MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Applied Physics

Module Information معلومات المادة الدراسية					
Module Title	Linear Algebra and Statistics			**Module Delivery**	
Module Type	**C**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	GEO2108				
ECTS Credits	**4**				
SWL (hr/sem)	100				
Module Level		2nd	**Semester of Delivery**		2nd
Administering Department		**Geophysics**	**College**	**Remote sensing & Geophysics**	
Module Leader	**Ali Khalid Khudhayir**		**e-mail**	ali.khdayir@kus.edu.iq	
Module Leader's Acad. Title		**Lecturer**	**Module Leader's Qualification**		**MSc. Method of teaching mathematics**
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date		**15/5/2024**	**Version Number**	2	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	**Null**	**Semester**	
Co-requisites module	**Null**	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. Using numerical methods, analyzing numerical methods, comparing them, and finding out if any of the methods are new and better.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	A- Cognitive goals 1. A1- Knowing the numerical methods to find the solution of nonlinear equations 2. A2- Employing numerical analysis in finite integrals 3. A3- Using numerical methods to find finite integrals 4. A4- Solving linear systems using Newton Raphson theory and a number of other theories 5. A 5- Employing numerical analysis in differentiation 6. A6- Concepts related to numerical programming in MATLAB B. Skills objectives of the course B1 - Scientific Reports B2 - Graduate Research
Indicative Contents المحتويات الإرشادية	1. At the beginning of the semester, students are informed of the course vocabulary and information sources

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Lecture method 2. standard method 3. inductive method

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	80		
Unstructured SWL (h/sem)	20		

الحمل الدراسي غير المنتظم للطالب خلال الفصل			
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	**Midterm Exam**	2 hr	10% (10)		
	Final Exam	2hr	50% (50)		
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Numerical Techniques 1
Week 2	Numerical Techniques 2
Week 3	Numerical Techniques 3
Week 4	Solution of Algebraic and Transcendental Equations
Week 5	Solution of Algebraic and Transcendental Equations
Week 6	Solution of Algebraic and Transcendental Equations
Week 7	Exam 1
Week 8	Curve Fitting
Week 9	Curve Fitting
Week 10	Numerical Differenation
Week 11	Numerical Differenation
Week 12	Numerical Differenation
Week 13	Numerical Integration

Week 14	Numerical Integration
Week 15	**Exam**
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. Mathematical Methods	
Recommended Texts	**1.** Advanced in numerical methods	
Websites	Varies lectures and lecture notes on the internet , (www.freescience.info/math)	

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Structural Geology			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☒ **Practical** ☒ **Seminar**	
Module Code	RGC2215				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level			**Semester of Delivery**	Five	
Administering Department	Remote Sensing		**College**	Remote Sensing & Geophysics College	
Module Leader	Ahmed Abbas Hasan		**e-mail**	ahmad.a.h@kus.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	01/06/2024		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	The course aims to study geological structures through: 1- The student learns about the forces, stresses and factors that control the behavior of rock materials. 2- The student describes the folds, classifies them and applies them in the field 3- The student describes, classifies, and studies the faults in the field.

	4- The student classifies commas and studies their applied aspects. 5- The student analyzes and explains plate tectonics and plate motion 6- The student analyzes and interprets the stereographic projections of folds, cracks, and joints practically 7- The student analyzes and explains the earth's magnetic field. 8- The student understands the concept of the theory of continental drift. 9- The student analyzes the reasons for the expansion of the ocean floor. 10- The student will know the reasons for the wandering of the earth magnetic pole. 11- The student studies the link between structural geology and other branches of geology. 12- The student recognizes the engineering properties of rocks 13- The student understands the changes in subsurface geological structures 14- The student estimates the extent of the economic value of synthetic fisheries in the presence of oil 15- The student applies the structural information in the field 16- The student distinguishes between the existing structures of the oceanic crust and the continental crust 17- The student distinguishes between the different types of continental shields 18- The student learns the applications of geological structures used in water resources studies 19- The student learns the applications of geological structures used in geomorphological studies 20- The student designs some proposed solutions and treatments to study rock fractures
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Adopting the principle of streamlining the solution of research problems through logical rules. 2- Students adopting the flow of scientific research steps through engineering systems. 3- The ability to convince researchers to adopt different computer applications. 4- The ability to market the results of digital analysis of satellite images to beneficiaries by the simplest means.
Indicative Contents المحتويات الإرشادية	Structural geology is one of the branches of earth science that deals with the study of geological structures, when and how they were formed.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Structural geology is one of the branches of earth science that deals with the study of geological structures, when and how they were formed. 1- Using the method of direct application by the teacher on the blackboard 2- Involve the student to solve some of the applications related to the paragraph. 3- On the practical side, the exercises are re-executed by the teacher and teaching assistant. 4- The student is asked to carry out the exercise under the direct supervision of the teacher and teaching assistant 5- The student's work is evaluated and detailed notes are placed on his work so that he can avoid it in the future.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	114	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	11	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	
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**	2	10% (10)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	**Midterm Exam**	2hr	10% (10)		
	Final Exam	2hr	50% (50)		
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Course vocabulary or content: Vocabulary of the theoretical material to be completed -Introduction: Definition, Objectives, and Scope of Structural Geology.
Week 2	The relationship of structural geology to other branches of geology

