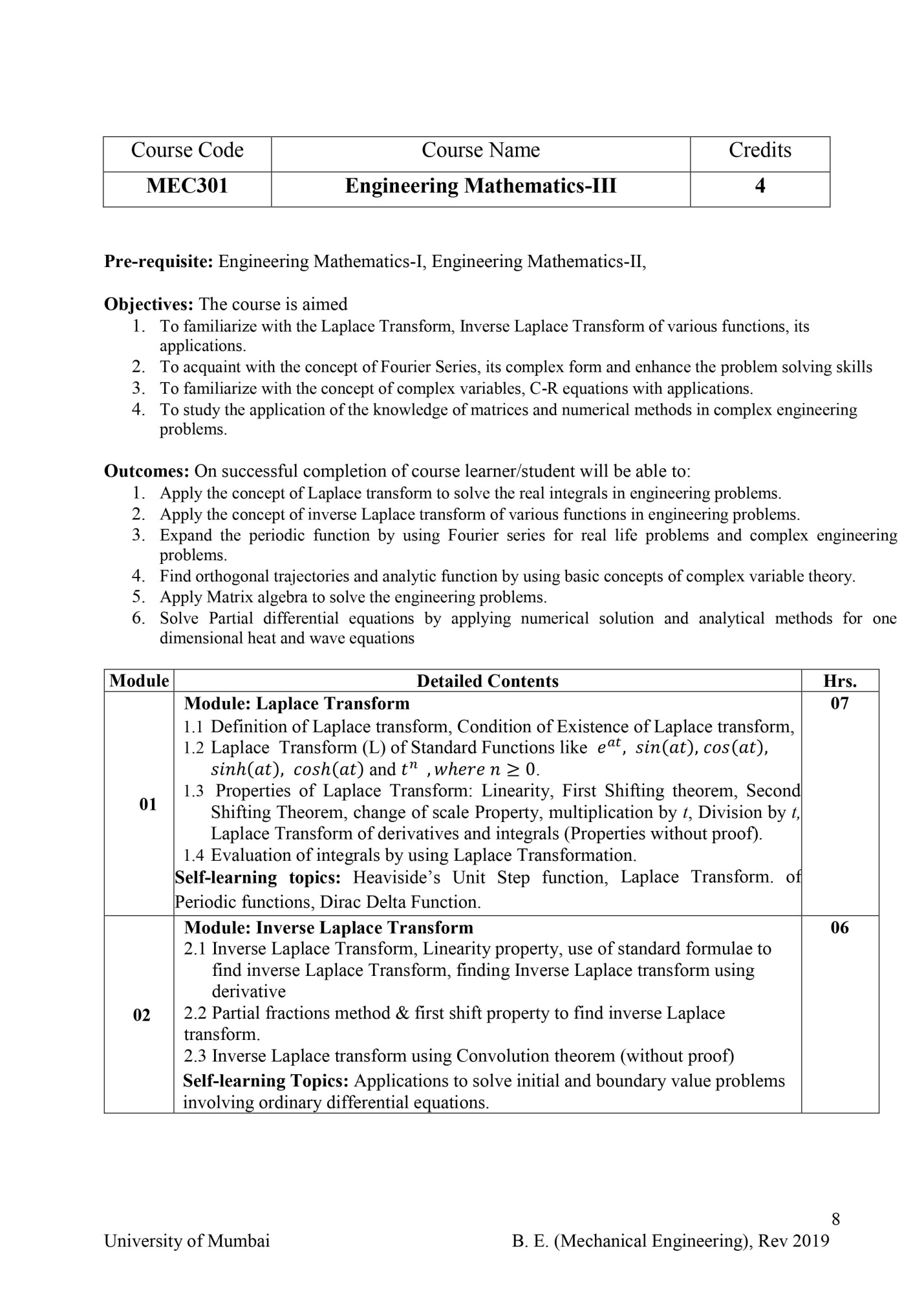
