**دليل الطالب لمساق**

**(رياضيات منفصلة/ BMOB1321)**

**الفصل الدراسي الثاني 2019- 2020**

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| **محاضر المساق** | | |
| **اسم محاضر المساق** | **م. ريهام زياد مقاط** | |
| **للتواصل مع المحاضر** | Meriam.1988@hotmail.com | |
| **مكان وموعد المحاضرة** | | |
| **موعد ومكان المحاضرة** | **شعبة الطالبات**  **الأحد 10:00-11:30**  **الثلاثاء 1:30-3:00**  **شعبة الطلاب**  **الاثنين 8:00-10:00**  **الأربعاء 8:00- 10:00** | |
| **محتوى المساق** | | |
| **وصف المساق** | This course discusses concepts of basic logic, sets, combinational theory. Topics include Boolean algebra; set theory; symbolic logic; predicate logic, objective functions, equivalence relations, graphs, basic counting, proof strategies, set partitions, combinations, trees, summations, and recurrences. | |
| **أهداف المساق** | 1. Discuss definitions and diagram strategies for potential proofs in logical sequential order without mathematical symbols (plain English). 2. Construct mathematical arguments using logical connectives and quantifiers. 3. Verify the correctness of an argument using symbolic logic and truth tables. 4. Construct proofs using direct proof, proof by contradiction, and proof by cases, or mathematical induction. 5. Solve problems using counting techniques and combinatorics. 6. Perform operations on discrete structures such as sets, functions, relations or sequences. 7. Solve problems involving recurrence relations and generating functions. 8. Construct functions and apply counting techniques on sets in the context of discrete probability. 9. Apply algorithms and use definitions to solve problems to proof statements in elementary number theory. | |
| **مخرجات المساق** | 1. Students will express real-life concepts and mathematics using formal logic and vice-versa; manipulate using formal methods of propositional and predicate logic; know set operation analogues. 2. Students will know basic methods of proofs and use certain basic strategies to produce proofs; have a notion of mathematics as an evolving subject. 3. Students will be comfortable with various forms of induction and recursion. 4. Students will understand algorithms and time complexity from a mathematical viewpoint. | |
| **الكتب الدراسية** | | |
| **اسم الكتاب المقرر** | *Kenneth H. Rosen,* **"Discrete Mathematics and its Applications"**, McGraw-Hill, Seventh Edition, 2018 | |
| **مراجع إضافية يمكن الاستعانة بها** | | 1. *William Barnier, Jean B. Chan,* **"Discrete Mathematics: With Applications"**, West Publishing Co., 1989. 2. *Mike Piff,* **"Discrete Mathematics, An Introduction for Software Engineers"**, Cambridge University Press, 1992. 3. *Todd Feil, Joan Krone*, **"Essential Discrete Mathematics"**, Prentice Hall, 2003. |
| **توزيع الدرجات** | | |
| **30 درجة** | أنشطة | |
| **30 درجة** | امتحان نصفي | |
| **40 درجة** | امتحان نهائي | |

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| **الأسبوع** | **اسم الوحدة والمواضيع التي سيتم مناقشتها في المساق خلال الفصل الدراسي** |
| **الأول** | Introduction to Logic |
| **الثاني** | Logic |
| **الثالث** | Proof |
| **الرابع** | Sets, Functions |
| **الخامس** | Algorithms |
| **السادس** | Integers, Matrices |
| **السابع** | Summation, Induction |
| **الثامن** | Recursion+ Counting |
| **التاسع** | **Midterm** |
| **العاشر** | Advanced Counting |
| **الحادي عشر** | Advanced Counting |
| **الثاني عشر** | Relations |
| **الثالث عشر** | Graphs, Trees |
| **الرابع عشر** | **Final Exam** |

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| ملاحظات إضافية للطلبة |
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