**Course Specification**

**(MA 113: Math 2)**

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| --- | --- |
| **University:** | Helwan University |
| **Faculty:** | Faculty of Computers & Information |
| **Department:** | Computer science |

**1. Course Data**

|  |  |
| --- | --- |
| **Code:** | MA 113 |
| **Course title:** | Math 2 |
| **Level:** | 2 |
| **Specialization:** | General |
| **Credit hours:** | 3 hours |
| **Number of learning units (hours):**  | (3) theoretical (2) tutorial |

**2. Course Objective**

Solve ordinary differential equation

Fourier series of a given function

Understand the basic knowledge of the rules of matrix algebra

Solve a system of linear equation

**3. Intended Learning Outcomes:**

1. **A- Knowledge and Understanding**

A3. Describe and model Mathematical and Physical problems numerically.

A4. Apply the basics of Calculus.

1. **Intellectual Skills**

B2. Select appropriate Mathematical method to solve a specific problem.

B3. Develop Analytical Skills.

B8. Gather and assess relevant information, using abstract ideas to interpret it effectively.

1. **Professional and Practical Skills**
2. **General and Transferable Skills**

D9. Follow Logical Thinking in real time problem solving.

D10. Follow Critical and Analytical Thinking.

**4. Course contents**

| **Topics** | **No. of hours** | **Lecture** | **Tutorial/ Practical** |
| --- | --- | --- | --- |
| Indeterminate forms | 3 | 1 | 1 |
| Taylor’s formula and improper integrals | 3 | 1 | 1 |
| Infinite series | 3 | 1 | 1 |
| Fourier series and Fourier integral | 3 | 1 | 1 |
| parametric curves and vectors in the plane | 3 | 1 | 1 |
| Vectors | 3 | 1 | 1 |
| curves and surfaces in space | 3 | 1 | 1 |
| Binomial theorem | 3 | 1 | 1 |
| Partial fractions | 3 | 1 | 1 |
| Partial different ion | 3 | 1 | 1 |

**Mapping contents to ILOs**

|  |  |
| --- | --- |
| Topic | Intended Learning Outcomes (ILOs) |
| Knowledge and understanding | Intellectual Skills | Professional and practical skills | General and Transferable skills |
| Indeterminate forms | A1 |  |  |  |
| Taylor’s formula and improper integrals | A1 | B20 |  |  |
| Infinite series | A1 | B19 |  | D4, D5 |
| Fourier series and Fourier integral | A1 |  |  |  |
| parametric curves and vectors in the plane | A3 |  |  |  |
| Vectors | A1 |  |  | D6, D9 |
| curves and surfaces in space | A27 | B1,B2, B3, B8, B21 | C1, C20 | D3,D4, D10 |
| Binomial theorem | A4 |  |  |  |
| Partial fractions | A4 |  |  |  |
| Partial different ion | A4 |  |  |  |

**5. Teaching and Learning Methods**

**4.1-** Class Lectures

**6. Teaching and Learning Methods for students with limited capability**

 Using data show

 e-learning management tools

**7. Students Evaluation**

**a) Used Methods**

5.1- Problem-solving assignments

**b) Time**

Assessment 1: Sheet 1 Week 4

Assessment 2: Sheet 2 Week 7

Assessment 3: Midterm Exam Week 10

Assessment 5: final written exam Week 15

**c) Grades Distribution**

Reports and presentations 35%

Attendance and Participation 5%

Final-term Examination 60%

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 Total 100%

Any formative only assessments

**List of Books and References**

**a) Notes**

Course Notes

- Handouts

**b) Mandatory Books**

 **Title:** CalculusTextbook

 **Author(s):** Gilbert. Strang

 **Publisher:** SIAM, 2004

 **ISBN:** 0961408820

**c) Suggested Books**

**d) Other publications**

<http://archives.math.utk.edu>

<http://www.scottlan.edu/lriddle/women/>