S2	S3	S4	V1	V2	V3
level 1	ENGL 0001							I	I		I
	CIS 0101	I									
	EDU 0101	I								I	I
level 2	ENGL 0002							I	I		I
	CIS 0102	I						I			I
	MTH 0101			I							
level 3	ENGL 0003										
	CHM 0103				I				I		
	MTH 0102			I							I
level 4	ISL 0101										

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Level	Course	1	2	3	4	5	6	7	8	9	10	11
	CIS 0203	**I**						**I**				**I**
	CIS 0211		**I**	**I**								**I**
	MTH 0203			**I**								
level 5	PHS 0101		**I**		**I**					**I**		
	CNE 0261											
	CIS 0204		**I**	**I**								**I**
level 6	ARB 0100							**I**		**I**		**I**
	PHS 0202		**I**		**I**					**I**		
	SWE 0201		I		I			I		I		
	MTH 0204			**I**								
level 7	ISL 0100											
	or ISL0108											
	or ISL0109											
	MTH 0285			**I**								
	SWE 0321	P			P			P		P		
	CIS 0205	P	P	P		P		P	P			P
level 8	CIS 0343											
	MTH 0281		P	P								P
	SWE 0342	P			P		P			P		
	SWE 0322		P		P		P			P		
level 9	ISL0100											
	or ISL0108											
	or ISL 0109											
	CIS 0322		P	P				P				P
	CIS 0342											
	SWE 0341	P		P	P	P					P	
level 10	ARB 0102							M		M		M
	SWE 0441	M			M		M			M		
	CNE 0463											
	CIS 0414											
level 11	ISL 0107									P	P	
	BUS 0101or											

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	K1	K2	K3	S1	S2	S3	S4	V1	V2	V3
EDU 0102 or CHIN 0101										
SWE 0491		M		M	M		M	M		
SWE 0421		M	M			M		M	M	
SWE XXX	To be determined from elective list									
SWE 0481 (level 12)	M	M		M	M					M
SWE 0492			M	M	M		M			M
SWE XXX	To be determined from elective list									
SWE XXX	To be determined from elective list									

Mapping Matrix of the program learning outcomes with department specialty courses

Course code & No.		Program Learning Outcomes									
		Knowledge and understanding			Skills				Values		
		K1	K2	K3	S1	S2	S3	S4	V1	V2	V3
level 6	SWE 0201		I		I			I	I		
level 7	SWE 0321	P			P			P		P	
level 8	SWE 0342	P			P	P	P			P	P
	SWE 0322		P		P		P			P	
level 9	SWE 0341	P	P		P	P				P	
level 10	SWE 0441	M			M		M		M		
level 11	SWE 0491		M		M	M		M	M		
	SWE 0421		M	M			M		M	M	
	SWE XXX	To be determined from elective list									
level 12	SWE 0481	M	M		M	M					
	SWE 0492			M	M	M		M			M
	SWE XXX	To be determined from elective list									
	SWE XXX	To be determined from elective list									

* Add a table for each track (if any)

Elective courses

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Course code & No.		Program Learning Outcomes									
		Knowledge and understanding			Skills				Values		
		K1	K2	K3	S1	S2	S3	S4	V1	V2	V3
	CIS 0313	M	M				M	M			M
	CIS 0434	M	M	M					M		
	CIS 0462	M	M		M	M		M		M	M
	CIS 0463	M	M	M	M		M			M	M
	CNE 0478		M			M	M		M		
	CNE 0484		M		M			M	M		
	IS 0427		M		M		M		M		
	IS 0472	P	P			P				P	
	SWE 0411	M				M	M				M
	SWE 0422	M			M		M		M		
	SWE 0442	M			M	M	M	M	M		
	SWE 0493	Depends on the content of the course									
	SWE 0423	M			M		M		M		

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5. Teaching and learning strategies to achieve program learning outcomes
Describe policies, teaching and learning strategies, learning experience, and learning activities, including curricular and extra-curricular activities, to achieve the program learning outcomes.

The graduates should possess the knowledge, skills and values to enable them to cope with dynamic employment opportunities, but they must also understand, through the benefits and constraints of their disciplinary perspectives, who they are and how they might contribute positively to the heterogeneity they will encounter in their local, regional and global communities.

High quality learning is not possible without high quality teaching. In SWE program, we use different teaching strategies including:
- Lectures
- Tutorials
- Class discussion
- Problem solving-based learning
- Case study
- Group Project-based learning
- Self-learning
- Presentation and reporting strategies
- Laboratory works

Program Learning Outcomes and Teaching Strategies work together and are aligned. They are joined together as one, coherent, unity that collectively articulate a consistent agreement between student learning and teaching.

