

SORAN UNIVERSITY
FACULTY OF EDUCATION
BASIC EDUCATION SCHOOL
DEPARTMENT OF GENERAL SCIENCES



SUBJECT OUTLINE
2014-2015

| | |
|-----------------------|--|
| Subject title: | |
| Credit hours: 4 | |
| Units: 8 | |

| | |
|------------------------------------|--------------------|
| Stage | Third stage |
| Class schedule: Monday , Wednesday | |
| Duration: for each day two hours | |

| | |
|-------------------------------------|---------------------------|
| Course coordinator | Assistant Lecturer |
| E. mail: shahab.saleh@ soran.edu.iq | |
| Lecturer: shahab m.s. saleh | |
| E. mail | |

1. Subject Description:

Subject: [calculus](#)

2. Require Background or Experience

Recalculus, foundation of mathematics, finite mathematics

3. Subject Objective (Practical organic chemistry)

A. Knowledge and understanding:

In this course we review the basic concepts of functions, polynomial functions, rational functions, trigonometric functions, logarithmic functions, exponential functions, hyperbolic functions, algebra of functions, composition of functions and inverses of functions. Then limits, derivatives and integrals and their application are studied.

4. Text book(s) and Readings:

Calculus, thomas ,version 10

5. Student Materials:

1. calculus book
2. Textbook and References
3. Lecture Note

6. Collage Facilities

1. data show
2. Access to internet

7. Subject Outline

| | |
|---------|---|
| Week1 | Real number, rules for inequalities |
| Week2 | intervals, domain and range |
| Week3 | lines, slope, increments and straight lines |
| Week4 | function and their graphs |
| Week5 | combining function, shifting and scaling graphs |
| Week6 | trigonometric function |
| | First Exam |
| Week7 | limits of function |
| Week 8 | the precise definition of a limit |
| Week9 | one-sided limits and limits at infinity |
| Week10 | finite limits as $x \longrightarrow \infty$ |
| Week 11 | limit of rational fun. |
| Week12 | continuity |

| | Second Exam |
|---------|---|
| Week13 | differentiation |
| Week14 | differentiation rules |
| Week15 | derivatives of the trigonometric function |
| Week16 | the chain rule |
| Week17 | implicit derivatives |
| Week18 | derivatives of the logarithmic function |
| | Third Exam |
| Week19 | derivatives of the exponential function |
| Week20 | application of derivatives |
| Week21 | integral and integral formulas |
| Week22 | indefinite integral |
| Week23 | definite integral |
| Week24 | Integral techniques |
| Week25 | Integral techniques |
| Week26 | application of integral |
| Week 27 | application of integral |

8. Instructional Methods:

- a. Lecture / Discussion sessions
- b. Questions and Answers
- c. Homework's and Readings
- d. Quizzes

9. Evaluation of Outcomes

Evaluation will be based on the following:

| | |
|----------------------|------|
| 1 st Exam | 100% |
| 2 nd Exam | 100% |
| 3 rd Exam | 100% |

| | |
|-------|------|
| Total | 100% |
|-------|------|

Total marks are : 40

10. Final Exam Data:

Pointed by the examination committee

Sample of Questions and Answers.

Some typical question and answers:

- Sample of question and answer:

A- 1-Which of this function is one-to-one?

$$y = \frac{5x-1}{|x|}$$

$$y = \sqrt{x^2 - 4}$$

Answer:

B- 3-Find domain and range of this function ?

a) $f(x) = |x| + \sqrt{2x}$

b) $f(x) = \frac{4x-2}{x-5}$

Answer:

C-7- Evaluate:

$$\int 3xe^{x^2} dx$$

$$\int_2^{-1} (2x-3)^2 dx$$

$f(x) = \ln(\sin 3x)$ $f' = ?$

$f(x) = \frac{2x-5}{x^2}$ $f' = ?$

Answer:

D-5-Solve the following inequalities and show their intervals?

$$|x - 3| + |x + 2| < 11$$

$$|5x - 4| > \frac{3}{5}$$

Answer:

E- 4-Prove this equation?

$$\frac{1+\sin \alpha}{\sqrt{1-\sin^2 \alpha}} \times \cot \alpha = 1 + \cos \alpha$$

Answer:

