DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

CIRCULAR NO. ACAD / NP /S.E./B.E./Syllabi/88/2012

It is hereby notified for the information of all concerned that, the **Academic Council at its meeting held on 06-07-2012** has accepted the **syllabi** in following Branches **of SECOND YEAR ENGINEERING** under the Faculty of Engineering & Technology as appended herewith :-

Sr. No.	Revised Syllabi
[1]	Second Year B.E. [CIVIL ENGINEERING],
[2]	Second Year B.E. [MECHANICAL / PRODUCTION ENGINEERING],
[3]	Second Year B.E. [COMPUTER SCIENCE ENGINEERING & I. T],
[4]	Second Year B.E. [ELECTRICAL ENGINEERING /EEP / EE / EEE],
[5]	Second Year B.E. [BIOTECHNOLOGY],
[6]	Second Year B.E. [INSTRUMENTATION],
[7]	Second Year B.E. [ELECTRONICS [EC / ECT / IE / E & C].

This is effective from the academic year 2012-2013 and onwards.

All concerned are requested to note the contents of this circular for their information and necessary action.

University Campus,
Aurangabad-431 004.
REF.NO. ACAD/ NP/ S.E.B.E./
2012/19033-55
A.C.S.S. I.No.81

Date:- 31-07-2012.

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Director,
Board of College and
University Development.

Copy forwarded with compliments to :-

1] The Principals, affiliated concerned Colleges,
Dr. Babasaheb Ambedkar Marathwada University.

Copy to :-

1] The Controller of Examinations,
2] The Superintendent, [Engineering Unit],
3] The Superintendent, [Eligibility Unit] ,
4] The Record Keeper,
Dr. Babasaheb Ambedkar Marathwada University.

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S/310712/-*

Dr BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD

Revised Structure and Syllabus of Second Year Engineering of

MECHANICAL / PRODUCTION

EFECTIVE FROM - 2012-13 & ONWARDS

RULES AND REGULATIONS

FOR

SECOND YEAR DEGREE COURSE IN ENGINEERING (REVISED)

(Applicable from the Academic Year 2012- 2013)

Note:

1. All the Rules and Regulations, hereinafter specified shall be read as a whole for the purpose of interpretation.

ADMISSION

1. Admission to second year engineering shall be carried out as per the rules and regulations prescribed by the competent authority as appointed by the Government of Maharashtra and Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, from time to time.

DURATION AND COURSES OF STUDY

1. The duration of the course is four years. Each of the four academic years shall be divided into two semesters herein after referred to as the semester I and semester II in chronological order. Each semester shall comprise

   Instructions ..... 15 weeks

   Preparation holiday ..... 2 weeks or 15 days

   (Includes practical exams)

2. Candidate who fails to fulfill all the requirements for the award of the degree as specified hereinafter within eight academic years from the time of admission, will forfeit his/her seat in the course and his/her admission will stand cancelled.

RULES AND REGULATION OF ATTENDANCE

1. Candidates admitted to a particular course of study are required to pursue a "Regular course of study" as prescribed by the University before they are permitted to appear for the University Examination.
2. "A regular course of study" means putting in attendance not less than 75% for individual subject.
3. a) In special cases and for sufficient causes shown, the Principal of the institute may, on the specific recommendation the Head of the Department, condone the deficiency in attendance to the extent of 15 % on medical ground subject to submission of medical certificate.

   b) However, in respect of women candidates who seek condonation of attendance due to pregnancy, the Principal may condone the deficiency in attendance to the extent of 25 % (as against 15 % Condonation for other) on medical grounds subject to submission of medical certificate to this effect. Such condonation be availed twice during the entire course of study leading to degree in Engineering and Technology.

4. "Active Participation in N.C.C/N.S.S. Camps or Inter collegiate or Inter University or Inter State or International matches or debates of Educational Excursions or such other Inter University activities as approved by the authorities involving journeys outside the city in which the college is situated will not be counted as absence. However, such 'absence shall not exceed (4) weeks per semester of the total period of instructions. Such leave should not be availed more than twice during the entire course of study.

