2024

Mathematics01

" Realized within the frame of the E-learning teacher training program "Mentouri Brothers University - Constantine".

Bahia Ghenaiet/Karima Abdelmalek

Light version adapted to the canvas proposed by the University of Souk ahras.

Specialty 1 st year license economics sciences

01/01/2024

Contents

I. Course informations

University: Messaadia M^{de} Cherif Souk ahras

Faculty: Economics sciences, commerce and management.

Target group: 1st year bachelor degree specialty: Economics, commerce and management sciences.

Course title: Mathematics01

Credit: 04

Coefficient: 02

Duration: 14 weeks

Schedule:

Course: Sunday: 13h15 - 14h45, Amphi: 14 (section01).
15h00 - 16h30, Amphi: 13 (section02).

TD: (Section 01) Sunday: 11h30 - 13h00, Salle: 11, 15h00-16h30, Salle: 15.
Monday: 11h30 - 13h00, Salle: 07, 13h15-14h45, Salle: 11,
15h00 - 16h30, Salle: 07.
(Section 02) Sunday: 11h30 - 13h00, Salle: 13, 13h15-14h45, Salle: 11.
Monday: 11h30 - 13h00, Salle: 08, 13h15-14h45, Salle: 12,
15h00 - 16h30, Salle: 13.

Teacher:

Course and TD: Dr. Karima Abdelmalek. (Section01)
Dr. Bahia Ghenaiet. (Section02)
Contact: by mail *k.abdelmalek@univ-soukahras.dz*

b.ghenaiet@univ-soukahras.dz

Availability:

In the office: Monday 09h-11 :30h

Answer on the forum: any question related to the course must be posted on the dedicated forum so that you can all benefit from my answer. I undertake to reply to posted questions within 48 hours.

By mail: I undertake to reply by e-mail within 48 hours of receipt of the message, except in the case of unforeseen circumstances. Please note that the preferred channel of communication is the forum; e-mail is reserved for "emergencies" (in the event of a problem accessing the platform) and should be used with discretion.

II. Course presentation

Mathematics plays a vital role in many fields one of them is economics. Economists use mathematical tools and graphical analyses a lot to develop, explain their theories and understand

their work, it is necessary to overcome the initial fear of mathematical concepts. For example, studying the relationships of buying and selling between economic agents, determining the demand for a product based on price, income, consumer preferences and the effectiveness of marginal behavior in explaining various economic phenomena such as production costs and the increase in utility from consuming one more unit.

III. Content

This course is divided into five chapters: the first chapter present the basic ideas of combinatorial analysis, the second chapter is devoted to the study of numerical sequences and their use in economics, the third one serves as a reminder of the most important concepts in functions, particularly the exponential and logarithmic functions, which are essential in financial mathematics. The last two chapters present derivative and integration respectively, these two powerful mathematical tools that used in economics.

The **figure 1** is a concept map showing the content of each chapter in greater detail.