	Program Learning Outcomes (PLOs)	Teaching and Learning Strategies	Assessment Methods

		Knowledge and Understanding		
Learning Domains		Demonstrate sound knowledge of the computing requirements to solve computer-based problems and state them in appropriate forms	• Lecture • Tutorials • Self-learning • Class discussions	• Exams • Assignments • Quizzes
		Define the essentials of analysis, design, implementation, and evaluation of computer-based system, process, component, or program to meet desired needs	• Lecture • Tutorials • Self-learning • Class discussions	• Exams • Assignments • Quizzes
		Demonstrate sound knowledge of mathematics, science, engineering and design appropriate to the discipline	• Lecture • Tutorials • Self-learning • Class discussions	• Exams • Assignments • Quizzes
		Skills		
		Apply the analysis, design principles, concepts of computing, management processes and mathematical problems solving appropriate to the software engineering.	• Lectures • Tutorials • Lab demonstrations • Field activities • Projects • Reports • Presentations • Class discussions	• Assignments • Exit Exam • Rubric-based Project Report • Presentation • Lab Exam
		Implement and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.	• Tutorials • Lab demonstrations • Field activities • Projects	• Assignments • Rubric-based Project Report • Lab Exam

				■		

		Use the current techniques and tools necessary for computing practice, delivery, use, and management of information systems.	■ Lab demonstrations ■ Field activities ■ Projects ■ Reports ■ Presentations	■ Assignments ■ Rubric-based Project Report ■ Lab Exam

Values

		Recognize ethical and professional responsibilities in software engineering situations including informed judgments with consideration of global, economic, environmental, and societal contexts.	■ Lectures ■ Tutorials ■ Field activities ■ Projects ■ Reports ■ Presentations ■ Self-learning ■ Class discussions	■ Rubric-based Project Report ■ Class Discussion ■ Presentation ■ Lab exam
		Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.	■ Lectures ■ Tutorials ■ Field activities ■ Projects ■ Reports ■ Presentations ■ Self-learning ■ Class discussions	■ Rubric-based Project Report ■ Class Discussion ■ Presentation ■ Lab exam
		Demonstrate an ability of self-learning and continuing professional development.	■ Lectures ■ Tutorials ■ Field activities ■ Projects ■ Reports ■ Presentations ■ Self-learning	■ Rubric-based Project Report ■ Class Discussion ■ Presentation

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			■ Class discussions	■ Lab exam

The SWE program is keen to implement extra-curricular activities to contribute to the achievement of Program Learning outcomes, and therefore these activities are planned in line with the learning outcomes. The development of life skills that empowers students to make informed decisions regarding their lives, academic and professional paths, and enhances their self-confidence, motivation for success and positive expectations for their future. These skills prepare them to enjoy a productive life and enhance their capabilities in adopting responsible, healthy livelihoods and positive behaviour with the aim of self-reliance, adaptation with others and facing challenges.

The offered extracurricular activities of students are of major importance at Jouf University and College of Computer and Information Sciences. Jouf University has two Deanships that are responsible for developing, observing, performing, and following up of the necessary responsibilities and services related to students. These deanships are: (1) The Deanship of Admissions & Registration and (2) The Deanship of Student Affairs. The Deanship for Admissions and Registration is the impetus for academic progress of the student. It manages the most of students' affairs throughout their time at the program, starting with the application cycle, throughout their tenure as students and even after their graduation. On the other hand, the Deanship of Student Affairs gives programs and services that help the students and strengthen the academic excellence by giving chances for the students both inside and outside the program. It facilitates with the College of Computer and Information Sciences, other colleges and the Jouf University's administration in order to develop a good academic learning environment, which advances successful learning and personal development according to the rules and policies of Jouf University.

Extracurricular activities complement the academic curriculum by refining and developing skills, hence, enhancing students' experience. The impact of Student engagement in extracurricular activities on achievement and employment is becoming evident nowadays. The extra-curricular activities in the SWE program include:

Community Service, which covers any sort of volunteer work included in graduation projects that help non-profit organization to manage and computerize its daily works.

Professional training and academic clubs, which shows that the passionate about learning and gaining a competitive advantage.

Belonging to a club or taking part in professional training is beneficial because it shows potential employers that the student have some technical skills and that the student is nationally and intentionally sought out opportunities to develop professionally. The college level committee of professional and academic training organizes at each semester a wide range of training courses covering different areas in the software engineering and other disciplines. It should be also mentioned that the CIS College offers training within the framework of IBM, SAS, CISCO, ORACLE, and Microsoft certifications as an academy accredited by the corresponding institutes and organizations. There are further several clubs that are settled at the college for improving

professional and practical skills of students such as IT club, programming club, cybersecurity club and electronic club. The table in the sequel summarizes some of the extra-curricular activities offered to the students and their impact on the SWE program outcomes.

Table: Contribution of Extra-curricular activity in PLOs

Extra-curricular activity	Professional Training	SWE Program Learning Outcomes									
		K1	K2	K3	S1	S2	S3	S4	V1	V2	V3
1	Problem-Solving methods in programming	x				x	x				
2	Software design using UML	x	x		x	x	x				
3	Introduction to Cybersecurity	x									
4	Database Design and Programming Using ORACLE	x					x				x
5	Object Relational Database	x					x				x
6	Oracle Forms Application Server	x					x				x
Development Entrepreneurial skills											
1	Entrepreneurial Competition		x					x		x	x
Academic Clubs											
1	Information Technology Club	x			x	x	x			x	x
2	Cyber Security Club			x	x	x	x	x			x

6. Assessment Methods for program learning outcomes.

Describe assessment methods (Direct and Indirect) that can be used to measure achievement of program learning outcomes in every domain of learning.

In order to assess and evaluate the extent to which the PLOs are being attained, the SWE Program uses various processes. These processes are defined to keep data gathering efficient and effective, and the evaluation relevant according to the process of continuous improvement. To achieve these goals, two types of assessments, direct and indirect are performed. The indirect assessment is performed using surveys while the direct assessment results are obtained from student coursework based evaluations.

1. Direct Assessment:

The direct assessment of the outcomes usually relies on the coursework and uses a variety of tools that include combinations (as defined in the articulation matrix at the beginning of academic year) of final exam, midterm tests, quizzes, homework, laboratory works, assignments, practical, projects, presentations, etc. The assessment tools do however vary from course to course.