	- Description of folds, parts of folds - Naming and classifying folds
Week 3	- Folds or folds: layering
Week 4	Mechanical principles: trapping pressure or rock pressure
Week 5	Different forces acting on bodies - Effort - stress
Week 6	-Factors controlling the behavior of materials
Week 7	**Mid-term Exam**
Week 8	- Re-folding - Field study of folds
Week 9	Commas: Description and classification of commas - Field study of commas
Week 10	-Geotectonic
Week 11	-Fractures: the origin and mechanics of fracture formation
Week 12	-Description and general classification of fractures
Week 13	-The theory of continental drift and ocean floor expansion
Week 14	- The earth's magnetic field, the inversion of the earth's magnetic field, the wandering of the earth's magnetic pole
Week 15	-The theory of plate tectonics and plate movement, general characteristics of the tectonics of the Arabian Peninsula, the Middle East
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Horizontal layer maps Inclined layer maps
Week 2	Non-submersible fold maps Submersible fold maps Applied aspects of separators
Week 3	Classification of Faults Field evidence (evidence) of the existence of faults
Week 4	Normal Fault: the mechanics of their formation.

Week 5	Size, position, and pattern of regular faults
Week 6	Reverse and impulsive faults: the engineering description has the mechanics of their formation
Week 7	Fault maps

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1- Fossen 2010 , Haakon , Structural Geology .	Yes
Recommended Texts	2- Pluijm and Marshak , 2003,Earth Structure: An Introduction to Structural Geology and Tectonics (Second Edition) . 3- Ragan 2009 , Donal , Structural Geology: An Introduction to Geometrical Techniques.	No
Websites		

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Gravity Method الطريقة الجذبية			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	GEO2117				
ECTS Credits	**6**				
SWL (hr/sem)	150				
Module Level		UGII	**Semester of Delivery**		Three
Administering Department		Department of Geophysics	**College**	College of Geophysics and Remote Sensing	
Module Leader	Assistant Professor Dr. Wadhah Mahmood Shakir		**e-mail**	wadhah.mah@kus.edu.iq	
Module Leader's Acad. Title		Assistant Professor Doctor of Geophysics	**Module Leader's Qualification**		PhD. In Geology / Geophysics
Module Tutor	----		**e-mail**	-----	
Peer Reviewer Name		-----	**e-mail**	-----	
Scientific Committee Approval Date		Approved	**Version Number**		

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Fundamentals of Geophysics	**Semester**	UGI , 2nd Semester
Co-requisites module	-------	**Semester**	------

