

| Course Name : Mathematical Analysis II |                                                          |                                                                                                                                                                                                                                                                     |                      |                      |                   |         |      |
|----------------------------------------|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|-------------------|---------|------|
| Course Code                            | Course Type                                              | Regular Semester                                                                                                                                                                                                                                                    | Lecture (hours/week) | Seminar (hours/week) | Lab. (hours/week) | Credits | ECTS |
| CMP 128                                | B                                                        | Spring                                                                                                                                                                                                                                                              | 3.00                 | 1.00                 | 0.00              | 3.50    | 5.00 |
|                                        |                                                          |                                                                                                                                                                                                                                                                     |                      |                      |                   |         |      |
| Lecturer                               |                                                          | Sofokli Garo, PhD                                                                                                                                                                                                                                                   |                      |                      |                   |         |      |
| Assistant                              |                                                          |                                                                                                                                                                                                                                                                     |                      |                      |                   |         |      |
| Course language                        |                                                          | Albanian                                                                                                                                                                                                                                                            |                      |                      |                   |         |      |
| Course level                           |                                                          | Bachelor                                                                                                                                                                                                                                                            |                      |                      |                   |         |      |
| Description                            |                                                          | This course provides concepts about indefinite and definite integrals and their implementations. An important part of this course is differential computation and solving differential equations. The course concludes with knowledge about series and their kinds. |                      |                      |                   |         |      |
| Objectives                             |                                                          | 1. The deepening of knowledge provided in 1st semester 2. Application in the field of IT                                                                                                                                                                            |                      |                      |                   |         |      |
| Core Concepts                          |                                                          | The fundamental concepts are the following: 1. Indefinite integral 2. Definite integral 3. The differential equation 4. Convergent and divergent series                                                                                                             |                      |                      |                   |         |      |
| Course Outline                         |                                                          |                                                                                                                                                                                                                                                                     |                      |                      |                   |         |      |
| Week                                   | Topic                                                    |                                                                                                                                                                                                                                                                     |                      |                      |                   |         |      |
| 1                                      | Indefinite integral                                      |                                                                                                                                                                                                                                                                     |                      |                      |                   |         |      |
| 2                                      | Fundemental elementary formulas                          |                                                                                                                                                                                                                                                                     |                      |                      |                   |         |      |
| 3                                      | Implementation in exercises and problems                 |                                                                                                                                                                                                                                                                     |                      |                      |                   |         |      |
| 4                                      | Definite integral                                        |                                                                                                                                                                                                                                                                     |                      |                      |                   |         |      |
| 5                                      | Computation of closed surfaces                           |                                                                                                                                                                                                                                                                     |                      |                      |                   |         |      |
| 6                                      | Computation of volumes for solids revolved around x axis |                                                                                                                                                                                                                                                                     |                      |                      |                   |         |      |
| 7                                      | Not proper integrals                                     |                                                                                                                                                                                                                                                                     |                      |                      |                   |         |      |
| 8                                      | Midterm test                                             |                                                                                                                                                                                                                                                                     |                      |                      |                   |         |      |
| 9                                      | Differential equations                                   |                                                                                                                                                                                                                                                                     |                      |                      |                   |         |      |
| 10                                     | Equations with separated variables                       |                                                                                                                                                                                                                                                                     |                      |                      |                   |         |      |
| 11                                     | Differential homogeneous equations                       |                                                                                                                                                                                                                                                                     |                      |                      |                   |         |      |
| 12                                     | The concept of arithmetic and geometric sequence         |                                                                                                                                                                                                                                                                     |                      |                      |                   |         |      |
| 13                                     | The convergent series                                    |                                                                                                                                                                                                                                                                     |                      |                      |                   |         |      |
| 14                                     | Divergent series. Types of divergent series              |                                                                                                                                                                                                                                                                     |                      |                      |                   |         |      |
| 15                                     | Review                                                   |                                                                                                                                                                                                                                                                     |                      |                      |                   |         |      |
| 16                                     | Final Exam                                               |                                                                                                                                                                                                                                                                     |                      |                      |                   |         |      |

|                                                                          |                                                                                                                                                |                         |                      |
|--------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|----------------------|
| <b>Prerequisites</b>                                                     | The student must attend the course at a minimum rate of 75%.                                                                                   |                         |                      |
| <b>Literature</b>                                                        | • Muka. V. Analiza Matematike                                                                                                                  |                         |                      |
| <b>References</b>                                                        | • Howard. V. Calculus. 6th edition                                                                                                             |                         |                      |
| <b>Course Outcome</b>                                                    |                                                                                                                                                |                         |                      |
| <b>1</b>                                                                 | Ne perfundim te kursit studentet do te kene bazen e nevojshme te njohurive matematike per te perballuar konceptet ne kurset profesionale te IT |                         |                      |
| <b>2</b>                                                                 | Ne perfundim te kursit studentet do te kene bazen e nevojshme matematike per te ndjekur disiplina te tjera matematikore.                       |                         |                      |
| <b>Course Evaluation</b>                                                 |                                                                                                                                                |                         |                      |
| <b>In-term Studies</b>                                                   |                                                                                                                                                | <b>Quantity</b>         | <b>Percentage</b>    |
| Midterms                                                                 |                                                                                                                                                | 1                       | 30                   |
| Quizzes                                                                  |                                                                                                                                                | 0                       | 0                    |
| Projects                                                                 |                                                                                                                                                | 0                       | 0                    |
| Term Projects                                                            |                                                                                                                                                | 0                       | 0                    |
| Laboratory                                                               |                                                                                                                                                | 0                       | 0                    |
| Class Participation                                                      |                                                                                                                                                | 1                       | 20                   |
| <b>Total in-term evaluation percent</b>                                  |                                                                                                                                                |                         | <b>50</b>            |
| <b>Final exam percent</b>                                                |                                                                                                                                                |                         | <b>50</b>            |
| <b>Total</b>                                                             |                                                                                                                                                |                         | <b>100</b>           |
| <b>ECTS Workload (Based on Student Workload)</b>                         |                                                                                                                                                |                         |                      |
| <b>Activities</b>                                                        | <b>Quantity</b>                                                                                                                                | <b>Duration (hours)</b> | <b>Total (hours)</b> |
| Course duration (Including the exam week: 16x Total hours of the course) | 16                                                                                                                                             | 4                       | 64                   |
| Study hours outside the classroom (Preparation, Practice, etc.)          | 14                                                                                                                                             | 4                       | 56                   |
| Duties                                                                   | 0                                                                                                                                              | 0                       | 0                    |
| Midterms                                                                 | 1                                                                                                                                              | 0                       | 0                    |
| Final Exam                                                               | 1                                                                                                                                              | 0                       | 0                    |
| Other                                                                    | 18                                                                                                                                             | 0                       | 0                    |
| <b>Total Work Load</b>                                                   |                                                                                                                                                |                         | <b>120</b>           |
| <b>Total Work Load / 25 (hours)</b>                                      |                                                                                                                                                |                         | <b>4.80</b>          |
| <b>ECTS</b>                                                              |                                                                                                                                                |                         | <b>5.00</b>          |