For a given course, each PLO assessment is treated and carried out individually independent of the rest of the PLOs. The level of achievement of a given PLO can however, be based upon weighted combinations of the various tools suggested by the program.

The assessment and attainment levels of the PLOs are not influenced by the reported final grade achievement of the students. But the achievement grades of the PLOs can contribute to the final grade i.e., the higher the achievement of PLOs, the higher will be the final grades of course.

The final reported grade obtained by each student in a given course is however influenced by the level of achievement of the PLOs which is calculated based upon the instructors' assigned weights of the PLOs.

The department has identified various possible assessment tools where the instructor can choose from The choice of the assessment tools varies from course to course. The list of the direct assessment tools are as follows:

1. Homework / Assignments
2. Quizzes / Tests
3. Mid-term Exams
4. Group (Individual) Project – Rubric Based
5. Group (Individual) Report / Research Report– Rubric Based
6. Lab Exams
7. Class- Participation/ discussion – Rubric Based
8. Presentation - Rubric Based
9. Final Exam

2. Indirect Assessment:

Stakeholder are asked to rate the quality of teaching and learning process through the conduction of different surveys. The SWE program developed evaluation forms for many stakeholders to guide the evaluation of results obtained from the collected surveys. The table below, summarizes the tools for the indirect assessment with respect to the course-level and program-level assessments. In this regard, surveys targeting the sought outcomes are solicited from stakeholders at the end of semester and during the academic year. The surveys are conducted by the faculty members in their respective classes, by the–measurement and evaluation committee (college committee), and/or by the department committees with the follow-up of the program coordinator.

Indirect assessment tools of the SWE program

	Assessment Tool	Frequency of Assessment	Target Level of Achievement
Course-level assessment surveys	Course Student Evaluation Surveys	Semester	60% of the students strongly agree or agree
Program-level assessment surveys	Program Evaluation Survey (Graduating students)	Year	Will be defined at the plan for PLOs measuring
	Employers Survey	Year	
	Alumni Survey	Year	

Course-level assessment surveys:

Course Student Evaluation Surveys (CSES):

As the name indicates, the CSES are course-level assessment surveys and are conducted at the end of each SWE course. These surveys aim to obtain analysis from students towards each course at the semester end. This is designed by the deanship of quality and academic accreditation that are based upon the suggested NCAAA templates. The survey included four themes which are:

- The first theme: The beginning of the course
- The second theme: What happened during the course (progression)

- The third theme: Evaluation of the course
- The fourth theme: Overall Evaluation

The survey used the five-point scale (Likert scale), and the mean and orientation were calculated for each item. The orientation (degree of agreement) was based on the weighted average as follows:
- Very low
- Low
- Average
- High
- Very high

This survey is carried out at the end of each semester. It aims to measure students' perspectives about various aspects of the courses offered in the SWE program. All the Course student evaluations are carried out electronically through an Electronic Student Gate. A report on the courses student evaluation surveys is delivered to eventually invoke recommendation for improvement in certain courses. The report is a part of the continuous improvement report, where recommendations for improvement are proposed and an action plan is delivered to the department for approval and then implemented in the following semester.

Program-level assessment surveys (Graduating students):

1. Program Evaluation Survey:

The Program Evaluation Survey provides valuable information on the effectiveness of the program in achieving its outcomes. Furthermore, it reflects the positive and negative aspects of the student's achievements in the program. The questions in the surveys assessed graduating students' satisfaction in the whole components of the program and program outputs including knowledge, skills, and competences that they gained, academic and career counseling they have encountered before graduation. This survey is evaluated by the continuous improvement committee which ultimately suggests recommendations based on the graduating students' assessments and suggestions.

2. Employer Satisfaction Survey:

This survey is designed specifically for students completing the program in order to measure their extent of achievement of the set outcomes intended for the program. Such surveys have important role to play in assessing the program outcomes and monitoring the quality and effectiveness of SWE Program.

3. Alumni Survey:

The alumni represent a vital part of the SWE program evaluation since they represent its outcomes, and their success is a direct reflection of the success of the program itself and the fulfillment of the program goals in providing the community with competent and confident graduates.

The achievements of PLOs are subject of the SWE continuous improvement committee to discuss comments and feedback from the students' attainments of the PLOs from direct and indirect assessments, to seek for the area of strengths and of weakness and to submit recommendations for improvement so as to attain the target level of PLOs achievements. It is worth noting that advisory board minutes about the SWE program results is also utilized as feedback for improvement and is incorporated into planning to enhance the overall attainment of program learning outcomes.

D. Student Admission and Support:

1. Student Admission Requirements

The University Council determines the number of students to be admitted in the upcoming academic year according to the recommendations of Colleges' Councils and respective bodies. Admission of prospective students requires the following:

1. The applicant must hold the General Secondary Certificate or its equivalent from inside outside Saudi Arabia.
2. The General Secondary Certificate or its equivalent must have been obtained within the last five years (Exceptions can only be decided by the University Council in light of persuasive reasons).
3. The applicant must enjoy a good conduct.
4. The applicant must pass any interviews or tests decided by the University Council.
5. The applicant must be medically fit.
6. The applicant must obtain an approval to the study from his/ her employer if he/she works in any government or private institution.
7. The applicant must meet any other conditions determined and announced by the University Council at the time of application.
8. The applicant must have not been dismissed from another university for disciplinary reasons.
9. Holders of a bachelor's degree or its equivalent may not be admitted to study another BA degree (exceptions can be decided only by the University Rector).
10. Applicants who are currently registered for another university degree or less, in this university or another one, may not be admitted. Selection of admitted students from applicants who meet all admission requirements is taken on the basis of their grades in the general secondary certificate, personal interviews and admission tests (if any).

