جامعة المستقبل
AL MUSTAQBAL UNIVERSITY

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	**Sera and Vaccines**		**Module Delivery**
Module Type	Core		☒Theory ☐Lecture ☒Lab ☐Tutorial ☐Practical ☒Seminar
Module Code	UOMU07064		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	6	**Semester of Delivery**	4
Administering Department	Biotechnology Medical	**College**	Sciences of college
Module Leader	Sarah Kamil Abbood	**e-mail**	Sarah.kamil@uomus.edu.iq
Module Leader's Acad. Title		**Module Leader's Qualification**	Ph.D
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date		**Version Number**	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Immunology MTB-35019	**Semester**	3, 4
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Analyzing sera: Researchers study sera (the liquid portion of blood containing antibodies) to identify specific antibodies that can neutralize pathogens. This helps in understanding immune responses and developing targeted treatments. 2. Vaccine development: By studying sera, scientists can identify antigens that trigger an immune response. This knowledge is used to design vaccines that stimulate the production of specific antibodies, providing protection against infectious diseases. 3. Vaccine effectiveness: Research is conducted to evaluate the efficacy and safety of vaccines. This involves studying sera from vaccinated individuals to measure the presence of specific antibodies and assess their ability to neutralize the targeted pathogens. 4. Immunization strategies: Understanding how sera and vaccinations work helps in developing effective immunization strategies. This includes determining the optimal timing, dosage, and delivery methods for vaccines, as well as identifying target populations for vaccination campaigns. 5. Disease prevention and control: The ultimate goal is to prevent the spread of infectious diseases and reduce their impact on public health. Through the study of sera and vaccinations, scientists aim to develop effective preventive measures, including vaccination programs and the identification of emerging infectious diseases. By focusing on sera and vaccinations, researchers aim to enhance our understanding of the immune system, develop effective vaccines, and implement strategies that can protect individuals and communities from a wide range of infectious diseases.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Studying sera and vaccines can have several positive outcomes for students in the field. Some of the key outcomes include: 1. Knowledge and understanding: Students gain a deep understanding of the immune system, antibodies, and how vaccines work. They learn about the various types of vaccines, their mechanisms of action, and their role in preventing infectious diseases. This knowledge equips them to make informed decisions and contribute to advancements in the field. 2. Research and innovation: Students engaged in studying sera and vaccines have the opportunity to conduct research and contribute to scientific advancements. They may explore new methods for vaccine development, investigate immune responses, or analyze the efficacy of existing vaccines.

	This research can lead to discoveries that improve public health outcomes. 3. Practical skills development: Students acquire practical laboratory skills through hands-on experience in analyzing sera and conducting vaccine-related experiments. These skills include techniques such as ELISA (enzyme-linked immunosorbent assay), serum neutralization tests, and cell culture techniques. Such skills are valuable for future careers in biomedical research, public health, or clinical practice. 4. Public health impact: By studying sera and vaccines, students become equipped to address public health challenges. They can contribute to the development of effective vaccination strategies, participate in outbreak investigations, and collaborate with healthcare professionals to implement immunization programs. Their work can have a direct impact on preventing the spread of infectious diseases and improving overall public health outcomes. Overall, studying sera and vaccines provides students with a wealth of knowledge, research opportunities, practical skills, and the chance to make a positive impact on public health.
Indicative Contents المحتويات الإرشادية	In lecture lab #1-#5 they will need (15hr). In lecture lab #7- #13 they will need (60 hr). In lecture lab #15 they will need (10hr).

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Here are some effective strategies for learning about sera and vaccinations: 1. Comprehensive study materials: Start by using reliable and comprehensive study materials such as textbooks, scientific journals, and reputable online resources. Look for resources that cover the basics of immunology, antibody responses, vaccine development, and related topics. 2. Attend lectures and courses: Enroll in courses, webinars, or workshops specifically focused on sera and vaccinations. These educational sessions provide structured learning and opportunities to interact with experts in the field. Take notes, ask questions, and actively participate in discussions to enhance your understanding. 3. Hands-on laboratory experience: Seek opportunities to gain practical experience in a laboratory setting. Work with experienced researchers or join research projects that involve studying sera or vaccine development. Hands-on experience will help solidify your understanding and develop essential laboratory skills. 4. Collaborate and discuss: Engage in discussions with peers, professors, or professionals who have expertise in the field. Collaborative learning allows for the exchange of ideas, perspectives, and knowledge. Participate in study groups, forums,

	or online communities dedicated to immunology and vaccines to enhance your understanding through discussion and debate. 5. Stay updated with current research: Follow scientific advancements and keep up with the latest research in the field of sera and vaccinations. Read scientific journals, attend conferences, and follow reputable websites and publications to stay informed about breakthroughs, emerging pathogens, and new vaccine developments. 6. Practical application and real-world examples: Connect theoretical knowledge to real-world examples and practical applications. Understand the impact of vaccines on public health by studying case studies, outbreaks, and vaccination campaigns. Analyze the challenges faced in vaccine development and implementation to gain a broader perspective. 7. Seek mentorship: Find mentors who are experienced in the field of sera and vaccinations. They can provide guidance, share their expertise, and help shape your learning journey. Mentors can offer valuable insights, career advice, and opportunities for practical experience. 8. Review and practice: Regularly review and reinforce your knowledge through self-assessment quizzes, practice questions, and mock scenarios. This will help you identify areas that need further understanding and solidify your knowledge base. learning about sera and vaccinations is a continuous process, and staying curious and up-to-date is essential in this dynamic field. Embrace opportunities for continuous learning, research, and practical application to enhance your understanding and make meaningful contributions to the field.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	61	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	10%	4, 6, 13	#1 and#2, #3-#5, #9
	Assignments	2	10%	8 and 15	#1 and #12
	Projects / Lab.	1	10%	continuous	all
	Report	2	10%	9	#14
Summative assessment	Midterm Exam	2h	10%	7	#1-#6, #8-#14
	Final Exam	3h	50	16	all
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	introduction & history
Week 2	serological diagnostic methods **part one**
Week 3	serological diagnostic methods **part two**
Week 4	Kinds of immunization
Week 5	Guideline on adjuvant in vaccines
Week 6	Lived, killed & attenuated
Week 7	1st Examination
Week 8	Vaccines administration
Week 9	Vaccine Strategies

Week 10	Viral Vaccine
Week 11	Preparation of Vaccine
Week 12	Newer strategies for vaccine development
Week 13	Process for the preparation of a vaccine for the treatment of intracellular infectious diseases
Week 14	New methods of vaccine production
Week 15	2nd Examination
Week 16	Final exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	General Introduction in Serology
Week 2	Serological test
Week 3	Sensitivity and specificity test
Week 4	Vaccine and Vaccination
Week 5	Types of vaccine
Week 6	Routes of Administration
Week 7	How Vaccine work and what are the properties of good vaccines
Week 8	First exam
Week 9	Vaccine Strategies
Week 10	Preparation of Vaccine
Week 11	A Preparation of vaccines
Week 12	Schedule of vaccination
Week 13	Primary vaccination and Booster vaccination
Week 14	Evaluation of effective vaccine

Week 15	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. "Vaccine: The Controversial Story of Medicine's Greatest Lifesaver" by Arthur Allen 2. "Principles of Vaccination" by Stanley A. Plotkin, Walter A. Orenstein, and Paul A. Offit 3. "Vaccines: Expert Consult - Online and Print" by Stanley A. Plotkin, Walter A. Orenstein, and Paul A. Offit 4. "Vaccine Design: Methods and Protocols" edited by Sunil Thomas 5. "Vaccine Adjuvants: Preparation Methods and Research Protocols" edited by Derek T. O'Hagan 6. "Vaccine Development and Manufacturing" edited by Emily P. Wen and Manmohan Singh 7. "Vaccine Analysis: Strategies, Principles, and Control" edited by Lisa M. Povsic and John R. Mascola 8. "Understanding Vaccines and the Immune System" by Paul Klenerman	
Recommended Texts	"Vaccines: Expert Consult - Online and Print" by Stanley A. Plotkin, Walter A. Orenstein, and Paul A. Offit	
Websites	https://www.elsevier.com/books/vaccines/plotkin/978-1-4557-0090-5	

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.