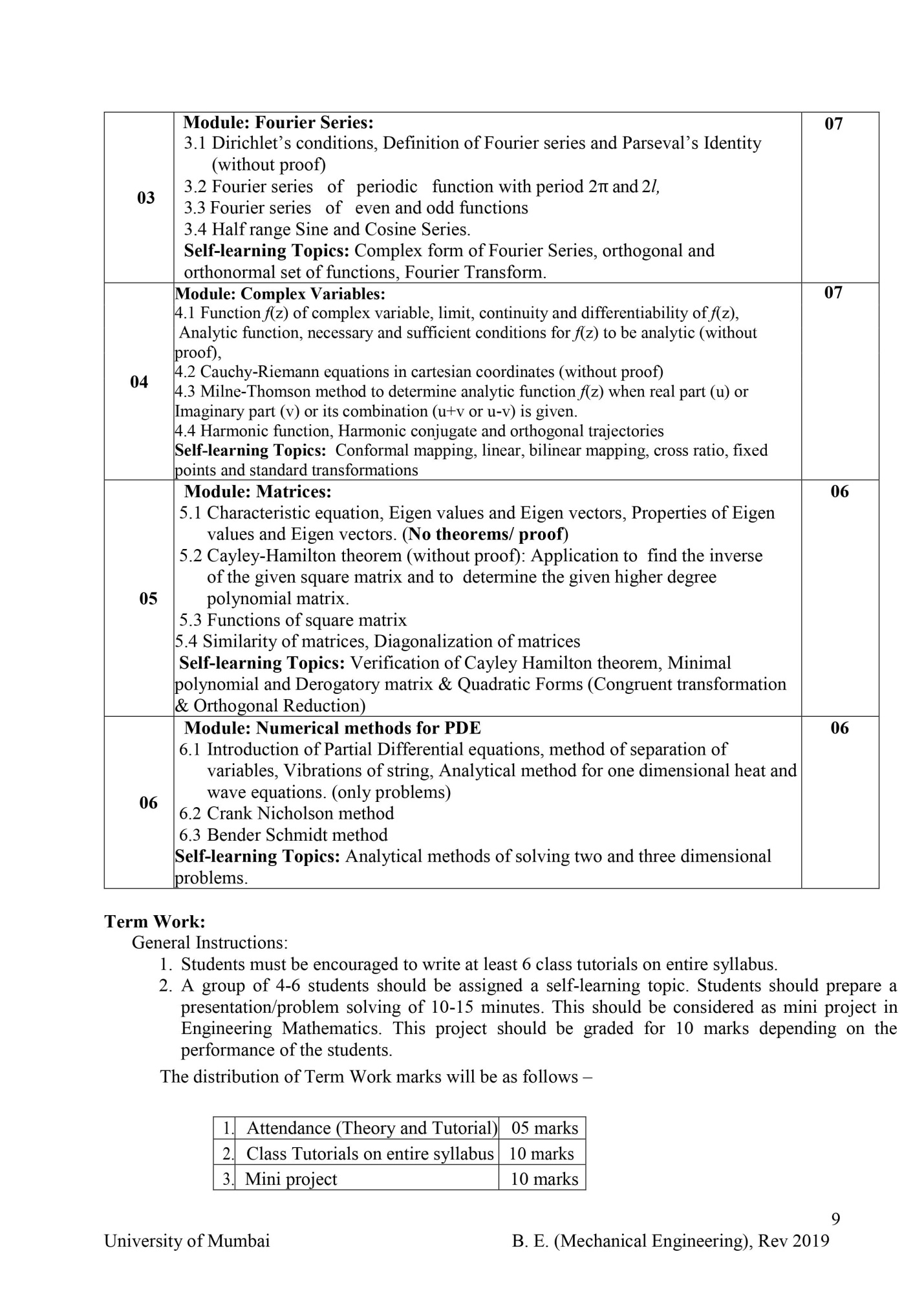