All newly admitted students spend their first academic year in the Common First Year. Since the language of instruction in majority of the private or public secondary schools is Arabic, the main objectives of the Common First Year program are: (a) to improve the students' English proficiency and thus enable them to pursue undergraduate studies in English, which is the principal language of instruction; (b) to review and reinforce the students' knowledge of basic mathematics and physics with English as the language of instruction; (c) to introduce the students to new university study skills needed by the students such as design studio, computer science as well as learning, communication, research and computer skills to improve their manual dexterity and develop practical skills; (d) to expose the students to the various academic specialties available in the University; and (e) to improve the students' physical well-being through health and physical education.

The students must complete all courses offered in the Common First Year program with a minimum GPA fixed in the beginning of each academic year by the SWE council to be eligible for promotion to the freshman level and placement in SWE program.

Placement is done normally at the end of spring (second) semester or after summer semester for irregular students, i.e., the students that must repeat courses. Irregular students are given a chance in the summer semester to complete their Common First Year courses according to the study and examination rules of Jouf University.

Program Specification

2. Guidance and Orientation Programs for New Students

An Academic student guide is available in Arabic language on the website of the Deanship of Admission and Registration, the URL is: http://dar.ju.edu.sa/forms/Acadmic_Student.pdf This orientation program gives the new students a chance for getting more information about the program, goals and objectives for their studying Also the orientation program reinforces the new students to discuss their concerns with program administrators and graduated students.

3. Student Counseling Services

(academic, career, psychological and social)

Guidance to Advising

At the beginning of each academic year, the dean and faculty of each college conduct a welcome orientation of its newly admitted students. The objectives of such an orientation include but not limited to:

1. A welcoming message from the Dean aimed at facilitating their integration into the various services of the university and also to the departments of the college.
2. Introducing the students to the Academic and Student Advising Unit in the college
3. Distributing the university advising guide
4. Assigning faculty advisors to the individual students
5. The meeting of the coordinators of the academic guidance to consult on the academic guidance plan in the college and about ways to develop it through practical proposals by each department under the supervision of the academic guidance unit
6. Activate the service of an academic guide for the new faculty members and connect students with them to establish a balance in the service of guidance among all members of the faculty without full-time assignments.

Role of academic advisors

A departmental faculty member is assigned for each student as long as he is staying with the department as a student. The academic advisor advises the student until his graduation. The advisor monitors the student's performance, rectifies any errors and observed deficiencies, guides the student in preparation of the graduation plan, helps to select the elective courses and a suitable topic for senior design project to meet his graduation plan. Other responsibilities of the academic advisors may include:

1. Monitoring the absence of the student: Monitoring the absence of students from the functions of the professor of the course, and the academic advisor to follow up cases referred to him by the coordinator's guidance in accordance with the plan.

2. Coaching about students' add and drop of courses procedures.

3. Providing students with direct and indirect access to the expertise of college members outside the classroom.

4. Advise the students of their career opportunities.

5. Advise the students psychologically by supporting them to overcome the psychological problems.

6. Advise the students socially

7. Upon noticing the signs of a student's psychological distress, the academic advisor needs to follow the mechanism of dealing with students with social or psychological problems (as provided in the evidence)

Career Guidance

1. Workshops are conducted during the studying for students in the early stages of how to choose a career path.
2. In each academic year prior to the commencement of the practical examinations, the college participates in the professional day. On a professional day, several workshops are held to teach students how to write a C.V., how to conduct interviews and how to choose the right job. On a professional day, the university invites a group of companies specializing in Information Technology, where they are presented with graduation projects for senior students and graduates

4. Special Support
(low achievers, disabled, gifted and talented)

Universities and colleges are increasingly aware of the needs of students with a disability and students with a learning difficulty.

Support for students with disabilities

Support provided by the college includes:

- Providing a private parking space for disability students' cars
- Provide lanes on the sidewalks to allow students to go up and down instead of stairs.
- Provide elevators for moving between floors.
- making sure buildings and facilities are accessible
- encouraging flexible teaching methods
- providing support during exams
- allowing additional time to complete courses

Support for gifted and talented students
The SWE program always encourages talented and gifted students and ensures their continued development as ideal future candidates for advanced studies in Software Engineering field on their journey to becoming the Nation's next generation of leaders and decision-makers.

