Faculty of Computer & Information Technology

Department of Information Technology

Program of Information Technology

Course Specification of Research Methodology

Head of Department	Vise Dean for Quality Assurance	Dean of the Faculty	Dean of Academic Development center and Quality
Ibrahim A. Al-Balatah	Dr. Anwar Al-Shamiri	Dr. Nagi Al-Shibani	Assoc. Prof. Dr.Huda Al.Emad
			Rector of Sana'a University
			Prof. Dr. Qassim Mohammed Abbas

Course No (...................)

2020/2021

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Course Specification of Research Methodology

I. Course Identification and General Information:						
1	**Course Title:**	Research Methodology				
2	**Course Code & Number:**					
3	**Credit hours:**	C.H				TOTAL
		Th.	Seminar	Pr	Tr.	
		3	--	-	--	3
4	**Study level/ semester at which this course is offered:**	Third Year -First Semester				
5	**Pre –requisite (if any):**	None				
6	**Co –requisite (if any):**	None				
7	**Program (s) in which the course is offered:**	Information System, Information Technology, Computer Science.				
8	**Language of teaching the course:**	English				
9	**Study System**	Term Based System				
10	**Mode of delivery:**	Full Time				

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11	Location of teaching the course:	Faculty of Computer and Information Technology
12	Prepared By:	Dr. Malek Al-gabri
13	Date of Approval	

II.   Course Description:

This course introduces research proposal writing, research methodologies, and foundational research theories, protocols, ethical principles and challenges, Students in the course learn about the cyclical nature of applied research and the iterative process of research writing.

Participants will use these theoretical underpinnings to begin to critically review literature relevant to their field or interests and determine how research findings are useful in informing their understanding of their environment (work, social, local, global)and teaches students how to write a proposal, engage in independent studies, helping students to identify a study topic, formulate inquiry questions, organize a literature review, and select appropriate research designs and methodologies.

Students use the proposal they develop to establish the foundation of a summer project and the basis of a final research paper that will be submitted at the end of the summer once the study is completed.

By the end of the course, students will complete a proposal that includes an introduction, problem statement (significance of study), literature review, methods section, references, and a project timeline and convert the proposal into a full research that will include the following sections: findings, discussion, conclusions, and references.

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III. Course Intended learning outcomes (CILOs) of the course		Referenced PILOs
a.1	Define the basic framework of research process.	A2,A6
a.2	Identify the types of methods best suited for investigating different types of problems and questions	A1,A6
b.1	Analyze various sources of information for literature review and data collection.	B1,B2
b.2	Explore and Illustrate students with the tools and skills required to understand research terminology and assess published research	B3,B4,B6
c.1	Practice the develop research questions that are based on and build upon a critical appraisal of existing research.	C2,C4,C6
c.2	Apply the design a research proposal, and begin initial preparations for embarking on a new research project	C2,C4,C6
d.1	Defend and plan the research designs and ethical dimensions of conducting basic research and applied research.	D1, D2, D3, D4

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d.2	Evaluate quantitative and qualitative research paradigms, and explain the use of each in scientific research.	D1, D2, D3, D4

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1- Define the basic framework of research process.	Lecture Class discussion Discussion oral questions Presentation by a panel of instructors or students	Assignments
a2- Identify the types of methods best suited for investigating different types of problems and questions	Lecture Class discussion Discussion oral questions Presentation by a panel of instructors or students	Assignments

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies

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b1- Analyze various sources of information for literature review and data collection.	Lecture Class discussion Discussion oral questions Presentation by a panel of instructors or students	Weekly Assignments Presentation,
b2- Explore and Illustrate students with the tools and skills required to understand research terminology and assess published research	Lecture Class discussion Discussion oral questions Presentation by a panel of instructors or students	Weekly Assignments Presentation,

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
C1- Practice the develop research questions that are based on and build upon a critical appraisal of existing research.	Lecture Class discussion Discussion oral questions Presentation by students	Weekly Assignments Presentation, Mock RFP, Final Research Project
C2- Apply the design a research proposal, and begin initial	Lecture Class discussion Discussion oral questions	Weekly Assignments Presentation,

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preparations for embarking on a new research project	Presentation by students	Mock RFP, Final Research Project,