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	**The gravity geophysical Method course is aiming to achieve the following:** **1- The wide scope of application of Gravity geophysical method for exploring the Earths crustal characteristics and investigating subsurface geological features and targets by studying the Earth's natural gravimetric field variations.** **2- Gravity data acquisition, processing and Interpretation. This would be helpful in obtaining results which used to detect the subsurface geological structures.** **3- Improving the student's qualifications through the application of manual, mathematical and computer software skills which related to the processing and interpretation of geophysical data.** **4- Improvement of student qualifications as an explorer and detective geophysicist who detects the subsurface geological evidences and to apply this scientific topic precisely in order to exploit it in different goals like: Geodesy , Crustal rocks Isostasy investigations, petrol and mineral investigations, Engineering and environmental Investigations ….etc.** **5- Understanding the ambiguity causes which related to the results of geophysical surveying data and looking for its solutions. This includes adopting methods and searching for strong evidences which helps in solving interpretational problems, in order to reach to the best logical, correct and less ambiguous geophysical interpretations.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**1- Attendance of theoretical lectures.** **2- Attendance of practical part application Laboratories.** **3- Presenting seminars within the material topic.**
Indicative Contents المحتويات الإرشادية	• **Introduction** • **Gravimetry** • **Importance and Applications of Gravity Method** • **Fundamental principles of Gravitation** • **Gravitational Potential** • **Gravitational Potential of the Earth** • **Effect of Earth's rotation and flattening on Gravity Potential** • **The Geoid and Ellipsoid** • **The Reference Ellipsoid** • **Gravity at the Reference Ellipsoid** • **Gravity measurement and instrumentation** • **Absolute Gravity Measurement** • **Relative Gravity measurements** • **Stable and unstable gravimeters** • **Basic Steps of Gravity measurement by using LaCoste and**

	Romberg Device • **Types of Gravity Surveys** • **The Required Steps to Achieve a Gravity Survey:** • **Ambiguity in gravity method** • **Corrections of Gravity Readings** • **The calculation of Bouguer Anomaly value** • **Gravity Data Processing and Interpretation** • **Qualitative Interpretation** • **Separating the residual gravity field from the total Field** • **Quantitative Interpretation of Gravity Profiles**

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	**1- Theoretical lecturing which includes teaching the scientific material. This includes the explanation of the method principle of application, instrumentation and data acquisition, processing and interpretation.** **2- A practical part laboratory includes the processing of geophysical data in different methods to obtain the results. The results would be displayed and interpreted, discussed by the student who ought to present his laboratory report in weekly basis.** **3- Quizzes in weekly basis.** **4- Midterm examination.** **5- Final theoretical and practical examination.**

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	86		
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	64		
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10	10	10
	Assignments	2	10	10	10
	Projects / Lab.	1	10	10	10
	Report	1	10	----	----
Summative assessment	Midterm Exam	2 hr	10	20	20
	Final Exam	2hr	50	50	50
Total assessment			100% (100 Marks)	100	100

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	An introduction about the gravity method and its application in geophysical exploration and the methods of measuring Earths gravimetric field
Week 2	The use of the unstable gravimeter instrument to take gravity field ground surface readings
Week 3	Corrections of gravity readings (part1)
Week 4	Corrections of gravity readings (part2)
Week 5	Corrections of gravity readings (part3)
Week 6	Bouguer anomaly value calculation
Week 7	Gravity mapping and profiling (part1)
Week 8	Gravity mapping and profiling (part2)
Week 9	Gravity mapping and profiling (part3)
Week 10	Qualitative interpretation of Gravity maps and profiles (part1)
Week 11	Qualitative interpretation of Gravity maps and profiles (part2)
Week 12	Qualitative interpretation of Gravity maps and profiles (part3)
Week 13	Quantitative interpretation of Bouguer anomaly maps and profiles (part 1)
Week 14	Quantitative interpretation of Bouguer anomaly maps and profiles (part2)
Week 15	Quantitative interpretation of Bouguer anomaly maps and profiles (part3)
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1-2	Absolute gravity acceleration measurement and gravimeters measurements
Week 3-4	Earth's Gravity field as compared to other solar system planets gravity fields
Week 5-6	Drift or tidal gravity reading correction
Week 7-8	Free air and Bouguer (Total Elevation correction)
Week 9-10	Theoretical gravity value calculation and latitude correction
Week 11-12	Bouguer anomaly value calculation ,mapping and qualitative interpretation
Week 13-14	Residual Bouguer anomaly deduction and quantitative interpretation