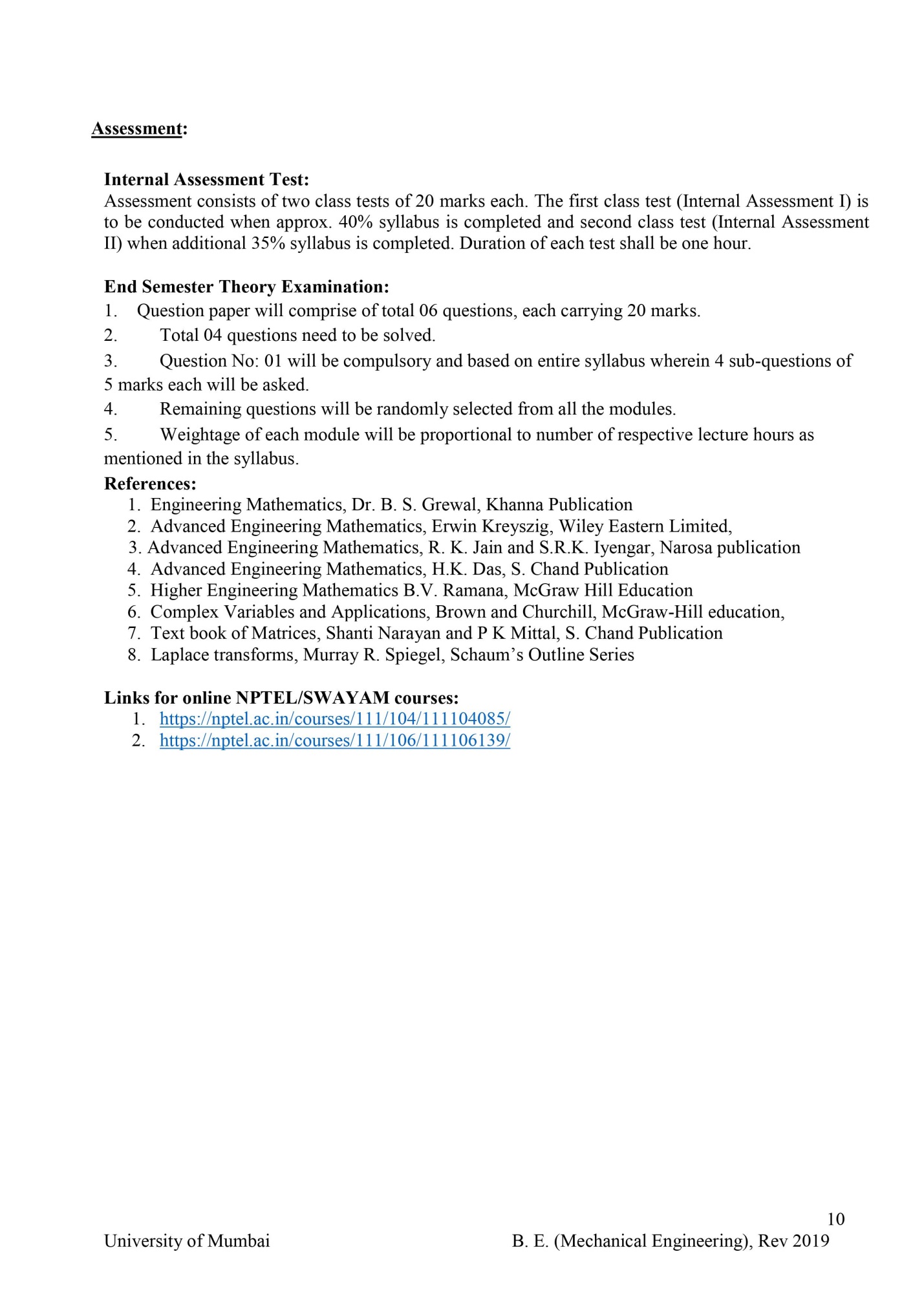
1)Syllabus :





