# Course Syllabus

020MAIGS1 Mathematical Techniques for Engineers

1. **Course number and name:** 020MAIGS1 Mathematical Techniques for Engineers
2. **Credits and contact hours:** 2 Credits / 17.5 Hrs
3. **Instructor's or course coordinator's name:** Fadi CHAMMAI
4. **Textbook and other supplemental material:**
   a. Instructor's class notes
5. **Specific course information**
   a. **Catalog description:** The objective of this course is to complete the mathematical knowledge of the engineering student in order to help him better understand the disciplines of specialty.
   b. **Prerequisites:** Analysis
   c. **Required/Elective/Selected Elective:** Required course for all Civil Engineering students.

6. **Specific goals for the course**
   a. **Specific outcomes of instruction:**
   **By the end of the course, the student will:**
      - develop a better approach to complex analysis
      - understand the concept of holomorphic functions
      - be able to perform integrations in the set of complex
      - understand the concept of the residues and apply it in integration problems
      - know about Laplace and Fourier transforms

   b. **KPIs addressed by the course:**

| **KPI** | a1 |
|---|---|
| **Covered** | X |
| **Assessed** | |
| **Give Feedback** | |

7. **Brief list of topics to be covered and approximate number of lectures:**

   1. Review of some basics of Complex Analysis (2 hrs)
   2. Holomorphic functions and integration applications (2 hrs)
   3. Poles, zeros of functions (2 hrs)
   4. Different techniques for finding the residues (4 hrs )
   5. Application of the Theorem of Residues to evaluate integrals (2.5 hrs)
   6. Laplace transform and inverse (3 hrs)
   7. Fourier transform (2 hrs)