5. The attendance shall be calculated on individual papers/subjects from the date of commencement of the semester.

6. In case of the candidates who fail to put in the required attendance in a course of study, he/she shall be detained in the same class and will not be recommended to appear for the University examination.

7. A candidate detained in semester I should take readmission in next academic year as a regular student and shall have to complete all the theory and practicals as a regular student.

8. In case a candidate is detained in semester II, he/she shouldl take admission to Semester II of next academic year and complete all the theory and practicals as a regular student of semester II

9. In case of change of syllabus the candidate even if detained in semester II should take readmission in next academic year for Semester I and II as a regular student and complete all the theory and practicals as a regular studenţ.

SCHEME OF INSTRUCTIONS AND EXAMINATION

1. Instructions about the curriculum in the various subjects in each semester of all the four years shall be provided by the University.

2. The details of instruction period, examination schedule, vacations etc. shall be notified by the Principal of the College as per the University academic calendar

3. The medium of instruction and examination shall be English.

4. At the end of each semester, University examinations shall be held as prescribed in the respective schemes of examination.

5. The examinations prescribed may include written papers, practical and oral, tests, inspection of certified sessional work in Drawing and Laboratories and work done by students in each practical examination, along with other materials prepared or collected as part of Lab work/Project.

6. All the rules for examinations prescribed by the University from time to time shall be adhered to.

7. A candidate shall be deemed to have fully passed the Examination of a semester, if he/she secures not less than the minimum marks/grade as prescribed.

8. Institutions will be encouraged to adopt modern tools in classroom/labs to deliver the course contents.

9. Institutions will be encouraged to conduct online class tests.

O.874

The SecondYear Examination in Engineering will be held in two parts S.E. semester-I and S. E. semester-II. No candidate will be admitted to S.E. semester-I examination unless he/she produce testimonials of having kept one term, for the subject under F.E. semester-I and II satisfactorily in a college of engineering affiliated to this University after passing the First year examination of engineering other examination recognized as equivalent thereto as per the admission rules to second year engineering prescribed by the Government of Maharashtra and Dr. B.A.M.University from time to time.

R.1861

i. In case a candidate fails in one or more heads of passing at the S.E. semester-I Examination after taking that examination at the end of first term as a regular student, he/she will be allowed to appear again for only those heads of passing in which he/she has failed at his/her immediately subsequent semester-I examination.

ii. That the marks obtained by the candidate at semester-I Examination shall be carried forward unless the candidate desires to appear for a paper in which he has failed and then gracing of marks should be done as as a whole for semester-I and semester-II examination taken together.

R.1862

a) Candidates who secure 45% or more but less than 50% marks in the aggregate and pass the examination will be declared to have passed the examination in Pass Division.

b) Candidates who secure 50% or more but less than 60% marks in the aggregate and pass the examination will be declared to have passed the examination in Second Division.

c) Candidates who secure 60% or more but less than 66% marks in the aggregate and pass the examination will be declared to have passed the examination in first Division.

d) Candidates who secure 66% or more marks in the aggregate and pass the examination will be declared to have passed the examination in First Division with Distinction.

e) For calculating the percentage for the purpose of giving weightage while awarding division in Final Examination to the students admitted to first year engineering, the maximum marks prescribed and the marks obtained by the examinee in the particular examinations shall be taken into consideration with the following weightages.

F.E. - 10%
S.E.- 10%
T.E. – 40%
B. E. – 40%

This shall be applicable for the students admitted in first year from academic year 2011-2012 onwards.

f) In case of the students directly admitted to the second year, the weightage while awarding Division in Final Examination the maximum marks prescribed and the marks obtained by the Examinee in the particular examinations shall be taken in to consideration

S.E.- 20%

T.E. – 40%

B. E. – 40%

This shall be applicable for the students admitted in first year from academic year 2012-2013 onwards.