2) LECTURE PLAN:

|  |  |  |  |
| --- | --- | --- | --- |
| **Course & Branch** | **S.E.PRODUCTION/MECHANICAL** | **Current Semester** | **III** |
| **Academic Year** | **2020 – 21 : JULY-DEC : 2020** | **Contact Hours** | **04 hours per week** |
| ***Teacher In-charge: Prof. Sundary S.Prabavathy*** | | | |

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| --- | --- | --- | --- | --- | --- |
| ***Sr. No.*** | ***Name of the Topic*** | ***Planned Date***  ***D/M/Y*** | ***Executed Date***  ***D/M/Y*** | ***Module/Remark*** | |
|
| 1 | Introduction to basic Calculus & other prerequisites | 11/07/2020 | 11/07/2020 | M-1 | |
| 2 | Introduction to Laplace Transform | 15/07/2020 | 15/07/2020 |  | |
| 3 | Definition &formulae for L.T of standard functions | 19/07/2020 | 19/07/2020 |  | |
| 4 | Properties of L.T | 21/07/2020 | 21/07/2020 |  | |
| 5 | Problems on Standard functions &First Shifting | 23/07/2020 | 23/07/2020 |  | |
| 6 | ……………Multiplication by t &powers of t(>0) | 26/07/2020 | 26/07/2020 |  | |
| 7 | ……………Division by t | 28/07/2020 | 28/09/2020 |  | |
| 8 | ……………Change of scale &Second Shifting | 30/07/2020 | 30/07/2020 |  | |
| 9 | Evaluation of real integrals using L.T | 31/07/2020 | 31/07/2020 |  | |
| 10 | Determining unknown constant in integrand using L.T | 01/08/2020 | 01/08/2020 |  | |
| 11 | TUTORIAL 1 : L.T | 03/08/2020 | 03/08/2020 |  | |
| 12 | Inverse L.T: Definition &problems on Standard functions | 04/08/2020 | 04/08/2020 | M-2 | |
| 13 | Problems using Partial Fractions | 05/08/2020 | 05/08/2020 |  | |
| 14 | ………………First Shifting | 07/08/2020 | 07/08/2020 |  | |
| 15 | ……………………………&Partial fractions combined | 10/08/2020 | 10/08/2020 |  | |
| 16 | ……………….Convolution Theorem | 11/08/2020 | 11/08/2020 |  |  |
| 17 | -------------------------------------------continued | 13/08/2020 | 13/08/2020 |  |  |
| 18 | ……………………………..&First Shifting combined | 14/08/2020 | 14/08/2020 |  | |
| 19 | ………………derivatives of F(s) for special cases | 17/08/2020 | 17/08/2020 |  | |
| 20 | TUTORIAL 2 : Inverse L.T | 18/08/2020 | 17/08/2020 | 2pm-3pm | |
| 21 | Fourier Series :Introduction& important formulae | 20/08/2020 | 20/08/2020 | M-3 | |
| 22 | F.S expansion for f(x) defined in (0 , 2pi ) | 21/08/2020 | 21/08/2020 |  | |
| 23 | -----------------------------------------(0 , 2l ) | 22/08/2020 | 22/08/2020 |  | |
| 24 | ----------------------------------------( - pi , pi )odd, even&general | 24/08/2020 | 24/08/2020 | UT 1:27-29 | |
| 25 | ----------------------------------------( - l , l )---------------------- | 31/08/2020 | 31/08/2020 |  | |
| 26 | Half Range Sine series | 01/09/2020 | 01/09/2020 |  | |
| 27 | Half Range Cosine series | 01/09/2020 | 02/09/2020 |  | |
| 28 | TUTORIAL : 3: F.S | 02/09/2020 | 02/09/2020 | 2pm – 3pm | |
| 29 | Complex Variables(Introduction) | 03/09/2020 | 03/09/2020 | M-4 | |
| 30 | Definitions: Analytic, Harmonic, Regular function ,theorems | 07/09/2020 | 07/09/2020 |  | |