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1- Defend and plan the research designs and ethical dimensions of conducting basic research and applied research.	Lecture Class discussion Discussion oral questions Presentation by a panel of instructors or students	Weekly Assignments Presentation, Mock RFP, Final Research Project
d2- Evaluate quantitative and qualitative research paradigms, and explain the use of each in scientific research.	Lecture Class discussion Discussion oral questions Presentation by a panel of instructors or students	Weekly Assignments Presentation, Mock RFP, Final Research Project

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IV. Course Content:					
A – Theoretical Aspect:					
Order	**Units/Topics List**	**Learning Outcomes**	**Sub Topics List**	**Number of Weeks**	**contact hours**
1	The Nature and Tools of Research	a.1,a.2	What Research is not? What Research is? Philosophical Assumptions Underlying Research Methodologies Tools of Research: The Library and Its Resources Computer Technology Measurement Statistics Language	1 week	2
2	The problem: The heart of the research process	a.1,a.2, b.1,b.2	Finding research projects Identifying ad Describing the Research problems Choosing an Appropriate Problem		

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			Stating the Research Problem	1 week	2
			Evaluating		
			The Research Problem dividing the research problem into subproblems.		
			Identifying independent, dependent, mediating, and moderating variables.		
			Fine-Tuning Your Research Problem		
3	Review of the Related Literature	a.1,a.2, b.1,b.2	Understanding the Role of the literature review.		2
			Strategies for Locating Related literature.		
			Using The library catalog		
			Using Online databases		
			Consulting with Reference librarians		
			Surfing the Internet	1 week	
			Using Citations and reference lists of those who have gone before you.		
4	Planning	b.1,b.2	Planning a General Approach	1 week	2

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	Your Research Project		Research Planning Virus Research Methodology The Nature and Role of Data in Research Data Are Transient and Ever Changing Primary Data Versus Secondary Data			
5	Writing the Research Proposal	b.1,b.2	Characteristics of a Proposal. A proposal is a straightforward Document A proposal is not a literary production A proposal is a clearly organized Organizing and Writing a Research proposal Formatting headings and subheadings	1 week	2
6	Quantitative Research - Descriptive Research	a.1,a.2, b.1,b.2, c.1,c.2	Descriptive Research Designs Observation Studies Correlational Research Developmental Design	1 week	2

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			Survey Research		
7	Quantitative Research – Experimental, Quasi-Experimental, and Ex Post Facto Designs	a.1,a.2, b.1,b.2, c.1,c.2	The Importance of Control Controlling for Confounding Variables Overview of Experimental, Quasi-Experimental, and Ex Post Facto Designs Pre-Experimental Designs True Experimental Designs Quasi- Experimental Designs Ex Post Facto Designs	1 week	2
9	Quantitative Research – Analyzing Quantitative Data	a.1,a.2, b.1,b.2, c.1,c.2	Exploring and Organizing a Data Set Organizing Data to Make Them Easier to Think about and Interpret Using Computer Spreadsheets to Organize and Analyze Data	1 week	2
10	Qualitative Research – Methods	a.1,a.2, b.1,b.2,	Research Problems and Methodology Choice in Qualitative Research	1 week	2

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		c.1,c.2, d.1	Potential Advantages of a Qualitative Approach Qualitative Research Designs Case Study Ethnography Phenomenological Study Grounded Theory Study Content Analysis		
11	Qualitative Research – Analyzing Quantitative Data	a.1,a.2, b.1,b.2, c.1,c.2, d.2	Qualitative analysis strategies General strategies for organizing and Analyzing Qualitative data Creswell's data analysis spiral	1 week	2
12	Mixed-Methods Research	a.1,a.2, b.1,b.2, c.1,c.2	When Mixed-Methods Designs Are Most Useful and Appropriate? Common Mixed-Methods Designs Embedded designs Exploratory Designs Multiphase Iterative Designs	1 week	2

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			Common symbolic Notations for Mixed-Methods Designs		
13	Research Reports	a.1,a.2, b.1,b.2, c.1,c.2, d.1,d.2	Planning and Preparing a Final Research Report\n\nSurfing the Internet for writing assistance\n\nLearn by looking\n\nEssential Elements of a Research Report\n\nExplanation of the research problem\n\nDescription of Methods\n\nDescription of the data and data analyses	1 week	2
14	How to Read a Research Paper	a.1,a.2, b.1,b.2, c.1,c.2, d.1,d.2	A Typical Researcher\n\nDoing a Literature Survey\n\nReferences	1 week	2
15	time management of research	a.1,a.2, b.1,b.2, c.1,c.2,	How to manage your research in specific time	1 week	2