R.1863

In case a candidate fails in the examination but desires to appear again thereat.

a) He may, at his option, claim exemption form appearing in the head or heads of passing in which he has passed.

b) Such exemption, if claimed, shall cover all the heads of passing- in which it can be claimed.

c) Such exemption, if not availed of at the immediately subsequent appearance of the candidate at the examination, shall be deemed to have lapsed.

d) He /She may, at his option claim exemption from appearing in head or heads of passing of his choice and appear in the remaining head or head/s of passing to make-up the deficiency in the aggregate, if he has passed in all the heads of passing but has failed to secure a minimum of 45% of the aggregate marks.

e) The Marks obtained by a candidate for such term work as separately assessed will be carried over unless fresh term work is presented by him. A candidate whose marks are thus carried over shall be eligible for a division provided he/she does not avail himself of exemption in any head of passing excepting term work.

f) For the purpose of deciding whether a candidate claiming exemption in accordance with (a), (b), (c) above or (d) and (e) above has as required by R.260 secures 45% of the total marks obtainable in the whole examination the marks at his/ her previous examination/examination in the head or heads of passing in which he/she is exempted will be carried over. Candidates passing the examination in this manner shall not be eligible for a division or prizes or scholarships at the examination.

R.1864

RULE FOR COMBINED PASSING

1) To pass the examination a candidate must obtain minimum 40% of Marks in each Theory Paper &class test taken together however the candidate must obtain minimum 35% of Marks at the University theory Examination. The candidate must obtain a minimum aggregate of 45% of the total Marks obtainable at the S.E. Semester -I & II Examination taken together.

To pass a subject where there is no provision of class test, the candidate must obtain 40% of Marks in the University Examination.

Gracing should be done for the performance at University Examination or University Examination and class test taken together.

Minimum two-class tests should be conducted in a semester for the theory subject if provided. The average performance of the Two-class tests should be forwarded to the University by the college along with the term work marks.

If candidate fails to secure 40% of marks at university theory examination and class test taken together at the regular semester examination, then he/she shall have to appear for university examination from subsequent examination onwards and secure 40% of marks at university examination and earlier obtained class test marks taken together. The improved performance at the university examination should not be Considered for the Merit/Medal/Prize etc.

If the candidate remains absent for the class-test, his performance should be treated as 'Zero' Marks.

Minimum marks required for passing in term work and practical shall be 40%. If a candidate secures less than 40% in any of the term work or fails to submit term work shall be detained in the same class.

RULE FOR A T K T

For securing ATKT at Second Year Engineering Course candidate should clear (pass) as per the provision of R.1864[A] in at least 12 heads of passing out of 16 heads of passing.

R.1865

GENERAL RULES OF EXAMINATION

1. Application for permission to appear at every examination shall be made in the prescribed format accompanied by one passport size full face photograph (not profile) along with the necessary certificates and the prescribed fee, should be submitted to the Principal of the institute on or before the date fixed for this purpose.

2. When a candidate's application is found in order and he/she is eligible to appear at an Examination, the Principal of the institute is empowered to furnish him/her with a Hall-Ticketwith the photograph affixed to it, enabling the candidate to appear in the Examination, and this Hall-Ticket shall have to be produced by the Candidate before he/she is admitted to the premises where the Examination is being held.

3. A Candidate who does not present himself/herself for the examination for any reason whatsoever, excepting shortage of attendance, shall not be entitled to claim refund of the whole or part of the examination fee, for subsequent Examination(s).
4. As engineering is a full time course, no candidate shall be allowed to put in attendance for acourse or appear at examinations for different degrees and different faculties at one and the same time.
5. Students who have appeared once at any examination of the course need not put in fresh attendance, if they wish to reappear at the corresponding examination, notwithstanding the fact that the College may have introduced new subject. They will, however, have to appear at the examinations according to the scheme of examination and syllabi in force

R.1866

EQUIVALENCE OF THE SUBJECTS

Whenever a course or scheme of instruction is changed in a particular year, three more examinations immediately following thereafter shall be conducted according to the old syllabi/regulations. Also candidates not appearing at the examinations or failing in them shall take the examination subsequently according to the changed syllabi/ regulations as per the equivalence of the subjects as prescribed by the University.