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	**1- Kearey P. , Brooks M. , Hill I.,2002,"An Introduction to Geophysical Exploration", 3rd ed., Blackwell Science Ltd., USA, 281 pages.** **2- Sharma P.V., 1986, "Geophysical Methods in Geology", 2nd Ed.,Elsevier Science Publishing Co., Inc., Amsterdam, the Netherlands.442 pages.** **3- Eric C. , 2015, Gravity and the figure of the Earth, Purdue University, Department of Earth and Atmospheric Sciences, West Lafayette, IN 47907-1397.**	Yes
Recommended Texts	**1- Kearey P. , Brooks M. , Hill I.,2002,"An Introduction to Geophysical Exploration", 3rd ed., Blackwell Science Ltd., USA, 281 pages.** **2- Sharma P.V., 1986, "Geophysical Methods in Geology", 2nd Ed., Elsevier Science Publishing Co., Inc., Amsterdam, the Netherlands.442 pages.** **3- Eric C. , 2015, Gravity and the figure of the Earth, Purdue University, Department of Earth and Atmospheric Sciences, West Lafayette, IN 47907-** **1397.** **4- AL-Khafaji W.M.S. and Al-Dabagh H.A. ,2019," A Geophysical Correlation between Near-Surface Radioactivity and Subsurface Faults Detected By Gravity Method for a Region Located In the Western Desert of Iraq", IJES, Vol. 11, Issue.2.** **5- Dobrin M.B. and Savit C.H., 1988, Introduction to Geophysical prospecting, (4th Ed.), McGraw Hill, New York.** **6- AL-Khafaji W.M.S., 2016, Gravity Field Interpretation for Subsurface Faults Detection in A Region Located SW- Iraq, Iraqi Journal of Science, Vol.57, No.3C, pp:2270-2279**	Yes
Websites	https://www.youtube.com/channel/UCnS-i5iT2M2TgRbI0FpS8uQ https://www.researchgate.net/publication/347951130_Lectures_in_the_Gravity_Method	

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Magnetic Method الطريقة المغناطيسية			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	GEO22112				
ECTS Credits	**5**				
SWL (hr/sem)	125				
Module Level		UGII	**Semester of Delivery**		Four
Administering Department		Department of Geophysics	**College**	College of Geophysics and Remote Sensing	
Module Leader	Assistant Professor Dr. Wadhah Mahmood Shakir		**e-mail**	wadhah.mah@kus.edu.iq	
Module Leader's Acad. Title		Assistant Professor Doctor of Geophysics	**Module Leader's Qualification**		PhD. In Geology / Geophysics
Module Tutor	----		**e-mail**	-----	
Peer Reviewer Name		-----	**e-mail**	-----	
Scientific Committee Approval Date		Approved	**Version Number**		

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Fundamentals of Geophysics	**Semester**	UGI , 2nd Semester
Co-requisites module	-------	**Semester**	------

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	**The Magnetic geophysical Method course is aiming to achieve the following:** **1- The wide scope of application of Magnetic geophysical method for exploring the Earths crustal characteristics and investigating subsurface geological features and targets by studying the Earth's natural magnetic field variations.** **2- Magnetic data acquisition, processing and Interpretation. This would be helpful in obtaining results which used to detect the subsurface geological structures and studying the basement rocks magnetic susceptibility.** **3- Improving the student's qualifications through the application of manual, mathematical and computer software skills which related to the processing and interpretation of geophysical data.** **4- Improvement of student qualifications as an explorer and detective geophysicist who detects the subsurface geological evidences and to apply this scientific topic precisely in order to exploit it in different goals like: studying the natural magnetic field of earth and its variations, Basement crustal rocks magnetic susceptibility investigations, petrol and mineral investigations, Engineering and environmental Investigations , archaeological investigations….etc.** **5- Understanding the ambiguity causes which related to the results of geophysical surveying data and looking for its solutions. This includes the assisting with the results of other geophysical methods and searching for strong evidences which helps in solving interpretational problems, in order to reach to the best logical, correct and less ambiguous geophysical interpretations.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**1- Attendance of theoretical lectures.** **2- Attendance of practical part application Laboratories.** **3- Presenting seminars within the material topic.**
Indicative Contents المحتويات الإرشادية	• **Introduction** • **Theories on the origin of the Earth's field** • **Principle of Magnetization** • **Magnetic units** • **Inducing magnetization** • **The Earth's geomagnetic field** • **Mathematical treatment of main field** • **The International Geomagnetic Reference Field (IGRF)** • **Secular variations in the main field** • **Diurnal variations** • **Magnetic storms** • **Geological effects** • **Rock magnetism and Kinds of minerals magnetism**

	• **The Curie temperature effect** • **Types of magnetism in rocks** • **Induced and remnant magnetism** • **Rock susceptibility** • **Common causes of magnetic anomalies** • **Instruments for Measuring Rocks Magnetism** • **Types of Magnetic surveys** • **Examples of Global regional magnetic surveys** • **Magnetic survey Data display** • **Aeromagnetic data** • **Data Processing and interpretation** • **Noise in ground magnetic surveys** • **Simple Magnetic Interpretation** • **Forms of magnetic anomaly** • **'Rule-of-thumb' in depth estimation of magnetized subsurface bodies**

