وەزارەتی خوێندنی باڵا و توێژینەوەی زانستی

Department of Computer Science

College of Science

University of Cihan Sulaimaniya

Subject	: Mathematics I
Course Book	: 1st Year
Lecturer's name	: Dr. Mohammed Wajid Al-Neama, Lecturer
Academic Year	: 2015/2016

Course Book

1. Course name	Mathematics
2. Lecturer in charge	Mohammed Wajid Al-Neama
3. Department/ College	Computer Science
4. Contact	Email : mwneama@gmail.com
5. Time (in hour) per week	Theory : 3 Practical : -
6. Office hours	All working hours expect teaching hours
7. Course code	
8. Teacher's academic profile	• Full Name : Mohammed Wajid Al-Neama • Sex : Male • Date of Birth : 18 July 1973 • Nationality : Iraqi • Qualifications : • BSc. Mathematics Computing, 1995, Mosul University, IRAQ, with rank (1st) out of (52)students. • M.Sc., Mathematics Computing, 2004, Mosul University, IRAQ, with rank (2nd). • PhD., Mathematics Computing, 2014, Al-Azhar University, Egypt. • • Publications/Citations Data: Type of Publication — Number of Publications Article in International Refereed Journals — 7 Conference Papers — 4 Books — 3 • Research Interests: • Parallel and Distributed Algorithm. • High Performance Computing • Bioinformatics. • Numerical Analysis Methods.
9. Keywords	Mathematics, Calculus, Limits, Derivative and Integral.

10. Course overview:

The course concentrates on areas where mathematics and computing are most relevant to each other, emphasising the bridges between theory and practice. It offers opportunities for potential computer scientists both to develop a deeper understanding of the mathematical foundations of their subject, and to acquire a familiarity with the mathematics of application areas where computers can solve otherwise intractable problems.

The first year of the course are spent acquiring a firm grounding in the core topics from subject; students are then free to choose options from a wide range of Mathematics and Computer Science subjects.

11. Course objective:

-To train the students in mastering the techniques of various branches of Mathematics.
-To motivate the students to apply the technique in their respective major subjects.

12. Student's obligation:

Student should be able to contribute significantly to finish his assignment alone and within a group work. Attending lectures will be compulsory to pass this subject.

13. Forms of teaching:

Contact hours : 3 theoretical weekly. Teaching is via a mixture of lectures and tutorials.

14. Assessment scheme:

The 100 marks will be divided into:
The midterm examination : 25%
A small project   : 5%
Activities   : 5%
Practical Examination   : 5%
Final Examination   : 60%

15. Student learning outcome:

At the end of this course the students will:

1. Understand what is meant by calculus and how to solve problems.
2. Learn how to derivative of a function, derivability implying continuity and geometrical interpretation of a derivative.
3. Learn how to calculate of nth derivatives, some standard results, determination of nth derivative of rational functions.
4. Learn how to evaluate of integral functions.
5. Understand the areas of a region bounded by a curve, x-axis and two ordinates.
6. Learn how to deal with the Assignment Problems.

16. Course Reading List and References:

▪Key references:
   - Finney, R. L. & Thomas , G. B. "Calculus", Published by Narosa Publishing House, 1998.
   - Smith, R.T. & Minton, R.B. "Calculus: Single Variable", McGraw-Hill Co. 2002.

▪Useful references:
   - Thomas G.B. and "Calculus and Analytic Geometry 5th Finney R.L. 1982Ed. Addison Wesley Press.

17. The Topics:	Lecturer's name

Week 1   Introduction: Linear Coordinate System.

Week 2   Absolute value & Inequalities.

Week 3   Distance between two points.

Week 4   Exercises, Functions.

Week 5   Limits & continuity.

Week 6   Limits for trigonometric function + exercises.

Week 7   Differentiation.

Week 8   Increasing & decreasing functions, critical points, max. & min.

Week 9   2nd degree of differentiation.

Week 10   Derivative for trigonometric function.

Week 11   Practice Problems.

Week 12   Integration.

Week 13   Integration for trigonometric function.

Week 14   Practice Problems.

18. Practical Topics (If there is any)	
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19. Examinations:

- Evaluate $\lim\limits_{x \to 0} \left(\dfrac{a^x + b^x + 1}{3} \right)^{\frac{1}{x}}$, where $a, b > 0$.

- If $f(x) = 4\sqrt{x} - \dfrac{3}{\sqrt[3]{x^2}} + \dfrac{5}{x} - \dfrac{7}{x^5}$, then find $f'(x)$.

- If $j(x) = \tan(2x^2 - 3x + 1)$, then find $j'(x)$.

- $\displaystyle\int \dfrac{dx}{\sqrt{(x+a)(x+b)}}$,

20. Extra notes:

21. Peer review
     Dr. Lway Faisl,
     Head of the Department .