Proposed Coding System of Subject/Paper

Six digit code for a subject (UG course)

Batch	Year	Subject no
CED	1. First Year UG	**Semester-I**
MED	2. Second Year UG	1-20 Theory
EEP	3. Third Year UG	21-30 practical
ECE	4. Fourth Year UG	31-40 Service Courses
EXE	5. Fifth Year UG	41-49 Electives
ETC		**Semester-II**
IEX		51-70 Theory
PED		71-80 Practical
CSE		81-90 Service Courses
CTD		91-99 Electives
COE		
ITD		
EED		
EEE		
ARH		
BSH		
BTD		

Structure of syllabus of subject

Code No: **Title:**

Teaching Scheme **Examination Scheme**

Theory: hours/week **Class Test: Marks**

Tutorial: hours/week **Theory examination: Maximum hours**
Practical/ TermWork : hours/week **Theory examination: Maximum Marks**
Practical/ Oral examination: Maximum Marks

Objectives: 1
2
3

Unit 1:
Unit 2:
Unit 3:
Unit 4:
Unit 5:
Unit 6:

Text Books: **1**
2

Reference Books: 1
2
3
4

Pattern of Question Paper:

The six units in the syllabus shall be divided in two equal parts i.e 3 units respectively. Question paper shall be set having two sections A and B. Section A questions shall be set on first part and Section B questions on second part. Question paper should cover the entire syllabus.

For 80 marks Paper:

1. Minimum ten questions
2. Five questions in each section
3. Question no 1 from section A and Question no 6 from section B be made compulsory and should have at least eight bits of two marks out of which five to be solved
4. Two questions from remaining questions from each section A and B be asked to solve having weightage of 15 marks

For 40 marks Paper:

1. Minimum eight questions
2. Four questions in each section

3. Question no 1 from section A and Question no 5 from section B be made compulsory and should have at least five bits of two marks out of which three to be solved.
4. Two questions from remaining questions from each section be asked to solve having weightage of 7 marks.

0.95 GRACE MARKS FOR PASSING IN EACH HEAD OF PASSING (THEROY / PRACTICAL / ORAL / SESSIONAL) (EXTERNAL / INTERNAL)

The examinee shall be given the benefit of grace marks only for passing in each head of passing (Theory/practical/Oral/ Sessional) in external or Internal examination as follows:-

Head of passing	Grace Marks upto
Up to 50	2
051 to 100	3
101 to 150	4
151 to 200	5
201 to 250	6
251 to 300	7
301 to 350	8
351 to 400	9
And 401 and above	10

Provided that the benefit of such gracing marks given in different heads of passing shall not exceed 01 (one) percent of the aggregate marks in that examination.

Provided, further that the benefit of gracing of marks under this ordinance shall be applicable only if the candidate passes the entire examination of semester/year.

Provided further that this gracing is concurrent with the rules and guidelines of professional statutory bodies at the All India level such as AICTE, MCI, Bar Council, CCIM, CCIH, NCTE, UGC etc.

0.96 GRACE MARKS FOR GETTING HIGHER CLASS

A candidate who passes in all the subjects and heads of passing in the examination without the benefit of either gracing is condonation rules and whose total number of marks falls short for securing Second Class/Higher Second class of First Class by marks not more than 01 percent of the aggregate marks of that examination or up to 10 marks, whichever is less, shall be given the required marks to get the next higher class or grade as the case may be.

Provided that benefit of the above mentioned grace marks shall not be given, if the candidate fails to secure necessary passing marks in the aggregate head of passing also, if prescribed in the examination concerned.

Provided further that this gracing is concurrent with the rules and guidelines of professional statutory bodies at the All India level such as AICTE, MCI, Bar Council, CCIM, CCIH, NCTE etc.

0.97 GRACE MARKS FOR GETTING DISTINCTION IN THE SUBJECT ONLY.

A candidate who passes in all the subject/heads of passing in the examination without benefit of either gracing or condonation rules and whose total number of marks in the subject/s falls short by not more than three marks for getting distinction in the subject/s shall be given necessary grace marks up to three in maximum two subjects, subject to maximum 01(one) percent of the total marks of that head of passing whichever is more, in a given examination.