E. Teaching and Administrative Staff

1. Needed Teaching and Administrative Staff

Academic Rank	Specialty		Special Requirements / Skills (if any)	Required Numbers		
	General	Specific		M	F	T
Professors	SWE	Machine learning/ Bioinformatics/Information Security		2	2	4

Academic Rank	Specialty		Special Requirements / Skills (if any)	Required Numbers		
	General	Specific		M	F	T
Associate Professors	SWE	Data Mining/ Information System development		2	2	4
Assistant Professors	SWE	Systems Analysis & Design / Human Computer Interaction/ Operations management / E-Commerce/ E-Business/E-Government/E-Learning/ Big Data analysis /Cloud Computing/ Web Semantics/ Information Retrieval/ Image Processing/ Computer networks/ Software Requirements & Specifications		6	6	12
Lecturers	SWE	Software Modeling/ Software Metrics and Quality Assessment/ Software Refactoring/ Knowledge Management/		5	5	10
Teaching Assistants	SWE			4	4	8
Technicians and Laboratory Assistants	SWE			4	4	8
Administrative and Supportive Staff	SWE			2	2	4
Others (specify)						

2. Professional Development

2.1 Orientation of New Teaching Staff

Describe briefly the process used for orientation of new, visiting and part-time teaching staff

A new faculty member is given a copy of the Faculty Handbook that contains all information about the duties and responsibilities of the faculty, including the rights, privileges and code of conduct. For the first two semesters, the faculty members assigned courses that are within his area of specialty. If necessary and desired, the faculty member is assigned an experienced senior faculty member for guidance. Students' evaluation is used to provide feedback about the faculty member quality of teaching. The faculty member is asked to attend the workshops on effective teaching and in professional development conducted by the University. The department will:

- Provide faculty handbook that summarizes main issues, e.g., number of office hours expected, evolvement in student advising, evolvement in administrative tasks, vacations, code of conduct, etc.
- Introduce new teaching staff to other faculty and staff in a department meeting.

2.2 Professional Development for Teaching Staff
Describe briefly the plan and arrangements for academic and professional development of teaching staff (e.g., teaching & learning strategies, learning outcomes assessment, professional development, etc.)

Faculty members are urged to participate effectively in the programs and special training offered by the Development Skills Center in Jouf University. Indeed, Jouf University provides a wide range of opportunities for professional development to its entire faculty members through the training programs provided by the Skills development center, including but not limited to:

1. Effective teaching strategies.
2. Building the achievement tests in the university stage.
3. Funding scientific research and grants.
4. Active learning strategies.
5. Citation and scientific documentation of research.
6. Effective teaching strategies.
7. Building and managing the research team.
8. Organize and manage the scientific review using the program EndNote X7.
9. Machine learning.
10. Deep learning.
11. Big Data and Data Science

Furthermore, the SWE faculty members are encouraged to assist to workshops within the institution to share teaching methods, short seminars of "know-how" of new tools. They are also encouraged to attend national and international conferences attendance twice a year and to conduct regular seminars in which faculty members present latest issues in the field.

F. Learning Resources, Facilities, and Equipment

1. Learning Resources.
Mechanism for providing and quality assurance of learning resources (textbooks, references and other resource materials, including electronic and web-based resources, etc.)

- Requests made by faculty teaching the course.
- Subject instructors are requested to select textbooks that are commonly used by top universities in the world. Also they are required to specify other teaching materials they need.
- The course coordinators submit all the department requests in appropriate form to library administration through departmental head.
- In addition, for text books it should be ensured that it covers the whole course specifications.

2. Facilities and Equipment
(Library, laboratories, medical facilities, classrooms, etc.).

Facilities Available at the College of Computer and Information Sciences - Main Campus

No.	Type of Facility	Facility Number	Capacity
1	Small class room	7	20

2	Medium class room	5	30
3	Large class room	5	60
4	Computer lab	6	25
5	Auditorium	1	830
6	Non-class room	3	10
7	Meeting rooms((for departments , vice deans and dean)	4	10
8	Lifts	6	15
9	WC	6	3
10	Library	1	
11	Photocopying/Scanning Room	1	1

Facilities Available at the College of Computer and Information Sciences – Girls Campus

No.	Type of Facility	Facility Number	Capacity
1	Small class room	5	30-35
2	Medium class room	1	40-45
4	Large class room	1	60-70
4	Computer lab	11	30
5	Auditorium	0	0
6	Non-class room	0	0
7	Meeting rooms (for departments , vice deans and dean)	1	1
8	Lifts	2	15
9	WC	2	7
10	Library	1	
11	Photocopying/Scanning Room	1	1

In main campus, SWE program's courses are taught in six labs. In girl's campus, SWE program's courses are taught in **eleven** labs. Each lab is equipped with **thirty two** PC for students and one for teacher.

The students of SWE program not only enjoy the use of its own computing resources, but also benefit from through facilities provided by the faculty and Jouf Library. Jouf University main campus internet bandwidth is currently 100 Mbps. Wireless internet access is installed at the faculty reaching all points of the faculty including staff and faculty offices and class rooms. Students of Jouf University can access the wireless network without passwords. Department of Information Technology at main campus provides the IT technical support for hardware, software, and network support and handles requests. The following faculty-wide and university-wide computing resources are available to staff and students:

1- E-Learning and Distance Learning Systems: The E-learning facility through Deanship of E-Learning and Distance Learning provides services to students and faculty through the links: http://del.ju.edu.sa. Faculty members use BlackBoard system to monitor their

students' academic progress and insert grades. Once the faculty/student is logged in, he should be able to see all the courses allocated to him for the current semester.

2- The Deanship of Admission and Registration provides its academic services system students and faculty through the link http://dar.ju.edu.sa. Students can register courses online; monitor their academic progress, view and print transcripts/grades.

3. Arrangements to Maintain a Healthy and Safe Environment (According to the nature of the program)

The course instructors or technicians of the department of Information Technology of Jouf University are responsible for the instructional activities along with relevant safety advising in laboratories. Each laboratory has its own instructions including:

1. Instructions for individual experiments.
2. Safety instructions (Electricity, high voltage equipment, heavy machines, Steam and hot equipment).
3. Tools and equipment use and handling.
4. Computers and internet instructions.
5. All the laboratories have signs showing equipment and safety instructions. Safety procedures are discussed before every practical class and observed at all times.