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		d.1,d.2			
Number of Weeks /and Units Per Semester				14	28

B - Practical Aspect: (if any)

Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1	**Communicating effectively through writing**	1 week	2	a.1,a.2
2	**Identifying Important Tools in your Discipline**	1 week	2	a.1,a.2
3	**Identifying and Describing the Research Problem**	1 week	2	a.1,a.2,b.1,b.2
4	**Identifying Independent, dependent, Mediating, and Moderating Variables**	1 week	2	b.1,b.2,c.1,c.2,d.1,d.2
5	**Writing the First Section of a Proposal**	1 week	2	a.1,a.2,b.1,b.2,c.1,c.2
6	**Reappraising a Proposal research Problem**	1 week	2	a.1,a.2,b.1,b.2,c.1,c.2

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7	Planning a Literature Search	1 week	2	b.1,b.2,c.1,c.2,d.1,d.2
8	Evaluating the Research of Others	1 week	2	a.1,a.2,b.1,b.2,c.1,c.2,d.1,d.2
9	Writing the Literature Review	1 week	2	a.1,a.2,b.1,b.2,c.1,c.2,d.1,d.2
10	Choosing a General Research Approach	1 week	2	a.1,a.2,b.1,b.2,c.1,c.2,d.1,d.2
11	Planning an Ethical Research Study	1 week	2	a.1,a.2,b.1,b.2,c.1,c.2,d.1,d.2
12	Judging the Feasibility of a Research Project	1 week	2	a.1,a.2,b.1,b.2,c.1,c.2,d.1,d.2
13	Writing Research Proposal	1 week	2	a.1,a.2,b.1,b.2,c.1,c.2,d.1,d.2
14	Identifying Possible Sampling Bias in Research Methodology	1 week	2	a.1,a.2,b.1,b.2,c.1,c.2,d.1,d.2
15	Identifying Research Designs	1 week	2	a.1,a.2,b.1,b.2,c.1,c.2,d.1,d.2
16	Analyzing and Interpreting Data in Research Study	1 week	2	a.1,a.2,b.1,b.2,c.1,c.2,d.1,d.2
Number of Weeks /and Units Per Semester			32	

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V. Teaching strategies of the course:

Lecture
Class discussion
Recitation oral questions
Discussion groups conducted
 Presentation by a panel of instructors or students

VI. Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Class discussions, instructor lectures	a.2,b.2,c.2,d.2	Every week	10
2	PPT	a.1,a.2,b.1,b.2,c.1,c.2,d.1,d.2	Week 6- week 11	١0
3	Paper analyzes	c.1,c.2,d.1,d.2	10th	10
4	Class Participation ,Mock RFP	a.1,a.2,b.1,b.2,c.1,c.2,d.1,d.2	12th	10
5	Final Research Project	a.1,a.2,b.1,b.2,c.1,c.2,d.1,d.2	16th	20
6	Totals			70

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VII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Assignments	Weekly	70	70%	a.2,b.2,c.2,d.2
2	Final-term exam	16th	30	30%	a.1,a.2,b.1,b.2,c.1,c.2,d.1,d.2
3	Total		100	%100	

VIII. Learning Resources:

- *Written in the following order: (Author - Year of publication – Title – Edition – Place of publication – Publisher).*

1- Required Textbook(s) (maximum two).

2-

1- Paul d. leedy ,2016,"Practical Research Planning and Design (11th Editio
2- Salkind, Neil J,2018,"Exploring research-Pearson".

2- Essential References.

1 John W. Creswell,2017-,Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, 4th ed, SAGE Publications

3- Electronic Materials and Web Sites *etc*.