Provided that benefit of the above mentioned grace marks shall be given to the candidate only for such examination/s of which provision for distinction in a subject has been prescribed.

Provided further that this gracing is concurrent with the rules and guidelines of professional statutory bodies at the All India level such as AICTE, MCI, Bar council, CCIM, CCIH, NCTE etc.

0.98 CONDONATION

If a candidate fails in only one head of passing, having passed in all other heads of passing, his/her deficiency of marks in such head of passing may be condoned by not more than 01 percent of the aggregate marks of the examination or 10 percent of the total number of marks of the head of passing in which he/she is failing, whichever is less. However, condonation, whether in one head of passing or aggregate head of passing be restricted to maximum upto 10 marks only.

Condonation of deficiency of marks be shown in the statement of marks in the form of asterisk and ordinance number.

Provided that this condonation of marks is concurrent with the rules and guidelines of

Professional statutory bodies at the all india level such as AICTE, MCI, Bar council, CCIM,CCIH,NCTE etc.

0.106 (A) UNFAIR MEANS COMMITTED BY THE STUDENT

1. The Board of Examinations shall be the competent authority to take disciplinary action against a student for his misconduct due to his unfair means committed by him at the examination conducted by the University.

2. The Principal, of the college or Head of the recognized Institution shall be the competent authority to take disciplinary action against a student for his misconduct due to his unfair means committed by him at the examination conducted by the University, recognizedInstitution of behalf of the University.

3. Definition- Unless the context otherwise requires

(a) Student means and includes a person who is enrolled as such by the University/college/Institution for receiving instruction qualifying for any degree, diploma or

certificate awarded by the University. It includes ex-student and student registered as candidate (examinee) for any of the Degree, Diploma or Certificate examinations.

(b) Unfair Means includes one or more of the following acts or omissions on the part of student/s during the examination period.

i. Possessing unfair means material and or copying there from.
ii. Transcribing any unauthorized material or any other use thereof.
iii. Intimidating or using obscene language or threatening or use of violence against invigilator or person on duty for the conduct of examination or man-handling him/her or leaving the examination hall without permission of the supervisor or causing disturbances in any manner in the examination proceedings.
iv. Unauthorized communicating with other examinees or any one else inside or out side the examination hall.
v. Mutual/Mass copying
vi. Smuggling out, either blank or written or smuggling in of answer books as copying material.
vii. Smuggling in blank or written answer book, forging and forging signature of the Jr. Supervisor therein.
viii. Interfering with or counterfeiting of University/College Institution seal or answer books or office stationary used in the examination.
ix. Impersonation at the University/college/Institution examination.
x. Revealing identity in any form in the answer written or in any other part of the answer book by the student at the University or College or Institution examination.
xi. Or any other similar act/s omission/s which may be considered as unfair means by the competent authority.

(c) "Unfair means relating to examination" means and includes directly or indirectly communicating or attempting to commit or threatening to commit any act or coercion, undue influence or fraud or malpractice with a view to obtaining wrongful gain to him or to any other person or causing wrongful loss to other person/s.

(d) "Unfair means material" means and includes any material whatsoever, related to the subject of the examination, printed, typed, handwritten or otherwise on the person or on clothes, or body of the student (examinee) or on wood or other material, in any manner or in the form of chart, diagram, map or drawing or electronic aid etc. which is not allowed in the examination hall.

(e) "Possession of unfair means material by a student" means having any unauthorized material on his/her person or desk or chair or table or at any place within his/ her reach, in the examination centre and its environs or premises at any time from the commencement of the examination till its conclusion.

(f) " Student found in possession" means a student reported in writing as having been found in possession of unfair means material by Jr. Supervisor, Sr. Supervisor, member of the Vigilance committee or Examination squad or any other person authorized for this purpose in this behalf, even if the unfair means material is not produced as evidence because of its being reported as swallowed or destroyed or snatched away or otherwise taken away or spoiled by the student or by any other person acting on his behalf to such an extent that it has become illegible.