| 31 | Problems on Constructions of analytic functions :given :u | 08/09/2020 | 08/09/2020 |  | |
| 32 | ………………………………………………….:given :v | 10/09/2020 | 10/09/2020 | Holidays 11-16 | |
| 33 | ……………………………………. :given : u+v | 17/09/2020 | 17/09/2020 |  | |
| 34 | --------------------------------------------------------- :given : u - v | 18/09/2020 | 18/09/2020 |  | |
| 35 | ……….proving f(z) is constant given 2 conditions | 25/09/2020 | 25/09/2020 |  | |
| 36 | ………….finding second order derivatives of given functions | 28/09/2020 | 28/09/2020 |  | |
| 37 | ---------------------harmonic conjugate | 29/09/2020 | 29/09/2020 |  | |
| 38 | --------------------Orthogonal Trajectories | 30/09/2020 | 30/09/2020 |  | |
| 39 | ---------to verify :given function is harmonic or not | 01/10/2020 | 01/10/2020 |  | |
| 40 | TUTORIAL : 4 :C.V | 03/10/2020 | 03/10/2020 |  | |
| 41 | Matrices:: Definitions: Characteristic equation ,roots &vectors | 05/10/2020 | 05/10/2020 | M-5 | |
| 42 | Cayley Hamilton Theorem Statement &application 1 (inverse) | 06/10/2020 | 06/10/2020 |  | |
| 43 | C.H.T: Application :Reduction of higher degree polynomial | 08/10/2020 | 08/10/2020 |  | |
| 44 | Problems :Eigen values &properties | 09/10/2020 | 09/10/2020 |  | |
| 45 | Functions of square matrices | 15/10/2020 | 15/10/2020 |  | |
| 46 | Eigen vectors: Definition ,properties &problems | 16/10/2020 | 16/10/2020 |  | |
| 47 | ------------------Problems continued | 19/10/2020 | 19/10/2020 |  | |
| 48 | Similar matrices, Algebraic & Geometric Multiplicity | 20/10/2020 | 20/10/2020 |  | |
| 49 | Diagonalization of matrices :Definitions :Modal matrix | 22/10/2020 | 22/10/2020 |  | |
| 50 | ---------------------------------:Problems | 23/10/2020 | 22/10/2020 |  | |
| 51 | --------------------------------Problems continued | 26/10/2020 | 26/10/2020 |  | |
| 52 | TUTORIAL : 5 : Matrices | 27/10/2020 | 27/10/2020 |  | |
| 53 | Partial Differential Equations :Introduction | 29/10/2020 | 29/10/2020 | M-6 | |
| 54 | Numerical methods :Bender’s for solving P.D.E | 02/11/2020 | 02/11/2020 |  | |
| 55 | …………………...:Nicholson’s ………………… | 03/11/2020 | 03/11/2020 |  | |
| 56 | Analytical method :One dimensional heat equation | 05/11/2020 | 05/11/2020 |  | |
| 57 | …………………..: …………………wave………. | 06/11/2020 | 09/11/2020 |  | |
| 58 | Special problems on heat &wave equations(analytical) | 09/11/2020 | 09/11/2020 |  | |
| 59 | TUTORIAL : 6: P.D.E | 10/11/2020 | 11/11/2020 |  | |
| 60 | Re-tutorials for missed out students | 11/11/2020 | 11/11/2020 | 2 pm-4pm | |
| 61 | Mini Project : Discussion on self- study topics :Modules 1&2 | 19/11/2020 | 19/11/2020 |  | |
| 62 | --------------------------------------------Modules 3&4 | 20/11/2020 | 20/11/2020 |  | |
| 63 | ------------------------------------------- Module 5&6 | 22/11/2020 | 22/11/2020 | UT 2:27-29 | |
| ***Signature : Sundary S.Prabavathy***  ***Date : 22 / 11 / 2020.*** | | | | | |
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3)COURSE OUTCOMES :