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	**1- Theoretical lecturing which includes educating the scientific material in the topic of magnetic geophysical method. This includes the explanation of the method principle of application, instrumentation and data acquisition, processing and interpretation.** **2- A practical part laboratory includes the processing of geophysical data in different methods to obtain the results. The results would be displayed and interpreted, discussed by the student who ought to present his laboratory report in a weekly basis.** **3- Quizzes in a weekly basis.** **4- Midterm examination.** **5- Final theoretical and practical examination.**

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	86		
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	39		
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	**Quizzes**	2	10	10	10

assessment	Assignments	2	10	10	10
	Projects / Lab.	1	10	10	10
	Report	1	10	----	----
Summative assessment	Midterm Exam	2 hr	10	20	20
	Final Exam	2hr	50	50	50
Total assessment			100% (100 Marks)	100	100

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	An introduction about the Magnetic geophysical method and its applications in geophysical exploration and the methods of measuring Earth's magnetic field
Week 2	Theories of the origin of Earth's magnetic field
Week 3	Geomagnetic elements , induced and remnant magnetization
Week 4	The mathematical treatment of Earth's magnetic field
Week 5	The International Geomagnetic Reference Field (IGRF)
Week 6	Secular and Diurnal variations , magnetic storms and geological effects on the main Earth's magnetic field
Week 7	Magnetization in rocks and minerals and magnetic Susceptibility
Week 8	Instruments of Measuring rocks Magnetism
Week 9	Types of Magnetic Surveys
Week 10	Magnetic surveying data display
Week 11	Magnetic data processing and interpretation
Week 12	Magnetic profiles and forms of magnetic anomaly
Week 13	Depth estimation of subsurface magnetized bodies (part1)
Week 14	Depth estimation of subsurface magnetized bodies (part2)
Week 15	Depth estimation of subsurface magnetized bodies (part3)
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1-2	Earth's Magnetic main Intensity field Mapping (part1)
Week 3-4	Earth's Magnetic main Intensity field Mapping (part2)
Week 5-6	Earth's Magnetic main Intensity field profiling (part1)
Week 7-8	Earth's Magnetic main Intensity field profiling (part2)
Week 9-10	Transforming 1D and 2D magnetic anomalies

Week 11-12	**Reduction To Pole and Reduction To Equator Methods**
Week 13-14	**Residual Magnetic anomaly deduction and quantitative interpretation**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	**1- Foulger G. R. & Peirce C., 2002, Geophysical Methods in Geology.** **2- 2- P. Kearey, M. Brooks and I. Hill, 2002, An Introduction to Geophysical Exploration, by, 3rd edition Blackwell Science.** **3- Calais E.2005, Geomagnetism, Purdue University Department of Earth and Atmospheric Sciences, West Lafayette, IN 47907-1397.** **4- Milsom J., 2003, Field Geophysics, 3rd Ed.,The Geological Field Guide Series, John Wiley & Sons Ltd, The Atrium, Southern Gate, Chichester, West Sussex PO19 8SQ, England .**	Yes
Recommended Texts	**1- Kearey P. , Brooks M. , Hill I.,2002,"An Introduction to Geophysical Exploration", 3rd ed., Blackwell Science Ltd., USA, 281 pages.** **2- Sharma P.V., 1986, "Geophysical Methods in Geology", 2nd Ed., Elsevier Science Publishing Co., Inc., Amsterdam, the Netherlands.442 pages.** **3- Dobrin M.B. and Savit C.H., 1988, Introduction to Geophysical prospecting, (4th Ed.), McGraw Hill, New York.**	Yes
Websites	https://www.youtube.com/channel/UCnS-i5iT2M2TgRbI0FpS8uQ https://www.researchgate.net/publication/356616463_Magnetic_Geophysical_Method_Course_Lectures_for_Undergraduate_Students	

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**برمجة عددية**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	GEO22011				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	III		**Semester of Delivery**	FIVE	
Administering Department	Geophysics		**College**	College of Geophysics and Remote Sensing	
Module Leader	Dr. Rami M. Idan		**e-mail**	Ramisc3@kus.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**Module Leader's Qualification**	Petroleum geology	
Module Tutor	Null		**e-mail**		
Peer Reviewer Name	Null		**e-mail**		
Scientific Committee Approval Date	16 / 6 / 2024		**Version Number**	2	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Null	**Semester**	Two
Co-requisites module	Null	**Semester**	-

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	This module deals with the principles of self-potential, accurate and normal electrical inductive focusing methods, sonic log and cross-charts. NMR measurements, some technical measurements such as dip meter and methods of their conduction, the most important results obtained by such measurements and methods for their interpretation
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• Develop an understanding of how to evaluate a variety of subsurface maps including fault, structure, and isochore maps. • Understand the types of questions to ask when reviewing interpretations, maps and prospects. • Evaluate the 3-D viability of an interpretation, map or prospect. • Evaluate whether the resources or reserves attributed to a completed interpretation or map are under or over estimated. • Determine whether an interpreter has applied sound, industry accepted, geoscience principles and methods to generate an interpretation, map or prospect.
Indicative Contents المحتويات الإرشادية	Through explanations and applications, using display screens, and presenting scientific films that explain the reality of what happens in nature.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Class Lecture Laboratory Practical Training Tutorial Seminar

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	72		
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	28		
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	**Midterm Exam**	2 hr	10% (10)		
	Final Exam	2hr	50% (50)		
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
Week	**Material Covered**
Week. 1	Introduction to Surfer:
Week. 2	Base Maps.
Week. 3	Map Options.
Week. 4	Post Maps:
Week. 5	Gridding Data (creating rasters).
Week. 6	**Exam**
Week. 7	Contour Maps: Simple, logarithmic, advanced contour levels, Edit contour labels and lines
Week. 8	Coordinate Systems: Why use coordinate systems, Assign coordinate systems

Week. 9	Grid Calculations
Week. 10	Trend Analysis, Residual Calculation and Display
Week. 11	**Exam**
Week. 12	3D Surface Maps: 3D surface enhancements, Overlay 3D surfaces, Create 3D block diagram
Week. 13	Volumetric Calculation and Blanking A Grid
Week. 14	Introduction to **Grapher software**
Week. 15	Create Professional Graph
Week. 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week. 1	Grid methods
Week. 2	Map constructions
Week. 3	Thickness map
Week. 4	Map editing
Week. 5	Didger work (Log digitizing)
Week. 6	Didger work (Map digitizing)
Week. 7	Grapher

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	**Introduction to Surfer**	Y
Recommended Texts	Surfer 11 Self-Paced Training Guide User's Guide, https://support.goldensoftware.com/hc/en-us/categories/115000653807-Surfer, http://www.goldensoftware.com/trainingclass	y

Websites	https://ocw.mit.edu/courses/find-by-topic/#cat=science&subcat=earthscience&spec=geophysics

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Petrology			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	RGC2103				
ECTS Credits	**6**				
SWL (hr/sem)	150				
Module Level	2nd		**Semester of Delivery**	1st	
Administering Department	Geophysics		**College**	College of Geophysics and Remote Sensing	
Module Leader	Dr. Amani L. M. salih		**e-mail**	Aman79.jk@gmail.com	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Petrology	
Module Tutor	None		**e-mail**		
Peer Reviewer Name	None		**e-mail**		
Scientific Committee Approval Date	16 / 6 / 2024		**Version Number**	2	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Null	**Semester**	
Co-requisites module	Null	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	To provide a foundation in igneous, metamorphic, and sedimentary petrology, to serve as a basis for more detailed courses in the coming years, and to provide a basic understanding of the role of magmatic and igneous rocks in the Earth, with particular reference to the conditions under, which magma is formed, the major types of magma, and the movement and presence (or eruption) of magmas) magma and its eventual solidification. To study the minerals and textures of igneous rocks. To study the ways in which a great variety of igneous rocks can be produced from relatively few types of magma. To study active volcanoes and their behavior, as direct evidence of magmatic processes. To provide an introduction to metamorphic rocks, their classification and nomenclature To study the minerals and textures of metamorphic rocks and use them to infer pressures and temperatures of metamorphism, and the role of deformation To investigate the possible tectonic processes and environments in which metamorphic rocks are formed As well as sedimentation processes for different sedimentary rocks
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Upon completion of this course, the student will be able to: Understand the basic elements of igneous and metamorphic rocks Apply basic knowledge and practical skills to interpret the characteristics of igneous and metamorphic rocks Improving the skills of observation and description of igneous and metamorphic minerals in hand samples and rock slides Describe and identify the most important igneous and metamorphic rock types, both in hand samples and in rock slides Use different graphical methods to help interpret rock formation
Indicative Contents المحتويات الإرشادية	Through explanations and applications, using display screens, and presenting scientific films that explain the reality of what happens in nature.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Class Lecture Laboratory Practical Training Tutorial Seminar