Provided that report to that effect is submitted by the Sr. Supervisor or chief Conductor or any other authorized person to the Controller of Examinations, Principal or Head of the Institutions concerned or any officer authorized in this behalf.

(g) Material related to the subject of Examination means and includes, if the material is produced as evidence any material certified as related to the subject of examination by a competent person and if the material is not produced as evidence or has become illegible for any of the reasons refereed to in clause (f) above, the presumption shall be that the material did relate to the subject of the examination.

(h) "Chief Conductor", means and includes, Principal of the College concerned, or Head of the recognized institution concerned where concerned examination is being conducted and any other person duly authorized by him or person appointed as In charge of examination, by the authority competent to make appointment to such post.

4. Where the examination of the University courses are conducted by the constituent college/recognized Institute on behalf of the University, the Principal/Head of the concerned college/recognized Institution on receipt of a report regarding use of unfair means by any student at any such examination including breach of the rules laid down by the Management council or by the College/recognized institution for proper conduct of examination, shall have power at any time to institute inquiry and to punish such unfair means or breach of any of the rules by exclusion of such a student from any such examination or any University course in any college/Institution either permanently or for a specified period or by cancellation of the result of the student in the college/recognized Institution examination for which he/she appeared or by deprivation of any college/Institution scholarship or by cancellation of the award of any college/Institution prize or medal to him/her or by imposition of fine not exceeding Rs.300/- or in any two or more of the aforesaid ways.

5. During examination, examinees and other students shall be under disciplinary control of the Chief Conductors.
6. Chief Conductor/s of the examination centre shall in the case of unfair means, follow the procedure as under:-

(a) The student shall be called upon to surrender to the Chief Conductor, the unfair means material found in his or her possession, if any, and his/her answer-book.

(b) Signature of the concerned student shall be obtained on the relevant materials and list thereon. Concerned Senior Supervisor and the Chief Conductor shall also sign on all the relevant materials and documents.

(c) Statement of the student and his undertaking in the prescribed format and the statement of the concerned Jr. Supervisor and Sr. Supervisor shall be recorded in writing by the Chief Conductor (Appendix-III). If the student refuses to make statement or to give undertaking the concerned Sr. Supervisor and / or Chief Conductor shall record accordingly under their signature.

(d) Chief Conductor shall take one or more of the following decisions depending upon seriousness/gravity of the case:-

i) In the case of impersonation or violence, expel the concerned student from the examination and not allow him/her to appear for remaining examination.

ii) Obtain undertaking from the student to the effect that the decision of the concerned competent authority in his/her case shall be final and binding and allow him/ her to continue with his/ her examination.

iii) May report the case to the concerned Police Station as per the provision of Maharashtra Act No. XXXI 1982 – An act to provide for preventing Malpractice's at University Board and other specified examinations (Appendix-III) (Performa A& B).

iv) Confiscate his / her answer books, mark it as suspected unfair means case and issue him/her fresh answer books duly marked.

v) All the material and list of material mentioned in sub-clause (a) and the undertaking with the statement of the student and that of the Jr. Supervisor as mentioned in clause No. (b) & (c) and the answer-book/s shall be forwarded by the Chief conductor along with his report to the concerned Controller of Examinations/Principal/Head of the Institution, as the case may be, in a separate and confidential sealed envelope marked " suspected unfair means case"

vi) In case of unfair means of oral type, the Jr. Supervisor and the Sr. Supervisor or concerned authorized person shall record the facts in writing and shall report the same to the concerned Controller of Examinations/Principal/Head of the Institutions, as the case may be.

PUNISHMENT

The competent authority concerned i.e. the Board of Examinations in the case of University examination, the concerned Principal in the case of college examinations held by the recognized Institutions, after

taking into consideration the report of the committee shall pass such orders as it deem fit including granting the student benefit of doubt, issuing warning or exonerating him/her from the charges and shall impose any one or more of the following punishment on the student/s found guilty of using unfair means:-

(a) Annulment of performance of the student in full or in part in the examination he/she has appeared for.

(b) Debarring student from appearing for any examination of the University or college Institution for a stipulated period not exceeding five year.