Upon completion of this course students will be able to

PEC/MEC 301 1: *evaluate* real integrals using Laplace Transform

PEC/MEC 301.2: *find* the inverse Laplace Transform of given function

(if it exists)

PEC/MEC 301.3: *express* periodic functions in Fourier series

PEC/MEC 301.4: *construct* analytic function &also obtain the orthogonal

Trajectories of the given family of curves

PEC/MEC 301.5: *diagonalize* the given matrix (if diagonalizable)&*apply* Cayley

Hamilton theorem

PEC/MEC 301.6: *solve* one dimensional heat &wave equation

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**4)CO Assessment Tools:**

**PEC/MEC 301.1: Direct Methods (80%):** Test 1+Tutorial 1+ End Exam

**CO1 dm = 0.4 x test 1+0.2 x tutorial 1 + 0.4 x end exam**

**Indirect Methods (20%):** Course Exit Survey (CES)

***CO1 idm =1x CES***

**PEC/MEC 301.1 = (0.8 x CO1 dm) + (0.2 x CO1 idm)**

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**PEC/MEC 301.2: Direct Methods (80%):** Test 1+Tutorial 2+ End Exam

**CO2 dm = 0.4 x test1+0.2 x tutorial 2+0.4 x end exam**

**Indirect Methods (20%):** Course Exit Survey (CES)

***CO2 idm =1x CES***

**PEC/MEC 301.2 = (0.8 x CO2 dm) + (0.2 x CO2 idm)**

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**PEC/MEC 301.3: Direct Methods (80%): Test 2+**Tutorial 3 + End Exam

**CO3 dm = 0.4 x test 2 + 0.2 x tutorial 3+0.4 x end exam**

**Indirect Methods (20%):** Course Exit Survey (CES)

***CO3 idm =1x CES***

**PEC/MEC 301.3 = (0.8 x CO3 dm) + (0.2 x CO3 idm)**

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**PEC/MEC 301.4: Direct Methods (80%): Test 2 +**Tutorial 4+ End Exam

**CO4 dm =0.4 x test 2 + 0.2 x tutorial 4 + 0.4 x end exam**

**Indirect Methods (20%):** Course Exit Survey (CES)

***CO4 idm =1x CES***

**PEC/MEC 301.4 = (0.8 x CO4 dm) + (0.2 x CO4 idm)**

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**PEC/MEC 301.5: Direct Methods (80%):** Tutorial 5+ End Exam

**CO5dm = 0.4 x tutorial 5 + 0.6 x end exam**

**Indirect Methods (20%):** Course Exit Survey (CES)

***CO5 idm =1x CES***

**PEC/MEC 301.5 = (0.8 x CO5 dm) + (0.2x CO5 idm)**

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**PEC/MEC 301.6: Direct Methods (80%):** Tutorial 6 + End Exam

**CO6dm = 0.4 x tutorial 6 + 0.6 x end exam**

**Indirect Methods (20%):** Course Exit Survey (CES)

***CO6 idm =1x CES***

**PEC/MEC 301.6 = (0.8 x CO6 dm) + (0.2 x CO6 idm)**

**5) CO – PO MAPPING :**

|  |  |
| --- | --- |
| **CO** | **PO1** |
| **PEC/MEC301.1** | **2** |
| **PEC/MEC301.2** | **2** |
| **PEC/MEC301.3** | **2** |
| **PEC/MEC301.4** | **2** |
| **PEC/MEC301.5** | **2** |
| **PEC/MEC301.6** | **3** |
| **TOTAL** | 13 |
| **Direct Attainment** | 2.25 (M) |

**Justification:**

**Above CO’s are mapped to the following PO’s as explained below:**PO1: provide the complete basic mathematical knowledge required for

* evaluating real integrals using Laplace Transform
* evaluating inverse Laplace transform of the standard functions.
* expressing periodic functions as Fourier and half-range series.
* constructing analytic functions &obtaining orthogonal trajectories
* diagonalzing matrix
* solving Heat &Wave equations

**6)Course Outcomes Target:**

**PEC/MEC 301.1**

**TARGET RANGE: 2.5**

**PEC/MEC 301.2**

**TARGET RANGE: 2.5**

**PEC/MEC 301.3**.

**TARGET RANGE: 2.5**

**PEC/MEC 301.4**

**TARGET RANGE: 2.5**

**PEC/MEC 301.5**

**TARGET RANGE: 2.5**

**PEC/MEC 301.6**

**TARGET RANGE: 2.5**