University of Mumbai

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges and Directors of the Recognized Institutions in Faculty of Science & Technology is invited to this office circular No. UG/130 of 2016-17 dated 9th November, 2016, relating to the revised syllabus as per Choice Based Credit System for Master of Engineering (Mechanical) Manufacturing System Engineering Sem. I to IV.

You are hereby informed that the recommendations made by the Board of Studies in **Mechanical Engineering** at its meeting held on 31st May, 2022 and subsequently passed in the Faculty and then by the Board of Deans at its meeting held on 5th July, 2022 **vide** item No. 6.51 (R) have been accepted by the Academic Council at its meeting held on 11th July, 2022 **vide** item No. 6.51 (R) and that in accordance therewith, the revised syllabus of **M.E. (Manufacturing System Engineering) (Sem.- I to IV) (CBCS) (REV - 2022 Scheme)**, has been brought into force with effect from the academic year 2022-23. (The circular is available on the University's website www.mu.ac.in).
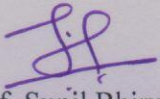
MUMBAI – 400 032
19th November, 2022

(Prof. Sunil Bhirud)
I/c Registrar

To

The Principals of the Affiliated Colleges and Directors of the Recognized Institutions in Faculty of Science & Technology.

A.C/6.51 (R)/11/07/2022

Copy forwarded with Compliments for information to:-

1) The Dean, Faculty of Science & Technology,
2) The Chairman, Board of Studies in Mechanical Engineering,
3) The Director, Board of Examinations and Evaluation,
4) The Director, Board of Students Development,
5) The Director, Department of Information & Communication Technology,
6) The Co-ordinator, MKCL.

Copy to :-

1. The Deputy Registrar, Academic Authorities Meetings and Services (AAMS),
2. The Deputy Registrar, College Affiliations & Development Department (CAD),
3. The Deputy Registrar, (Admissions, Enrolment, Eligibility and Migration Department (AEM),
4. The Deputy Registrar, Research Administration & Promotion Cell (RAPC),
5. The Deputy Registrar, Executive Authorities Section (EA),
6. The Deputy Registrar, PRO, Fort, (Publication Section),
7. The Deputy Registrar, (Special Cell),
8. The Deputy Registrar, Fort/ Vidyanagari Administration Department (FAD) (VAD), Record Section,
9. The Director, Institute of Distance and Open Learning (IDOL Admin), Vidyanagari,

They are requested to treat this as action taken report on the concerned resolution adopted by the Academic Council referred to in the above circular and that on separate Action Taken Report will be sent in this connection.

1. P.A to Hon'ble Vice-Chancellor,
2. P.A Pro-Vice-Chancellor,
3. P.A to Registrar,
4. All Deans of all Faculties,
5. P.A to Finance & Account Officers, (F.& A.O),
6. P.A to Director, Board of Examinations and Evaluation,
7. P.A to Director, Innovation, Incubation and Linkages,
8. P.A to Director, Board of Lifelong Learning and Extension (BLLE),
9. The Director, Dept. of Information and Communication Technology (DICT) (CCF & UCC), Vidyanagari,
10. The Director of Board of Student Development,
11. The Director, Department of Students Walfare (DSD),
12. All Deputy Registrar, Examination House,
13. The Deputy Registrars, Finance & Accounts Section,
14. The Assistant Registrar, Administrative sub-Campus Thane,
15. The Assistant Registrar, School of Engg. & Applied Sciences, Kalyan,
16. The Assistant Registrar, Ratnagiri sub-centre, Ratnagiri,
17. The Assistant Registrar, Constituent Colleges Unit,
18. BUCTU,
19. The Receptionist,
20. The Telephone Operator,
21. The Secretary MUASA

for information.

University of Mumbai

Revised Syllabus for

M.E.

(Manufacturing System Engineering)

Semester – (Ito IV)

(Choice Based Credit System)

(With effect from the academic year 2022-23)

University of Mumbai

O: _____ Title of Course	M.E. (Manufacturing Systems Engineering)
O: _____ Eligibility	Ordinance 0.5134
R: _____ Passing Marks	45%
No. of years/Semesters:	4 semesters
Level:	P.G. / U.G./ Diploma / Certificate
Pattern:	Yearly / Semester
Status:	New / Revised
To be implemented from Academic Year :	With effect from Academic Year : 2022-23

Dr. Vivek Sunnapwar
Chairman
of Board of Studies in Mechanical
Engineering

Dr. Suresh K. Ukarande
Associate Dean,
Faculty of Science and Technology

Dr Anuradha Majumdar
Dean,
Faculty of Science and
Technology

Preamble

Education in engineering is growing in India and is expected to increase by a factor of several in the near future. The current situation presents a significant challenge in terms of ensuring quality to stakeholders while expanding. To face this challenge, the problem of quality must be addressed, debated, and progressed in a methodical manner. Accreditation is the primary form of quality assurance in higher education, and it signifies that the institution or programme of study is committed to meeting certain minimum stated requirements and is available to external assessment in order to get recognition. The main goal of this accrediting procedure is to assess the outcomes of the programme being evaluated. Program outcomes are a collection of skills and information that a student will possess upon completion of the programme. In keeping with this, the University of Mumbai's Faculty of Science and Technology has taken the lead in implementing the principle of outcome-based education into the curriculum building process.

We are pleased to report that the Postgraduate Program Educational Objectives were completed in a brainstorming session attended by more than 20 members from the University's associated institutes. They were either department heads or senior faculty from the Mechanical Engineering Department. The Program Educational Objectives finalized for the postgraduate program in Mechanical Engineering are listed below;

1. To prepare the Learner with a sound foundation in the mathematical, scientific and engineering fundamentals.

2. To prepare the Learner to use modern tools effectively in order to solve real life problems.

3. To prepare the Learner for a successful career in Indian and Multinational Organisations

4. To encourage and motivate the Learner in the art of self-learning.

5. To inculcate a professional and ethical attitude, good leadership qualities and commitment to social responsibilities in the Learner's thought process.

In addition to the aforementioned, linked Institutes may add 2 to 3 additional programme instructional objectives of their own. In addition to Program Educational Objectives, each course in a postgraduate program's curriculum includes objectives and expected outcomes from the perspective of the learner to support the idea of outcome-based education. We are convinced that even a tiny move in the correct manner will go a long way toward ensuring that the main stakeholders receive high-quality education.

<table>
<tr><td>Dr. S. K. Ukarande</td><td>Dr Anuradha Muzumdar</td></tr>
<tr><td>Associate Dean</td><td>Dean</td></tr>
<tr><td>Faculty of Science and Technology</td><td>Faculty of Science and Technology</td></tr>
<tr><td>University of Mumbai</td><td>University of Mumbai</td></tr>
</table>

Preface

To tackle the challenge of assuring engineering education excellence, the problem of quality must be addressed, debated, and progressed in a methodical manner. Accreditation is the primary way of ensuring the quality of higher education. The main goal of the certification procedure is to determine how good a company is. The major emphasis of accreditation process is to measure the outcomes of the program that is being accredited. In line with this, Faculty of Technology of University of Mumbai has taken a lead in incorporating philosophy of outcome-based education in the process of curriculum development.

Faculty of Science and Technology, University of Mumbai, in one of its meetings collectively resolved that, each Board of Studies shall prepare some Program Educational Objectives (PEOs), give freedom to Affiliated Institutes to add few (PEOs), course objectives course outcomes to be clearly defined for each course, so that all faculty members in linked institutes are aware of the depth of approach to the subject to be given, so improving the learning process of students It was also decided that while changing the curriculum, the most senior academics from institutions and industry specialists should be included.

We are happy to state that the Board of studies has adhered to the resolutions passed by Faculty of Technology and developed curriculum accordingly. In addition to outcome-based education, Choice Based Credit System is also introduced to ensure quality of engineering education.

Choice Based Credit and Grading System allows for a much-needed shift in education focus from teacher-centric to learner-centric, since the workload estimate is based on time spent learning rather than teaching. It also emphasises constant evaluation, which will improve educational quality. University of Mumbai has taken a lead in implementing the system through its affiliated Institutes. Faculty of Technology has devised a transparent credit assignment policy, adopting a ten-point scale to grade learner's performance. REV-2022 scheme is implemented for Master of Engineering from the academic year 2022-2023.

We trust this revised version of syllabus come up to the expectations of all stakeholders. We wish to place on record our sincere thanks and appreciations to the various contributors from the academia and industry for their most learned inputs in framing this syllabus.

Board of Studies in Mechanical Engineering

Dr. Vivek K. Sunnapwar   : Chairman
Dr. S. M. Khot   : Member
Dr. V. M. Phalle   : Member
Dr. Siddappa Bhusnoor   : Member
Dr. S.S. Pawar   : Member
Dr. Sanjay U. Bokade   : Member
Dr. Dhanraj Tambuskar   : Member
Dr. V. B. Tungikar   : Member
Dr. K.P. Karunakaran   : Member
Dr. S. S. Thipse   : Member
Dr. Milind Deshmukh   : Member

Semester III

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total
MSEMP301	Major Project: Dissertation -I	--	20	--	--	10	--	10
Total		**00**	**20**	**00**	**00**	**10**	**--**	**10**