Furthermore,

- Fire evacuation policy and fire drills are practiced in all places.
- First aid kits are available in SWE department.
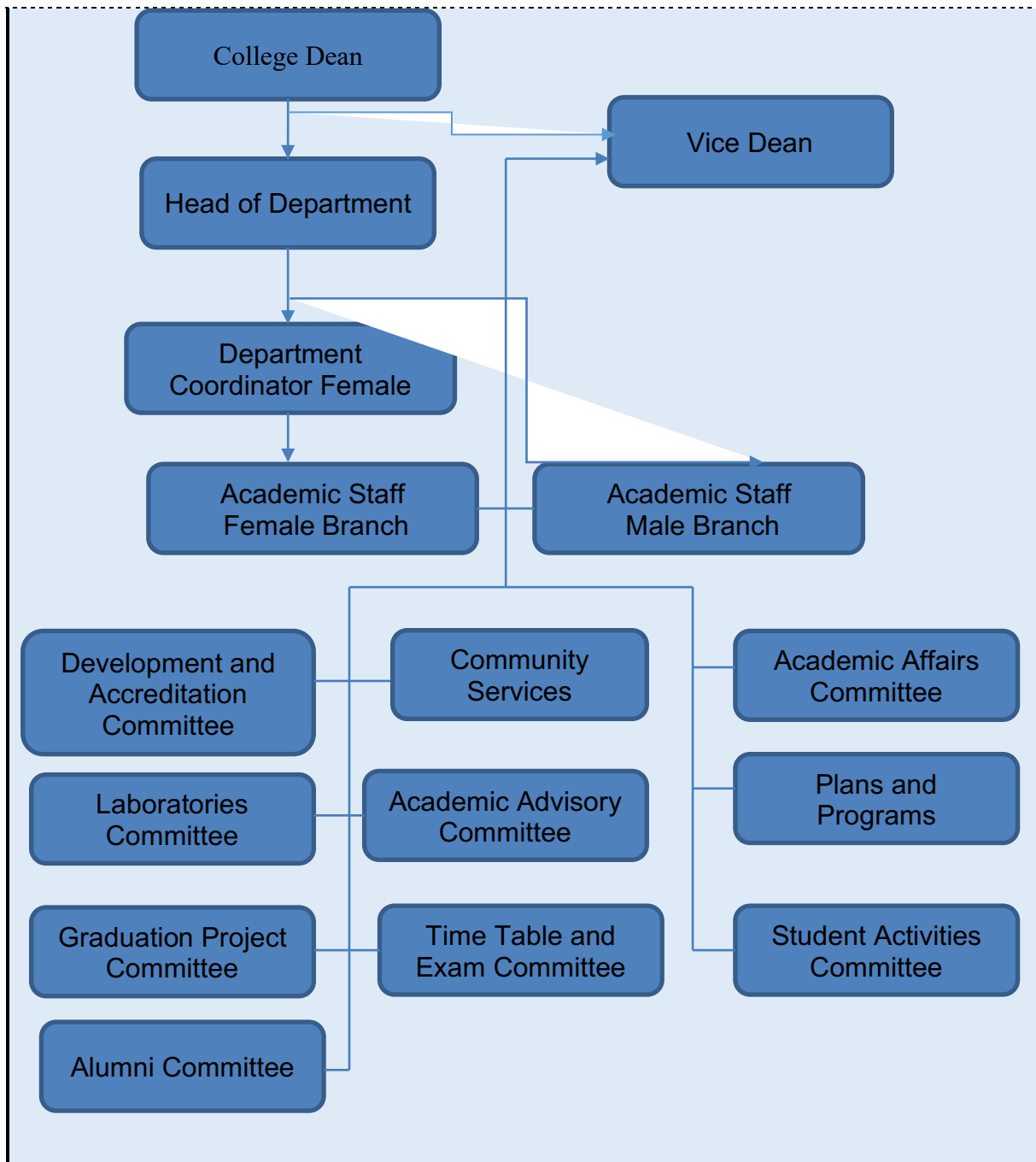- The College has emergency plans, safety signs, and emergency exit signs.

G. Program Management and Regulations

1. Program Management
1.1 Program Structure
(including boards, councils, units, committees, etc.)

The Program Management depends on the different committees and units of the Software Engineering department.

1.2 Stakeholders Involvement

Describe the representation and involvement of stakeholders in the program planning and development. (students, professional bodies, scientific societies, alumni, employers, etc.)

The program stakeholders are those who must be satisfied with the performance of the SWE program. The significant groups of stakeholders of the SWE program include but not limited to faculty, students, alumni and employer and most importantly to the program Industrial Advisory Committee:

Faculty: SWE faculty members are involved on regular basis in the assessment processes.

Students: Current SWE students are interested in whether the SWE program adequately prepares them for future employment.

<u>Alumni</u>: This group consists of recent graduates who have been employed for most two years. They should have the incentives to assess the quality of PEOs based on their career achievements.

<u>Employers</u> (government, industry and universities): Employers' satisfaction with our students' education provides measure of the program success. Their satisfaction translates to employment opportunities for our students.

