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| Business Mathematics – 6 ECTS |
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Instructors: Faton Berisha
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Location:

Times:

Department: Business Administration, Bachelor Studies

Required Materials

- F. M. Berisha, M. Q. Berisha, *Matematikë për biznes dhe ekonomiks*, Prishtinë, 2006.
- L. D. Hoffmann, G. L. Bradley, *Calculus - for business economics, and the social and life sciences*, Mc Graw Hill, 2000.

Materials for additional reading

- R. J. Harshbarger, J. J. Reynolds, *Mathematical applications – for the managements, life, and social sciences*, Houghton Mifflin, 2000.

- H. Hughes-Hallett, et al., *Applied calculus*, John Wiley & Sons, 2003.
- T. Mitre, B. Ruseti, O. Stringa *Matematika I për Fakultetin Ekonomik*, Tiranë, 1990.
- J. Slater, R. Ponticelli, *Business mathematics for college*, Irwin, 1997.
- F. Rizvanolli, M. Dema, *Matematika për ekonomistët*, Prishtinë, 1995.
- D. Janev, M. Mitsevska, M. Stojanovski, K. Naumov, *Primeneta matematika: biznes i ekonomija*, Shkup, 1998.
- A. Ahmeti, *Matematika për ekonomistë*, Prishtinë, 2003.

Course Description

The course introduces the notions of functions and differentiation.

Teaching delivery will be by two lectures and two exercises per week in small groups of students.

Lectures will be supported by detailed handouts. Concepts learned during the course of Mathematics will be heavily used. When appropriate, computer applications using a symbolic computation and a spreadsheet software will be demonstrated to the students.

Student will be encouraged to active contributions in discussing and solving problems and exercises, which will be presented to them on regular basis.

Course Objectives

By the end of the course, students should be able to:

- Prove that they possess knowledge about dependencies between the quantities used in business and economics and simple mathematical models.
- Identify the relation between differential calculus and functions of business and economics.

- Apply these relations for studying dependencies between the quantities in business and economics.
- Apply differential calculus for solving different problems involving business or economics applications.

Evaluation Policy

Each student will be evaluated at the end of the semester according to the total number of points accumulated from: exams, homework and participation into the classroom activities. The assignments will be designed to measure the students knowledge of the module content and their abilities to apply the knowledge in solving application problems.

The percentage achieved by a student will be used to calculate the students final course grade as described in the table below.

| Grade Scale | Grade Description | Grade Points | Letters |
|-------------|-------------------|--------------|---------|
| 95%–100% | Magnificent | 10 | A |
| 86%–94% | Excellent | 9 | A– |
| 77%–85% | Very Good | 8 | B |
| 68%–76% | Good | 7 | C |
| 60%–67% | Satisfactory | 6 | D |
| 59%–below | Failing | 5 | F |

Evaluation

Assignments given to the students will be graded by the following scheme.

| Assignment | Num. Points |
|---------------|-------------|
| Pop-up quiz | 10 |
| Midterm exam | 30 |
| Homework | 10 |
| Final exam | 40 |
| Participation | 10 |

Attendance Policy

Attendance is compulsory.

Academic Integrity

Cheating, in all of its forms, is strictly forbidden. The penalty for academic dishonesty is failing the student in the module.

Course Content

| Week | Topics | References |
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| Week 1 | Functions. Notion. Properties. | <ol style="list-style-type: none">1. Section 4.1 in F. M. Berisha, M. Q. Berisha, <i>Matematikë për biznes dhe ekonomiks</i>,2. L. D. Hoffmann, and others, <i>Calculus - for business, economics, ...</i> |
| Week 2 | The graph of a function. | <ol style="list-style-type: none">1. Section 4.2 in F. M. Berisha, M. Q. Berisha, <i>Matematikë për biznes dhe ekonomiks</i>,2. L. D. Hoffmann, and others, <i>Calculus - for business, economics, ...</i> |