Course Code	Course Name	Examination Scheme							
		Theory					Term Work	Pract/ Oral	Total
		Internal Assessment			End Sem. Exam	Exam. Duration (in Hrs)			
		Test-1	Test-2	Avg					
MSEMP301	Major Project: Dissertation -I	--	--	--	--	--	100	--	100
Total		**--**	**--**	**--**	**--**	**--**	**100**	**--**	**100**

Online Credit Courses

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total
MSEOCC301	Online Credit Course - I	--	--	--	--	--	--	3
MSEOCC302	Online Credit Course - II	--	--	--	--	--	--	3
Total		**--**	**--**	**--**	**00**	**00**	**00**	**06**

Note 2: It is mandatory to complete the Online Credit Courses (OCC) available on NPTEL / Swayam /MOOC or similar platform approved by UoM. These two courses shall be completed in any semester I or II or III, but not later end of the Semester III. University shall make a provision that credits earned with OCC- I and OCC-II shall be accounted in the third semester grade-sheet with actual names of courses. The learner shall be allowed to take up these courses from his or her institute or organisation/ industry where his / her major project is carried out. The students shall complete the courses and shall qualify the exam conducted by the respective authorities/ instructor from the platform. The fees for any such courses and the corresponding examination shall be borne by the learner.

Semester IV

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total
MSEMP401	Major Project : Dissertation -II	--	32	--	--	16	--	16
Total		**--**	**32**	**--**	**--**	**16**	**--**	**16**

Course Code	Course Name	Examination Scheme							
		Theory					Term Work	Pract/ Oral	Total
		Internal Assessment			End Sem. Exam	Exam. Duration (in Hrs)			
		Test-1	Test-2	Avg					
MSEMP401	Major Project : Dissertation -II	--	--	--	--	--	100	100	200
Total		**--**	**--**	**--**	**--**	**--**	**100**	**100**	**200**

Total Credits: 68

Note 3: The Dissertation -II submission shall not be permitted till thelearner completes all the requirements ME course.

Note 4: The contact hours for the calculation of load of the teacher for Major Project are as follows:
Major Project Dissertation I and II - 02 Hour / week / student

Course Code	Course Name	Credits
MSEOCC301 & MSEOCC302	**Online Credit Course – I & II**	**03 + 03**

Guidelines for Online Credit Course:

It is mandatory to complete the Online Credit Courses (OCC) available on NPTEL / Swayam /MOOC or similar platform approved by UoM. These two courses shall be completed in any semester I or II or III, but not later end of the Semester III. University shall make a provision that credits earned with OCC- I and OCC-II shall be accounted in the third semester grade-sheet with actual names of courses. The learner shall be allowed to take up these courses from his or her institute or organisation/ industry where his / her major project is carried out. The students shall complete the courses and shall qualify the exam conducted by the respective authorities/ instructor from the platform. The fees for any such courses and the corresponding examination shall be borne by the learner.

Online Credit Course – I
The learner shall opt for the course in the domain of Research Methodology or Research & Publication Ethics or IPR. The opted course shall be of 3 credits of equivalent number of weeks.

Online Credit Course –II
The learner shall opt for the course recommended by Faculty Advisor/ Project Supervisor from the institute. The opted course shall be of 3 credits of equivalent number of weeks.

Course Code	Course Name	Credits
MSEMP301	**Major Project: Dissertation -I**	**10**

Guidelines for Dissertation-I

Students should do literature survey and identify the problem for Dissertation and finalize in consultation with Guide/Supervisor. Students should use multiple literatures and understand the problem. Students should attempt solution to the problem by analytical/simulation/experimental methods. The solution to be validated with proper justification and compile the report in standard format. Guidelines for Assessment of Dissertation-I.

Dissertation-I should be assessed based on following points:
- Quality of Literature survey and Novelty in the problem
- Clarity of Problem definition and Feasibility of problem solution
- Relevance to the specialization
- Clarity of objective and scope Dissertation-I should be assessed through a presentation by a panel of Internal examiners and external examiner appointed by the Head of the Department/Institute of respective Programme.

Course Code	Course Name	Credits
MSEMP401	**Major Project: Dissertation -II**	**16**

Guidelines for Dissertation-II

Dissertation II should be assessed based on following points:
- Quality of Literature survey and Novelty in the problem
- Clarity of Problem definition and Feasibility of problem solution
- Relevance to the specialization or current Research / Industrial trends
- Clarity of objective and scope
- Quality of work attempted or learner contribution
- Validation of results
- Quality of Written and Oral Presentation

Students should publish at least one paper based on the work in referred National/ International conference/Journal of repute.

Dissertation II should be assessed by internal and External Examiners appointed by the University of Mumbai.