الجامعة : المثنى
الكلية : العلوم
القسـم : الفيزياء
المرحلة : ماجستير فيزياء
اسم المحاضر الثلاثي :د. هادي قاسم محمد
اللقب العلمي : أستاذ مساعد
المؤهل العلمي : دكتوراه
مكان العمل : كلية العلوم

جمهورية العراق

وزارة التعليم العالي والبحث العلمي

جهاز الاشراف والتقويم العلمي

49

استمارة الخطة التدريسية للفصل الدراسي الثاني

الاسم	د. هادي قاسم محمد / د. حسن مكطوف جبر
البريد الالكتروني	hadeyk2002@yahoo.com
اسم المادة	**Advanced Electromagnetic Theory**
مقرر الفصل	**Course II**
أهداف المادة	To study all the most relevant mathematical methods and physics laws of obtaining Maxwell's equations and its applications
التفاصيل الأساسية للمادة	Cartesian coordinates systems Change of axis (Rotation Matrices) . Field and differential operators . Derivative and integration operators Cylindrical and spherical coordinates . Divergence theorem . Stoke theorem . Coulomb's law . Gauss's law . Poisson's equation . Solution of Laplace's equation in : Cylindrical coordinates . Spherical coordinate . Rectangular coordinate . Potential and electric field outside a dielectric medium (polarization) . Electric field inside a dielectric . Gauss's law in dielectric (electric displacement) . Properties of dielectric . Poisson's and Laplace's equation in dielectric . Dielectric sphere in uniform field . Microscopic theory of the dielectric . The energy in electric field . The energy in dielectric . Electric Current density . Equation of continuity . Ohm's law . Steady current in a conductor . Biot and Savart law . Force on a current element in magnetic flux B . Ampere's law . Faraday's law in induction . Inductance . The LCR circuit . Boundary condition of field vector . Microscopic theory of magnetic properties of matter . Magnetic energy and energy density . Maxwell equation . Maxwell equation and their application . Time Varying Fields and Maxwell's equations Faraday's Law Concepts of Displacement Current General Field Relations for Time Varying Electric and Magnetic Fields Maxwell's equations for Free Space Maxwell's equations for Good Conductor Maxwell's equations for Harmonically Varying Fields Boundary Conditions for Time Varying Fields Retarded Potentials Uniform Plane Waves General Wave Equations Uniform Plane Waves in Free Space Uniform Plane Waves in Perfect Dielectric Uniform Plane Waves in Lossy Dielectric Uniform Plane Waves in Good Conductor Poynting Vector and Poynting Theorem Integral and Point Forms of Poynting Theorem Power Flow in a Concentric Cable Reflection of Uniform Plane Waves Normal Incidence at Plane Dielectric Boundary Normal Incidence at Plane Conducting Boundary Oblique Incidence Oblique Incidence at Plane Conducting Boundary Oblique Incidence at Plane Dielectric Boundary
الكتب المنهجية	**1. Electromagnetic Theory, U.A. Bakshi, Technical Publications, 2007.** **2. Classical Electromagnetics, W. Greiner, Springer,1998.** **3. Classical Electromagnetic Theory, J. Vanderlinde,2nd Edition,Springer,2005**
المصادر الخارجية	

تقديرات الفصل	الفصل الدراسي	المختبر	الامتحانات اليومية	المشروع	الامتحان النهائي
	%25	–	%5	–	%70
معلومات إضافية					

جمهورية العراق

وزارة التعليم العالي والبحث العلمي

جهاز الاشراف والتقويم العلمي

الجامعة : المثنى
الكلية : العلوم
اسم القسـم : الفيزياء
المرحلة :ماجستير فيزياء
اسم المحاضر الثلاثي :د. هادي قاسم محمد
اللقب العلمي : أستاذ مساعد
المؤهل العلمي : دكتوراه
مكان العمل : كلية العلوم

استمارة الخطة التدريسية للفصل الدراسي الثاني

الأسبوع	التاريخ	المادة النظرية	المادة العلمية	الملاحظات
1	2019/2/17 – 2019/2/23	Cartesian coordinates systems Change of axis (Rotation Matrices) . Field and differential operators		
2	2019/2/24 – 2019/3/2	Derivative and integration operators Cylindrical and spherical coordinates . Divergence theorem . Stoke theorem .		
3	2019/3/3 – 2019/3/9	Coulomb's law . Gauss's law . Poisson's equation . Solution of Laplace's equation in : Cylindrical coordinates . Spherical coordinate . Rectangular coordinate .		
4	2019/3/10 – 2019/3/16	Potential and electric field outside a dielectric medium (polarization) . Electric field inside a dielectric		
5	2019/3/17 – 2019/3/23	Gauss's law in dielectric (electric displacement) . Properties of dielectric . Poisson's and Laplace's equation in dielectric . Dielectric sphere in uniform field . Microscopic theory of the dielectric		
6	2019/3/24 – 2019/3/30	The energy in electric field . The energy in dielectric . Electric Current density . Equation of		

		continuity . Ohm’s law . Steady current in a conductor . Biot and Savart law . Force on a current element in magnetic flux B . Ampere’s law . Faraday’s law in induction . Inductance . The LCR circuit .		
		Boundary condition of field vector . Microscopic theory of magnetic properties of matter . Magnetic energy and energy density . Maxwell equation . Maxwell equation and their application .	**– 2019/3/31 2019/4/6**	**7**
		Time Varying Fields and Maxwell's equations Faraday's Law Concepts of Displacement Current	**– 2019/4/7 2019/4/13**	**8**
		General Field Relations for Time Varying Electric and Magnetic Fields Maxwell's equations for Free Space Maxwell's equations for Good Conductor Maxwell's equations for Harmonically Varying Fields	**– 2019/4/14 2019/4/20**	**9**
		Boundary Conditions for Time Varying Fields Retarded Potentials Uniform Plane Waves General Wave Equations Uniform Plane Waves in Free Space	**– 2019/4/21 2019/4/27**	**10**
		Uniform Plane Waves in Perfect Dielectric Uniform Plane Waves in Lossy Dielectric Uniform Plane Waves in Good Conductor	**– 2019/4/28 2019/5/4**	**11**
		Poynting Vector and Poynting Theorem Integral and Point Forms of Poynting Theorem	**– 2019/5/5 2019/5/11**	**12**
		Power Flow in a Concentric Cable Reflection of Uniform Plane Waves Normal Incidence at Plane Dielectric	**– 2019/5/12 2019/5/18**	**13**
		Boundary Normal Incidence at Plane Conducting Boundary Oblique Incidence	**– 2019/5/19 2019/5/25**	**14**
		Oblique Incidence at Plane Conducting Boundary Oblique Incidence at Plane Dielectric Boundary	**2019/5/26**	**15**

توقيع الأستاذ :أ.م.د. هادي قاسم محمد
أ.م. د. حسن مكطوف جبر

توقيع رئيس القسم : أ.م. علي سلمان علي