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| Week 3 | Linear function. | <ol style="list-style-type: none"> 1. Section 4.3 in F. M. Berisha, M. Q. Berisha, <i>Matematikë për biznes dhe ekonomiks</i>, 2. L. D. Hoffmann, and others, <i>Calculus - for business, economics, ...</i> |
| Week 4 | Functional models. | <ol style="list-style-type: none"> 1. Section 4.4 in F. M. Berisha, M. Q. Berisha, <i>Matematikë për biznes dhe ekonomiks</i>, 2. L. D. Hoffmann, and others, <i>Calculus - for business, economics, ...</i> |
| Week 5 | Limits. Continuity. | <ol style="list-style-type: none"> 1. Section 4.5 in F. M. Berisha, M. Q. Berisha, <i>Matematikë për biznes dhe ekonomiks</i>, 2. L. D. Hoffmann, and others, <i>Calculus - for business, economics, ...</i> |

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| Week 6 | Applications in business and economics. Midterm exam. | <ol style="list-style-type: none"> 1. Section 4.6 in F. M. Berisha, M. Q. Berisha, <i>Matematikë për biznes dhe ekonomiks</i>, 2. L. D. Hoffmann, and others, <i>Calculus - for business, economics, ...</i> |
| Week 7 | Differential calculus. The derivative: Slope and rates. | <ol style="list-style-type: none"> 1. Section 5.1 in F. M. Berisha, M. Q. Berisha, <i>Matematikë për biznes dhe ekonomiks</i>, 2. L. D. Hoffmann, and others, <i>Calculus - for business, economics, ...</i> |
| Week 8 | Techniques of differentiation. | <ol style="list-style-type: none"> 1. Section 5.2 in F. M. Berisha, M. Q. Berisha, <i>Matematikë për biznes dhe ekonomiks</i>, 2. L. D. Hoffmann, and others, <i>Calculus - for business, economics, ...</i> |

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| Week 9 | The product and quotient rules. | <ol style="list-style-type: none"> 1. Section 5.3 in F. M. Berisha, M. Q. Berisha, <i>Matematikë për biznes dhe ekonomiks</i>, 2. L. D. Hoffmann, and others, <i>Calculus - for business, economics, ...</i> |
| Week 10 | Marginal analysis: approximation by increments. | <ol style="list-style-type: none"> 1. Section 5.4 in F. M. Berisha, M. Q. Berisha, <i>Matematikë për biznes dhe ekonomiks</i>, 2. L. D. Hoffmann, and others, <i>Calculus - for business, economics, ...</i> |
| Week 11 | The chain rule. | <ol style="list-style-type: none"> 1. Section 5.5 in F. M. Berisha, M. Q. Berisha, <i>Matematikë për biznes dhe ekonomiks</i>, 2. L. D. Hoffmann, and others, <i>Calculus - for business, economics, ...</i> |

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| Week 12 | The second derivative. | <ol style="list-style-type: none"> 1. Section 5.5 in F. M. Berisha, M. Q. Berisha, <i>Matematikë për biznes dhe ekonomiks</i>, 2. L. D. Hoffmann, and others, <i>Calculus - for business, economics, ...</i> |
| Week 13 | Increasing and decreasing functions. | <ol style="list-style-type: none"> 1. Section 5.6 in F. M. Berisha, M. Q. Berisha, <i>Matematikë për biznes dhe ekonomiks</i>, 2. L. D. Hoffmann, and others, <i>Calculus - for business, economics, ...</i> |
| Week 14 | Concavity. | <ol style="list-style-type: none"> 1. Section 5.7 in F. M. Berisha, M. Q. Berisha, <i>Matematikë për biznes dhe ekonomiks</i>, 2. L. D. Hoffmann, and others, <i>Calculus - for business, economics, ...</i> |

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| Week 15 | The study of a function in its entirety. Applications in business and economics | <ol style="list-style-type: none"> 1. Section 5.8 in F. M. Berisha, M. Q. Berisha, <i>Matematikë për biznes dhe ekonomiks</i>, 2. L. D. Hoffmann, and others, <i>Calculus - for business, economics, ...</i> |
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