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	86		
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	64		
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	**Midterm Exam**	2 hr	10% (10)		
	Final Exam	2hr	50% (50)		
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week. 1	Introduction to Igneous Petrology
Week. 2	An Introduction to Igneous Phase Diagrams and Silicate Melts and Magmas
Week. 3	The Chemistry of Igneous Rocks and Basalts and Mantle Structure
Week. 4	Convergent Margin Magmatism
Week. 5	Intracontinental Volcanism and Interpretation of Granitic Rocks
Week. 6	Sedimentology and Sedimentary rocks Introduction
Week. 7	Erosion, transportation, sedimentation, and lithification
Week. 8	Sedimentary structures
Week. 9	Sandstone and Limestone

Week. 10	Introduction to sedimentary facies
Week. 11	Exam
Week. 12	Introduction to Metamorphic Petrology & Interpretation of Metamorphic Phase Diagrams
Week. 13	Metamorphic Facies and the Metamorphism of Mafic Rocks
Week. 14	Metamorphism of Peridotitic Rocks
Week. 15	Regional Occurrence and Tectonic Significance of Metamorphic Rocks
Week. 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week. 1	Microscope parts
Week. 2	Sandstone under Microscope
Week. 3	Sediment size, size distribution, and sorting
Week. 4	Pettijon and Folk classification
Week. 5	Limestone under Microscope
Week. 6	Denham classification
Week. 7	Facies identification

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Grotzinger & Jordan, *Understanding Earth*, Chapters 4, 6 and 12. Marshak, *Portrait of a Planet*, Chapters 6, 8, 9,11.	no
Recommended Texts	Klein & Philpotts, *Earth Materials: Introduction to Mineralogy and Petrology,* Chapters 7, 8, 9, 13, 14 Hefferan & O'Brien, *Earth Materials*, Chapter 7 Duff, *Holmes' Principles of Physical Geology*, Chapters 12 and 13. Mason, *Petrology of the Metamorphic Rocks (2nd edition).*	no

	Cox, Price & Harte, T*he Practical Study of Crystals, Minerals and Rocks (2nd edition)*, Chapter 10. MacKenzie & Adams, *A Colour Atlas of Rocks and Minerals in Thin Section*.	
Websites	https://ocw.mit.edu/courses/find-by-topic/#cat=science&subcat=earthscience&spec=geophysics	

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Stratigraphy			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	RGC2114				
ECTS Credits	**6**				
SWL (hr/sem)	150				
Module Level		II	**Semester of Delivery**		Three
Administering Department		Geophysics	**College**	College of Geophysics and Remote Sensing	
Module Leader	Dr. Mohammed Sattam		**e-mail**	moh.sattam@kus.edu.iq	
Module Leader's Acad. Title		Assistant Professor	**Module Leader's Qualification**		Stratigraphy& Paleontology
Module Tutor	Nul		**e-mail**		
Peer Reviewer Name		Null	**e-mail**		
Scientific Committee Approval Date		16 / 6 / 2024	**Version Number**	2	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	General Geology	**Semester**	One
Co-requisites module	Null	**Semester**	-

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	A Stratigraphy Module encompasses the study of rock layers and their arrangement in time. It covers principles and methods used to analyze and interpret sedimentary sequences, including facies analysis, biostratigraphy, and lithostratigraphy. Topics include dating techniques, paleoenvironmental reconstructions, and the correlation of rock units across different regions, providing a comprehensive understanding of Earth's geological history
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	- Understanding the importance of Stratigraphy as one of the pure geological sciences . - Develop an understanding of how to identify the sediments and beds theoretically and practically. - Identify the types of beds and interpretations of their distribution. - Understanding of how to identify the formation in the field . - Evaluate whether the resources or reserves attributed to a completed interpretation map are under or over estimated. - Determine the rank of stratigraphic units .
Indicative Contents المحتويات الإرشادية	Through explanations and applications, using display screens, and presenting scientific films that explain the reality of what happens in nature.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Class Lecture Laboratory Practical Training Seminar

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem)	114		

الحمل الدراسي المنتظم للطالب خلال الفصل			
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	36		
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	Midterm Exam	2 hr	10% (10)		
	Final Exam	2hr	50% (50)		
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Stratigraphy "Introduction and Identification "
Week 2	Principles of Stratigraphy
Week 3	Stratigraphic Classification
Week 4	Stratigraphic Units
Week 5	Nomenclature and units
Week 6	Defining a Stratigraphic Units, Types of Stratigraphic Unit
Week 7	Information are required for Stratigraphic units
Week 8	Type locality
Week 9	Midterm exam
Week 10	Stratigraphic Terminology "Dual Stratigraphic Classification"
Week 11	Formation Representative
Week 12	Unconformities

Week 13	Sedimentary Facies
Week 14	Facies Distribution
Week 15	Stratigraphic Sections and Correlation
Week 16	Second Midterm Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Geological Time Scale
Week 2	Time events arrangements
Week 3	Lithology detection outcrop
Week 4	Unconformities
Week 5	Correlation
Week 6	Lithological Correlation
Week 7	Time Correlation

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Nichols, G., 2009. Sedimentology and Stratigraphy. This edition , United Kingdom,419 pp .	Y
Recommended Texts	Mark J. Osborne, Richard E. Swarbr. "Mechanisms for Generating Overpressure in Sedimentary Basins: A Reevaluation: Reply."	y
Websites	https://www.sepmstrata.org/	

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Electromagnetism

Module Information معلومات المادة الدراسية					
Module Title	Principles of Electromagnetic			**Module Delivery**	
Module Type	C			☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	GEO22013				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level	2nd		**Semester of Delivery**	4th	
Administering Department	Geophysics		**College**	Remote sensing & Geophysics	
Module Leader	Hind Ibrahim Abdulgafour		**e-mail**	hind.ibrahem.abdulghafoor@kus.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**Module Leader's Qualification**	PhD	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	15/5/2024		**Version Number**		

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Null	**Semester**	
Co-requisites module	Null	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. Basic principles of Electromagnetism phenomena. 2. Learn the basic Electric and magnetic fields. 3. The student acquires a cognitive skill about the basic principles of electromagnetism waves with properties. 4. The student learn the nature of light as well as learn the law of reflection and refraction. 5. Learn the source and types of radiation with their applications.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. To understand the basics of the Electromagnetism principles. 2. To learn the light and waves. 3. To learn the types of Electromagnetism. 4. To learn the induction of Electric and magnetic field. 5. To learn the Law of Reflection and refraction. 6. To learn the source and the types of radiations.
Indicative Contents المحتويات الإرشادية	1. Understanding, assimilation, analysis and interpretation of study results. 2. Recording scientific notes and realizing work in general. 3. Focusing on extra-curricular activities to develop students' skills. 4. Scientific trips to research centers specialized in this field.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be focus on understanding the topics and the sequence of logical answers to intellectual questions .Analyze the results according to the daily and monthly tests approved in the study. Examining the extent to which study subjects are applied in work

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48		
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	77		
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**	2	10% (10)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	**Midterm Exam**	2 hr	10% (10)		
	Final Exam	2hr	50% (50)		
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	**Electromagnetic Spectrum**
Week 2	**Light and the Electromagnetic Spectrum**
Week 3	**Light as a Wave**
Week 4	**Types of Electromagnetic waves**
Week 5	**The Electric Field**
Week 6	**The Magnetic field**
Week 7	**Gauss' Law**
Week 8	**Ampère's Law**
Week 9	**Induction of Electric and Magnetic field**

Week 10	**Faraday Law's**
Week 11	**Maxwell Law's**
Week 12	**Properties of EM wave**
Week 13	**The nature of Light**
Week 14	**The Law of Reflection and Refraction**
Week 15	**Dispersion**
Week 16	**The Sources of Radiation and their applications**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	**Electromagnetics and Applications.** **David H. Staelin.**	
Recommended Texts	**ELECTROMAGNETISM Principles and Applications. Paul Lorrain.**	
Websites	https://www.abebooks.com/book-search/title/university-physics-13th-edition/author/freedman-roger-a-young-hugh-d	

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.