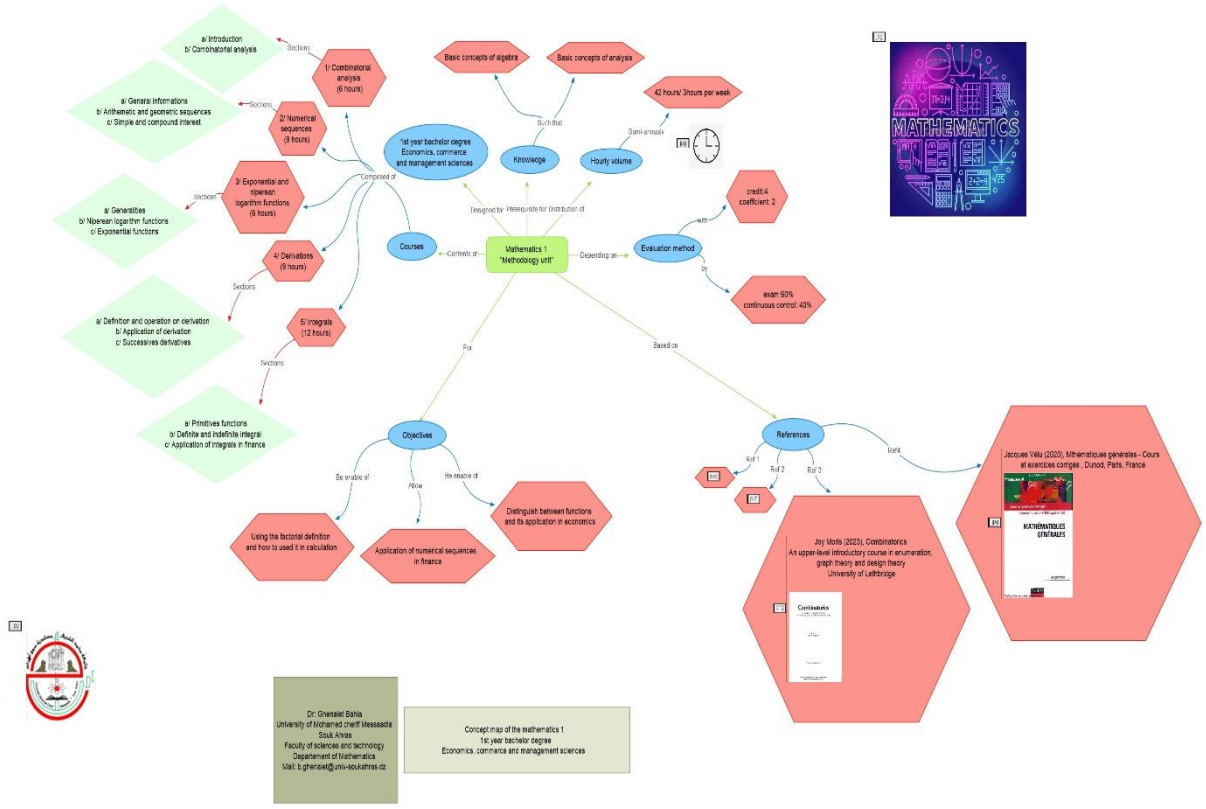

Figure01 : Course concept map

IV. Prerequisite

This course is designed primarily for students of 1 st year bachelor degree, economics,

commerce and management sciences. To ensure that you follow this course correctly, you need to know:

- The basic concepts of algebra.
- The fundamental principles of analysis.

To test your knowledge, a test is available on the distance learning platform: http://elearning.univ-soukahras.dz

"Use the username and password provided by your teacher to log in, then click on the "My courses" block and choose Mathematics01 course".

The test is available from the first week onwards and is open-ended, so you can retake it at any time. If your score is insufficient, you will be directed to a self-study course to be taken at your own pace and progress. This course is on the same distance learning platform, and you can access it by following the instructions below:
1. In the navigation block, click on "My courses";
2. Click on the "Mathematics01 _ Prerequisite test" course to access it.

V. Place of the course in the program (optional)

Teaching unit: Methodology;

Code: TUM 11;

Credits: 4;

Coefficients: 2.

VI. Learning objectives

The overall competence by this course is that "the student be able to apply mathematics to improve their ability to read and understand economic texts, to use it in various administrative, financial and economic fields, as well as in other modules related to the specialization and to interpret data and economic research".

The mathematics01 course aims to:

- Apply combinatorial analysis to solve economic problems by defining factorials and using them in calculations.
- Using the implications of interest types on personal financial decisions, such that savings, loans, and credit card debt.
- Distinguish between functions and its applications in economics.

VII. Learning assessment methods

Final evaluation is done through:

- A table-top final exam covering everything you've seen in the course during the semester, which accounts for 60% of the final grade.
- Continuous and regular assessment, which accounts for the remaining 40% and enables you to earn points throughout the semester. This continuous assessment is carried out in a variety of ways:
  - 25% Note of home work
  - 35% Attendance and participation.
  - 40% Mini exam

The aim of this distribution is to encourage regular work during the semester in order to acquire the module.

A final grade of 10 or higher is required to pass this course.

VIII. Teaching and learning activities

To help you understand the various mathematics concepts covered in this course, we offer a number of in person and distance learning activities.

In person

- In a lecture, note-taking is very important, as it helps you to master the various concepts that are essential for carrying out learning activities.
- During the session, everyone is invited to take part in debates, which are generally initiated by your questions, with the aim of developing exchanges of ideas between you.
- Tutorials are scheduled at the end of each chapter so that you can consolidate and deepen your understanding of the learning in progress.

Distance learning

- A SCORM version of the course is offered to help you organize your note-taking in the classroom, and a number of activities are inserted after each teaching sequence to help you assimilate the various concepts encountered in the course.
- To help you organize what you've been taught and identify any gaps, you are invited to take the quizzes offered in a variety of formats (MCQs, MCQs, etc.).

IX. Pedagogical alignment

The organization and planning of a course is based on fundamental teaching activities such as knowing, knowing how to do and knowing how to be. These main concepts are illustrated in figure 2. In order to achieve these three fundamentals and bring the learner into an intelligible and meaningful learning situation, it is necessary to formalize clear objectives, offer the student a variety of activities adapted to the different learning objectives, and provide assessments in line with the student's learning.