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	1-https://www.sophia.org/tutorials/research-methods--5
	2-https://guides.lib.vt.edu/researchmethods/design-method

IX. Course Policies:	
Unless otherwise stated, the normal course administration policies and rules of the Faculty of Computer and Information Technology apply. For the policy, see: ----------------------------------- The University Regulations on academic misconduct will be strictly enforced. Please refer to **-----------**	
1	**Class Attendance:** A student should attend not less than 75 % of total hours of the subject; otherwise he will not be able to take the exam and will be considered as exam failure. If the student is absent due to illness, he/she should bring a proof statement from university Clinic
2	**Tardy:** For late in attending the class, the student will be initially notified. If he repeated lateness in attending class he will be considered as absent.
3	**Exam Attendance/Punctuality:** A student should attend the exam on time. He is Permitted to attend an exam half one hour from exam beginning, after that he/she will not be permitted to take the exam and he/she will be considered as absent in exam.
4	**Assignments & Project** The assignment is given to the students after each chapter; the student has to submit all the assignments for checking on time.
5	**Cheating:**

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Faculty of Computer & Information Technology

Department of Computer Science

Program of Computer Science

Course Specification of Research Methodology

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			Prof. Dr. Qassim Mohammed Abbas

Course No (.................)

2020/2021

Template for Course Plan (Syllabus)

I. - Information about Faculty Member Responsible for the Course:								
Name of Faculty Member		**Office Hours**						
Location& Telephone No.		**SAT**	**SUN**	**MON**	**TUE**	**WED**	**THU**	
E-mail								

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II. Course Identification and General Information:					
1-	**Course Title:**	Research Methodology			
2-	**Course Number & Code:**				
3-	**Credit hours:**	**C.H**			**Total**
		Th.	**Seminar**	**Pr.**	**F. Tr.**	
		3	--	-	--	3
4-	**Study level/year at which this course is offered:**	Third Year -First Semester			
5-	**Pre –requisite (if any):**	None			
6-	**Co –requisite (if any):**	None			
7-	**Program (s) in which the course is offered**	Information System, Information Technology, Computer Science.			
8-	**Language of teaching the course:**	English			
9-	**System of Study:**	Term Based System			
10-	**Mode of delivery:**	Full Time			
11-	**Location of teaching the course:**	Faculty of Computer and Information Technology			

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III. Course Description:

This course introduces research proposal writing, research methodologies, and foundational research theories, protocols, ethical principles and challenges, Students in the course learn about the cyclical nature of applied research and the iterative process of research writing.

Participants will use these theoretical underpinnings to begin to critically review literature relevant to their field or interests and determine how research findings are useful in informing their understanding of their environment (work, social, local, global)and teaches students how to write a proposal, engage in independent studies, helping students to identify a study topic, formulate inquiry questions, organize a literature review, and select appropriate research designs and methodologies.

Students use the proposal they develop to establish the foundation of a summer project and the basis of a final research paper that will be submitted at the end of the summer once the study is completed.

By the end of the course, students will complete a proposal that includes an introduction, em statement (significance of study), literature review, methods section, references, and a ct timeline and convert the proposal into a full research that will include the following sectio gs, discussion, conclusions, and references.

IV. Intended learning outcomes (ILOs) of the course:

- Brief summary of the knowledge or skill the course is intended to develop:

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1. Define the basic framework of research process.
2. Identify the types of methods best suited for investigating different types of problems and questions
3. Analyze various sources of information for literature review and data collection.
4. Explore and Illustrate students with the tools and skills required to understand research terminology and assess published research
5. Practice the develop research questions that are based on and build upon a critical appraisal of existing research.
6. Apply the design a research proposal, and begin initial preparations for embarking on a new research project
7. Defend and plan the research designs and ethical dimensions of conducting basic research and applied research.
8. Evaluate and examine quantitative and qualitative research paradigms, and explain the use of each in scientific research.

V. Course Content:

- Distribution of Semester Weekly Plan of Course Topics/Items and Activities.