<u>Industrial Advisory Committee (IAC)</u>: This group plays a major role in program evaluation, advising, improvement, and development. Because of the closeness of the three programs, namely Information Systems, Computer Science and Computer Engineering and Networks, a common Industrial Advisory Committee to the whole college was established with prominent managerial as well as technical members of the computational communities. Our IAC includes five members from the industry and five faculty members.

The major roles of this group are:
1. To guide the program to meet future needs.
2. To develop strong partnership and relationship between the department and the program by some collaborative tasks.
3. To provide advice for development of the curricula
4. To suggest the required amendment to meet the potential job market.

2. Program Regulations
Provide a list of related program regulations, including their link to online version: admission, study and exams, recruitment, appeals and complaint regulations, etc.)

The program regulations are the same as those of the Jouf University, they are available in the following link:

• Students Council Rules
• Students Discipline Regulations
• Students Rights and Obligations
• Non-Smoking Regulations
• Students Clubs Regulations
• Students Complaints Regulations
• Study and Exams Regulations

H. Program Quality Assurance

1. Program Quality Assurance System
Provide online link to quality assurance manual

http://www.ju.edu.sa/en/administrations/deanships/deanship-of-quality-academic-accreditation/home/

2. Program Quality Monitoring Procedures
1- Preparing the program Specification once at the beginning of the plan
2- Preparing course Specification, taking into consideration the correlation of course Specification with the mission and goals of the program.

3- Preparing the course report every semester. Improvements and additions to course Specification can be made based on the feedback from the course report in each semester.

4- Preparing the program report annually, improvements and amendments can be made to the Courses and Program Specification based on the feedback from the program report annually.

5 At the end of the five year, a self-study report for the program is prepared, and the program's mission, goals, learning outcomes of program to development are reviewed.

To assure that the assessment methods are appropriate and consistent with the specific learning outcomes and learning strategies, the SWE program adopts a reviewing process, The figure below summaries the different reviews that are carried out to the SWE program in terms of internal and external review process:
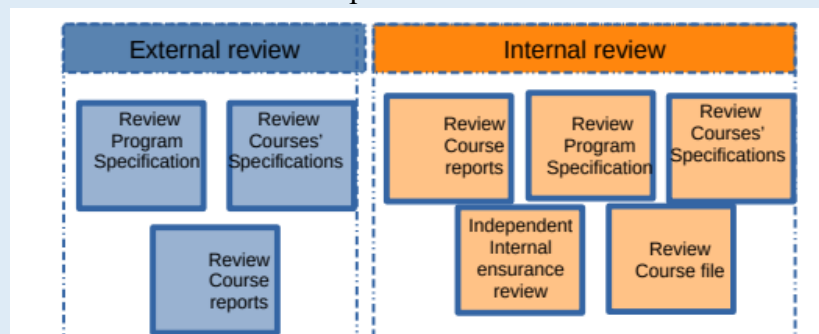
Internal and external review process of the SWE program

In addition, the review process is designed to ensure objective and constructive assessments regarding the quality of the programs and to meet the following objectives:
- monitor the degree to which students are achieving learning outcomes;
- to improve methods of delivering education, indicating program strengths, and ensuring the rigor of documentation;
- determine how the quality of the program can be increased;
- provide guidance to the faculty and make administrative decisions to support continuous future improvement.

The main procedures adopted are:
1. Revise course specification, taking into consideration the correlation of course specification with the mission and goals of the program.
2. Revise the course report every semester. Improvements and additions to course Specification can be made based on the feedback from the course report in each semester.
3. Revise the program report periodically by conducting periodic program report reviews. The purpose of program review is to systematically evaluate all the aspects of academic programs, including curriculum, program outcomes, academic services, policies and resources, the competitive and market environment, and stakeholder perceptions of the program. This program review helps to ascertain strengths and weaknesses in these areas and propose changes and improvements as deemed essential.

Program Specification

4. Program specifications is periodically reviewed by program revision team and consideration must be given to representing them according to certain guidance.

5. At the end of the five year, a self-study report for the program is prepared, and the program's mission, goals, learning outcomes are reviewed, for program development.

In addition, the Deanship of Quality and Academic Accreditation, is conducting an external audit to verify that educational processes in the SWE program are consistent with the NCAAA requirements. External quality reviews of institutions and accreditation of programs will give particular attention to the adequacy of mechanism for verification of standards of student achievement.

3. Arrangements to Monitor Quality of Courses Taught by other Departments.

1- The courses Specifications that are taught through other scientific departments are accordance with the program Specification, and taking correlation of these programs Specification with the mission and goals of the program.

2- Program management is provided with Courses reports taught through other scientific departments. Improvements and additions to course Specification can be made based on feedback from the course report in each semester

3- Visiting

4. Arrangements Used to Ensure the Consistency between Main Campus and Branches (including male and female sections)

1- Preparing the course report for all the courses in a grouped manner, in which the male and female students and the branches are explained every semester.

2- Preparing the program report in a grouped manner in which the male and female students are explained annually.

3- Preparing the performance indicators report for the program.

4- Preparing an improvement plan to achieve Consistency between the two parts.

5- Monitoring and follow-up.

6- Working together in SWE program committees

7- teaching the same course specifications

5. Arrangements to Apply the Institutional Regulations Governing the Educational and Research Partnerships (if any).

Not Applicable

6. Assessment Plan for Program Learning Outcomes (PLOs), and Mechanisms of Using its Results in the Development Processes

1- Learning outcomes are measured at the program level annually by direct method (all kinds of tests) and indirect method (questionnaires).

2- Calculating performance indicators of learning outcomes annually.