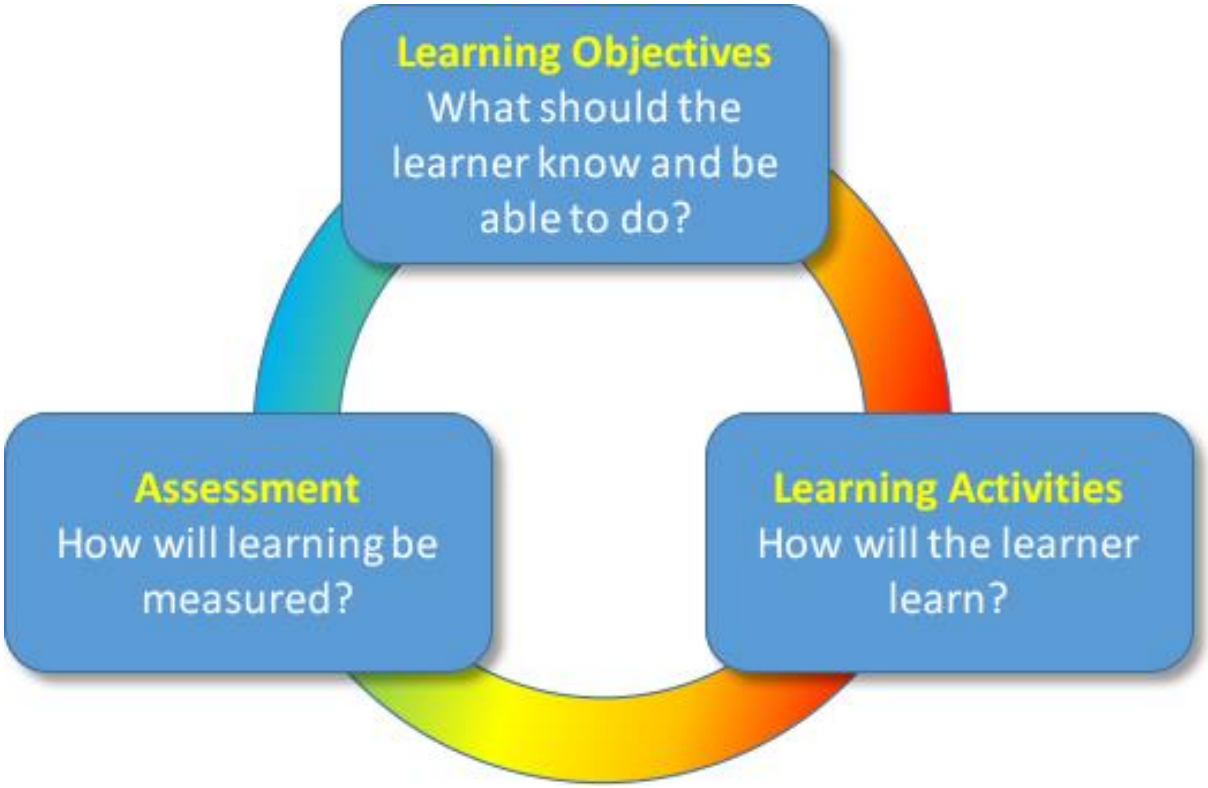

Figure2: The main concepts of pedagogical alignment

X. Operating procedures

The course is organized into:

- Theoretical sessions to provide you with all the knowledge you need.
- Tutorial sessions at the end of each learning unit to help you apply the knowledge you have acquired.

In addition to the in-person classroom sessions, there are also distance learning sessions via the teaching platform, which enable you to deepen your understanding of the concepts you have learned in the classroom.

XI. Support resources

1. A. Asano, An introduction to mathematic for economics, Cambridge University press, 2013.
2. F. Bessière, Maths- L1- cours et TD, Lorraine university, Metz, 2020-2021.
3. F. Dress, Les probabilités et la statistique de A à Z, Dunod, 2005.

4. J. Morris, Combinatorics, University of Lethbridge, Version 2.1.1 of March 2003.
5. J. Morris, Combinatorics An upper-level introductory course in enumeration, graph theory and design theory University of Lethbridge,2023.
6. J. Vélu, Mathématiques générales – Cours et exercices corrigés, Dunod, Paris, France, 2020.
7. K. Sydsaester & P. J. Hammond, Mathematics for economic analysis; Prentice-Hall, 1995.
8. https://www.youtube.com/watch?v=R8PNCh8exkl