مختصر توصيف المقرر

معلومات المقرر* **(Course Information)**

اسم المقرر:	أسس الرياضيات
رقم المقرر:	ريض 131
اسم ورقم المتطلب السابق:	--
اسم ورقم المتطلب المرافق:	--
مستوى المقرر:	الأول
الساعات المعتمدة:	3 (3+0+0)

Module Title:	Mathematics Basis
Module ID:	MTH 131
Prerequisite:	--
Co-requisite:	--
Course Level:	First
Credit Hours:	3 (3+0+0)

وصف المقرر : **Module Description**

Review on common number sets ($\mathbb{N}, \mathbb{Z}, \mathbb{Q}, \mathbb{R}, \mathbb{C}$)- Equations of the first and second degree. Application to solve Inequalities and equations of degree great than 3- Mathematical Logic- Proof Methods, Mathematical Induction- Functions and their properties- Sets and their properties- Relations and their properties- Equivalence relation- Binary operations- Polynomials on the set of real numbers - Partial fractions

أهداف المقرر : **Module Aims**

1	To make a check up on the common number sets with a particular attention to the complex numbers	1
2	Solve equations and apply them to study the sign of a polynomial with respect to the values of the variable. Learn the principal techniques to solve an equation of degree great than 3	2
3	Studying Introduction to Mathematical Logic	3
4	Study the different Methods of proofs (contraposition, contradiction, case by case direct and Induction methods)	4
5	Introduce the principal concepts of Set theory	5
6	Binary operations	6
7	Equivalence Relations and construct for a given equivalence relation its equivalence Classes	7
8	Mappings are introduced and their principal properties are defined and many examples are also introduced. (images and inverse images of a sets under mappings	8
9	Countable and finite sets	9

10	Studying the concepts of Binary operations-homeomorphisms	10
11	The set of polynomial can be introduced without talking about the ring of polynomials.	11
12	Many calculus can be performed for partial fractions	12

Learning Outcomes: **مخرجات التعليم:**

1	**The student should to be able to:** - Perform calculus on a given number set. - Solve equations of degree 2 in $\mathbb{R}$ and $\mathbb{C}$. Apply his skills to study the sign of a polynomial with real variable. - Recognize when does a composed assertion is true or false. - Use the adequate Methods to prove a statement. - Determine the union, the intersection of two sets, the complement of Set the power set and the Cartesian product. - Show that an operation is binary and deduce its properties. - Show the a relation is an Equivalence Relations and determine explicitly the equivalence classes. - Determine the principal properties of a Mapping and perform all its parameters as the direct images and inverse images of a sets under mapping. - Countable and finite sets. - Perform all the calculus on Polynomials with real coefficients. - Add, multiply Partial fractions. Reduce some elementary partial fractions to simple forms.	1

Course Contents: **محتوى المقرر:**

ساعات التدريس (Hours)	عدد الأسابيع (Weeks)	قائمة الموضوعات (Subjects)
3	1	المجموعات العددية، الأعداد المركبة، كتابات المختلفة للأعداد المركبة
3	1	المعادلات، دراسة إشارة كثيرة حدود، المعادلات من الدرجة الثالثة
6	2	المنطق الرياضي
3	1	طرق البرهان الاستنتاج الرياضي
6	2	الدوال وانواعها واهم الخصائص عليها
3	1	المجموعات وانواعها واهم الخصائص عليها
3	1	العلاقات والعلاقات المتكافئة
3	1	العلاقات المتكافئة
3	1	القوانين الداخلية الثنائية
3	1	حلقة كثيرة الحدود
3	1	حساب على الكسور الجزئية

Textbook and References: **الكتاب المقرر والمراجع المساندة:**

سنة النشر Publishing Year	اسم الناشر Publisher	اسم المؤلف (رئيسي) Author's Name	اسم الكتاب المقرر Textbook title
2012	WCB/Mc Graw-Hill	Kenneth H. Rosen	Discrete Mathematics and Its Applications
سنة النشر Publishing Year	**اسم الناشر Publisher**	**اسم المؤلف (رئيسي) Author's Name**	**اسم المرجع Reference**
2003	Wiley 2003	David S., Foote, Richard M Dummit	Abstract Algebra
1990	McGraw Hill	J. Mathos, R. Campanha	A Book of Abstract Algebra: Second Edition
2012	Mc Graw Hill Second Edition	Rhonda Huetteenmueller	Precalculus Demystified
2006	دار الخريجي للنشر والتوزيع	معروف سمحان وفدوي أبو مريفة	أسس الرياضيات