Course Specification

(Postgraduate Programs)

Course Title: The Scientific Method in Forensic Science
Course Code: BIO 6291
Program: Executive Master of Forensic Science
Department: Biology and Chemistry
College: Science
Institution: Imam Mohammad Ibn Saud Islamic University
Version: 1
Last Revision Date: 29 September 2024

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A. General information about the course:

1. Course Identification:

1. Credit hours: 3 (3 lectures, 0 laboratories, 0 tutorials)					
2. Course type					
A.	☐University	☐College	☒ Program	☐Track	
B.	☒ Required		☐Elective		
3. Level/year at which this course is offered: (Level 3 l Year 2)					
4. Course General Description:					
This course is designed to develop and improve the capability of graduate students to carry out search and interpret as well summarize the literature survey relevant for Forensic Evidence Topics. This course will introduce students to scientific research methodology in Forensic Science so as to develop understanding of the research process as applied to Forensic sciences and other scientific research. Students will learn about an overview of research and Forensically sciences research, formulation of research objective and research problems, the importance of literature study and review, scientific research methodology design, preparation of research proposals, data collection and presentation, writing research reports and scientific articles.					
5. Pre-requirements for this course (if any)**:**					
BIO 6101, BIO 6105, CHM 6138, CHM 6151, STA 6117					
6. Co-requirements for this course (if any)**:**					
None					
7. Course Main Objective(s):					
At the end of the course, the students will be able to 1. Understand the scientific research methodology in Forensic Science. 2. Recognize various designs and methodologies of Forensic Science. 3. Provide suggestions for treatment of investigating challenges in a scientific way. 4. Make bibliography about the current state of the art of specific Forensic Scientific subjects. 5. Read, comment and summarize scientific papers and reports. 6. Make a critical assessment of investigating work conducted by others. 7. Offer scientific oral presentation and writing scientific report relevant to Forensic science.					

2. Teaching Mode: (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	100%
2	E-learning	-	-
3	Hybrid • Traditional classroom • E-learning	-	-
4	Distance learning	-	-

3. Contact Hours: (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	45
2.	**Laboratory/Studio**	-
3.	**Field**	-
4.	**Tutorial**	-
5.	**Others (specify)……**	-
	Total	45

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Recall the fundamentals and application of Biology and Chemistry fields in investigating and solving a Forensic Evidence problem	K1	Interactive Lecture Discussion and Dialogue Mind Maps Concept Maps Standard Method Inductive Method Self-Learning Cooperative Learning Field Visits	Written tests Class discussion questions Class assignments Homework Short research/reports Summaries Presentations
1.2	Outline the appropriate methods	K2, K3, K4	Interactive Lecture Discussion and	Written tests Class

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
	and routes in formulating a Forensic Evidence problem or topic		Dialogue Mind Maps Concept Maps Standard Method Inductive Method Self-Learning Cooperative Learning Field Visits	discussion questions Class assignments Homework Short research/reports Summaries Presentations
1.3	List in-depth the Forensic Science Progress and development via literatures survey analysis	K1, K4	Interactive Lecture Discussion and Dialogue Mind Maps Concept Maps Standard Method Inductive Method Self-Learning Cooperative Learning Field Visits	Written tests Class discussion questions Class assignments Homework Short research/reports Summaries Presentations
1.4	Recognize a critical assessment of scientific investigating work conducted by others	K1, K3	Interactive Lecture Discussion and Dialogue Mind Maps Concept Maps Standard Method Inductive Method Self-Learning Cooperative Learning Field Visits	Written tests Class discussion questions Class assignments Homework Short research/reports Summaries Presentations
2.0	**Skills**			
2.1	Develop experience in searching and assessing current Forensic Science literature	S1, S2	Practical Application Microteaching Modeling and Simulation Project-Based Learning	Observation / Rating Scales Practical Tests Self-Assessment Peer Assessment

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
			Discovery Learning Collaborative Learning	
2.2	Summarize the literature survey the applied methods and techniques used	S1, S3	Practical Application Microteaching Modeling and Simulation Project-Based Learning Discovery Learning Collaborative Learning	Observation / Rating Scales Practical Tests Self-Assessment Peer Assessment
2.3	Analyze and contrast the literature survey with instructor guidance	S2, S4	Practical Application Microteaching Modeling and Simulation Project-Based Learning Discovery Learning Collaborative Learning	Observation / Rating Scales Practical Tests Self-Assessment Peer Assessment
2.4	Appraise communication, accompanying writing of mini-reports, operating electronic mail, and network in communicating conclusions and recommendations	S2, S3, S4	Practical Application Microteaching Modeling and Simulation Project-Based Learning Discovery Learning Collaborative Learning	Observation / Rating Scales Practical Tests Self-Assessment Peer Assessment
3.0	**Values, autonomy, and responsibility**			
3.1	Demonstrate group leadership skill and to evaluate the responsibility	V1	Modeling Dialogue and discussion Self-learning Collaborative learning	Observation Self-assessment Peer assessment Achievement file
3.2	Illustrate the ability	V2	Modeling	Observation

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
	to communicate their ideas with the instructor at all times during and after the class		Dialogue and discussion Self-learning Collaborative learning	Self-assessment Peer assessment Achievement file

C. Course Content:

No	List of Topics	Contact Hours
1.	Introduction to Scientific Research	5
2.	Overview of Forensic Research	4
3.	Literature Review	6
4.	Formulate Research Problem and Research Objective	5
5.	Research Design for the Forensic Science Student and Practitioner	5
6.	Research Proposal	8
7.	How to Critically Review a Published Scientific articles	5
8.	The Importance of Ethics and Impartiality in Forensic Science	4
9.	The Key to Effective Communication in Forensic Science	3
Total		**45**

D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	1st written report and oral presentation: Review of literature Scientific research question and proposal	4th week	20%
2.	2nd written report and oral presentation: Scientific research design and methodology Reference styles and citations manager	8th week	20%
3.	3rd written report and oral presentation: Drafting research article and submission Response to reviewers' comments and revision	12th week	20%
4.	Essay	16th week	20%
5.	Final oral presentation	16th week	20%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities:

1. References and Learning Resources:

Essential References	Mike Illes & Paul Wilson (2020) The Scientific Method in Forensic Science A Canadian Handbook. Toronto, Canada ISBN-13: 9781773381633. Igwenagu, Chinelo. (2016). Fundamentals of research methodology and data collection. Marczyk, Geoffrey R. (2014) Essentials of research design and methodology. Wiley.
Supportive References	None
Electronic Materials	None
Other Learning Materials	None

2. Educational and Research Facilities and Equipment Required:

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classrooms and Laboratories
Technology equipment (Projector, smart board, software)	Projector and Smart board
Other equipment (Depending on the nature of the specialty)	Forensic Science-related instruments, including safety cabinet, centrifuges, incubators, thermal cyclers, trans-illuminators, gel electrophoresis apparatus

F. Assessment of Course Quality:

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct
Effectiveness of students' assessment	Program Leaders	Direct
Quality of learning resources	Peer Reviewer	Indirect
The extent to which CLOs have been achieved	Program Leaders	Direct
Other	-	-

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval Data:

COUNCIL /COMMITTEE	Department of Biology Council
REFERENCE NO.	Meeting No. 6
DATE	29/9/2024