3- Based on the results of measuring learning outcomes and performance indicators of learning outcomes, an improvement and development plan that is applied in the following year has been prepared and a report of this plan is written in the program report for the following year (appendices).

Program Specification

7. Program Evaluation Matrix

Evaluation Areas/Aspects	Evaluation Sources/References	Evaluation Methods	Evaluation Time
Leadership	students, graduates, alumni, faculty Staff, administrative staff, employers,	Surveys	End of Academic year
Achievement of Graduate Attributes	Graduates/Graduating Students Employers	Capstone project Alumni Survey PES Survey Employers Survey	According to the Approved Assessment Plan
Program Learning Outcomes Achievement	Students Alumni	Rubrics CLO Assessment Program Survey Alumni Survey	According to the Approved Assessment Plan
Course Learning Outcomes	Students	CLO assessment using grade-based Rubrics. Course Evaluation Survey	Once per semester
Effectiveness of Students' Learning Experience in a Program	Students	Program Evaluation Survey	Once per academic year
Effectiveness of Students' learning Experience in a program	Students	Course Evaluation Survey	Once per academic year
Graduate attributes	Alumni	Alumni Survey	Once per academic year
Graduate attributes	Employers	Employers Survey	Once per academic year
Students' skills	Field Supervisors	Field Supervisor Survey	Once per academic year
learning resources	students, graduates, alumni, faculty Staff,	Surveys	End of Semester

Evaluation Areas/Aspects (e.g., leadership, effectiveness of teaching & assessment, learning resources, partnerships, etc.)
Evaluation Sources (students, graduates, alumni, faculty, program leaders, administrative staff, employers, independent reviewers, and others (specify)
Evaluation Methods (e.g., Surveys, interviews, visits, etc.)
Evaluation Time (e.g., beginning of semesters, end of academic year, etc.)

Program Specification

8. Program KPIs*

The period to achieve the target (5) year.

No	KPIs Code	KPIs	Target	Measurement Methods	Measurement Time
1	KPI-P-01	**Percentage of achieved indicators of the program operational plan objectives**	**90%**	**Program Operational Plan**	**End of Year.**
2	KPI-P-02	**Students' Evaluation of quality of learning experience in the program**	**4.5**	**Surveys**	**End of Term.**
3	KPI-P-01	**Students' evaluation of the quality of the courses**	**5**	**Surveys**	**End of Term.**
4	KPI-P-04	**Completion rate**	**70%**	**Reports of Academic System**	**End of Academic Year**
5	KPI-P-05	**First-year students retention rate**	**98%**	**Reports of Academic System**	**End of Academic Year**
6	KPI-P-06	**Students' performance in the professional and/or national examinations.**	**NA**	**NA**	**NA**
7	KPI-P-07	**Graduates' employability and enrolment in postgraduate programs.**	**50% 25%**	**Reports from Alumni Unit**	**End of Academic Year**
8	KPI-P-08	**Average number of students in the class.**	**10**	**Reports of Academic System**	**End of Academic Year**
9	KPI-P-09	**Employers' evaluation of the program graduates proficiency**	**5**	**Surveys**	**End of Term.**
10	KPI-P-10	**Students' satisfaction with the offered services**	**5**	**Surveys**	**End of Term.**
11	KPI-P-11	**Ratio of students to teaching staff**	**10:1**	**Reports from Deanship of Teaching Staff Affairs**	**End of Academic Year**
12	KPI-P-12	**Percentage of teaching staff distribution**	**B: 70% Assist. P: 60% Assoc. P:20% Prof. 20%**	**Reports from Deanship of Teaching Staff Affairs**	**End of Academic Year**
13	KPI-P-13	**Proportion of teaching staff leaving the program**	**0%**	**Reports from Deanship of Teaching Staff Affairs**	**End of Academic Year**
14	KPI-P-14	**Percentage of publications of faculty members**	**80%**	**Reports from Scientific Research Unit**	**End of Academic Year**
15	KPI-P-15	**Rate of published research per faculty member**	**5**	**Reports from Scientific Research Unit**	**End of Academic Year**
16	KPI-P-16	**Citations rate in refereed journals per faculty member**	**20**	**Reports from Scientific Research Unit**	**End of Academic Year**
17	KPI-P-17	**Satisfaction of beneficiaries with the learning resources**	**4**	**Surveys**	**First and Second Terms.**

Program Specification

The table in the sequel describes the additional KPIs used by the Software Engineering Program.

No	KPIs Code	KPIs	Target	Measurement Methods	Measurement Time
Add 1	ADD KPI-P-01	Number of research groups in the program	2	Scientific research reports	End of Academic Year
Add 2	ADD KPI-P-02	Number of funded research projects in the program	5	Scientific research reports	End of Academic Year
Add 3	ADD KPI-P- 03	The percentage of students participating in extra-curricular activities	20%	Advising unit reports	End of Academic Year
Add 4	ADD KPI- P – 04	Employers' satisfaction about program vision , mission and goals	3.5	Surveys	End of Academic Year
Add 5	ADD KPI- P - 05	Percentage of the student's graduation projects related to the surrounding community	25%	Graduation unit reports	End of Academic Year

* including KPIs required by NCAAA

I. Specification Approval Data

Council / Committee	SOFTWARE ENGINEERING DEPARTMENT COUNCIL
Reference No.	DEPARTMENT COUNCIL N 7
Date	14-SHABAN-1443H --- MAR -17-2022

Program Specification