A – Theoretical Aspect:

Order	Topics List	Week Due	Contact Hours
1	The Nature and Tools of Research	1st	2
2	The problem: The heart of the research process	2nd	2

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3	Review of the Related Literature	3th	2
4	Planning Your Research Project	4th	2
5	Writing the Research Proposal	5th	2
6	Quantitative Research -Descriptive Research	6th	2
7	Quantitative Research –Experimental, Quasi-Experimental, and Ex Post Facto Designs	7th	2
8	Midterm	8th	2
9	Quantitative Research –Analyzing Quantitative Data	9th	2
10	Qualitative Research – Methods	10th	2
11	Qualitative Research –Analyzing Quantitative Data	11th	2
12	Mixed- Methods Research	12th	2
13	Research Reports	13th	2
14	How to Read a Research Paper	14th	2
15	Time management of research	15th	2
16	Final Exam	16th	2
Number of Weeks /and Units Per Semester		**16**	**32**

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B – Practical Aspect: *(if any)*			
Order	**Topics List**	**Week Due**	**Contact Hours**
1	Communicating effectively through writing	1 week	2
2	Identifying Important Tools in your Discipline	1 week	2
3	Identifying and Describing the Research Problem	1 week	2
4	Identifying Independent, dependent, Mediating, and Moderating Variables	1 week	2
5	Writing the First Section of a Proposal	1 week	2
6	Reappraising a Proposal research Problem	1 week	2
7	Planning a Literature Search	1 week	2
8	Evaluating the Research of Others	1 week	2
9	Writing the Literature Review	1 week	2
10	Choosing a General Research Approach	1 week	2
11	Planning an Ethical Research Study	1 week	2
12	Judging the Feasibility of a Research Project	1 week	2

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13	Writing Research Proposal	1 week	2
14	Identifying Possible Sampling Bias in Research Methodology	1 week	2
15	Identifying Research Designs	1 week	2
16	Analyzing and Interpreting Data in Research Study	1 week	2
Number of Weeks /and Units Per Semester		16	32

VI. Teaching strategies of the course:

Lecture
Class discussion
Recitation oral questions
Discussion groups conducted
Presentation by a panel of instructors or students

VII. Assignments:

No	Assignments	Week Due	Mark
1	Class discussions, instructor lectures	Every week	10
2	PPT	Week 6- week 11	10
3	Paper analyzes	10th	10

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4	Class Participation ,Mock RFP	12th	10
5	Final Research Project	16th	20
Total			70%

VIII. Schedule of Assessment Tasks for Students During the Semester:

Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Assignments	Weekly	70	70%
2	Final-term exam	16th	30	30%
3	**Total**		100	%100

IX. Learning Resources:

• Written in the following order: (Author – Year of publication – Title – Edition – Place of publication – Publisher).

1- Required Textbook(s) (maximum two).

    3- Paul d. leedy , 2016,"Practical Research Planning and Design (11th Editio

    4- Salkind, Neil J, 2018,"Exploring research-Pearson".

2- Essential References.

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1 John W. Creswell,2017,Research Design: Qualitative, Quantitative, and Mixed Me Approaches, 4th ed, SAGE Publications

3- Electronic Materials and Web Sites *etc.*
1-https://www.sophia.org/tutorials/research-methods--5 2-https://guides.lib.vt.edu/researchmethods/design-method

X.	**Course Policies:**
	**Unless otherwise stated, the normal course administration policies and rules of the Faculty of Computer and Information Technology apply. For the policy, see: ---------------------------------- The University Regulations on academic misconduct will be strictly enforced. Please refer to ----------**
1	**Class Attendance:** A student should attend not less than 75 % of total hours of the subject; otherwise he will not be able to take the exam and will be considered as exam failure. If the student is absent due to illness, he/she should bring a proof statement from university Clinic
2	**Tardy:** For late in attending the class, the student will be initially notified. If he repeated lateness in attending class he will be considered as absent.
3	**Exam Attendance/Punctuality:** A student should attend the exam on time. He is Permitted to attend an exam half one hour from exam beginning, after that he/she will not be permitted to take the exam and he/she will be considered as absent in exam.
4	**Assignments & Project** The assignment is given to the students after each chapter; the student has to submit all the assignments for checking on time.

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5	**Cheating:** For cheating in exam, a student will be considered as fail. In case the cheating is repeated three times during his/her study the student will be disengaged from the Faculty.
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اللجنة الإشرافية

م.	الاســــم	الصـــــــفة	التوقيع
١	أ.م.د. عبد الماجد الخليدي	نائب عميد الكلية للشؤون الأكاديمية	
٢	أ.م.د. احمد مجاهد	نائب عميد مركز التطوير الأكاديمي وضمان الجودة	
٣	د. حسين الأشول	ممثل المركز في الكلية	
٤	أ.د. إبراهيم المطاع	نائب رئيس الجامعة للشؤون الأكاديمية	

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