(c) Debarring student from appearing for any examination of the University or college Institution for a stipulated period not exceeding five year.

(d) Cancellation of the University or College or Institution scholarship/s or award/s prize or medal etc. awarded to him/her in that examination.

(e) In addition to the above mentioned punishment, the competent authority may impose a fine not exceeding Rs.300/- on the student declared guilty. If the student concerned fails to pay the fine within a stipulated period, the competent authority may impose on such a student additional punishment/penalty as it may deem fit.

(f) The student concerned be informed of the punishment finally imposed on him/her in writing by the competent authority or by the officer authorized by it in this behalf, under intimation to the College/Institution he/ she belongs to.

(g) An appeal against the findings of the committee shall lie with the concerned competent authority whose decision shall be final and binding.

(h) An appeal made in writing within a period of 30 days from the date imposition of the punishment shall be considered by the competent authority on merit and shall be decided on the basis of the evidence available in the case and shall be heard in person in deserving cases, if the competent authority finds substance in the appeal, the competent authority shall supply a typed copy of the relevant extract of fact-finding report of the inquiry committee, as well as documents relied upon (if not strictly confidential). Decision in the appeal shall be informed to the student concerned accordingly.

(i) The court matters in respect of the unfair means cases should be dealt with by the respective competent authority.

(j) As far as possible the quantum of punishment should be as prescribed (Category-wise in Appendix-I

APPENDIX-I

THE BROAD CATEGORIES OF UNFAIR MEANS ADOPTED BY STUDENTS AT THE UNIVERSITY/ COLLEGE/ INSTITUTION EXAMIANTION AND THE QUANTUM OF PUNISHMEN T FOR EACH CATEGORY THEREOF.

Sr. No.	Nature of Malpractices	Quantum of Punishment
1.	Possession of copying material	(Note:- This quantum of punishment Shall apply also ot the following categories of malpractices at Sr. No. 2, to Sr. No.12 in addition to the Punishment prescribed thereat)
2.	Actual copying from the copying material	Exclusion of the student from university or College or Institution examination for one additional examination.
3.	Possession of another students Answer Book	Exclusion of the student from University or College or Intuition examination for one additional examination (Both the students)
4.	Possession of another students Answer book+ actual evidence of Copying	Exclusion of the student from University or College or Institution examination for two additional examination (Both the Students)
5.	Mutual / Mass copying.	Exclusion of the student from University or College or Institution examination for two additional examinations.
6 (a)	Smuggling out or smuggling in of Answer book as copying material.	Exclusion of the student from University or College or Institution examination for two additional examinations.
(b)	Smuggling in of written answer book based on the question paper set at the examination	Exclusion of the student from University or College or Institution examination for three additional examinations
(c)	(c) Smuggling in of written answer book and forging signature of Jt, Supervisor thereon	Exclusion of the student from University or College or Institution. Examination for four additional examinations.

7.	Attempt to forge the signature of the Jr. Supervisor on the answer book or Supplement.	Exclusion of the student from the University or College or Institution examination for four additional examinations.
8	Interfering with or counterfeiting of University / College/ Institution seal or Answer books or office stationary used in the examination	Exclusion of the student from University or College or Institution examination for four additional examinations.
9.	Answer book main or supplement written outside the examination hall or any other insertion in answer book.	Exclusion of the student from University or College or Institution examination for four additional examinations.
10.	Insertion of currency notes/to bribe or attempting to bribe any of the persons/s connected with the conduct of Examination	Exclusion of the student from University or College or Institution Examination for four additional examinations. (Note:- This money shall be created to the Vice-Chancellor's Fund)
11.	Using obscene language/violence/ threat at the examination centre by a student at the University/ College / Institution Examination to Jr./ Sr. Supervisor/ Chief Conductor or Examiners.	Exclusion of the student from University or College or Institution examination for four additional Examinations.
12.(a)	Impersonation at the University/ College / Institution examination	Exclusion of the Student from University or College or Institution examination for five additional examinations, (Both the students if impersonator is University or College or Institute student)
(b)	Impersonation by a University/ College/ Institute student at S.S.C./ H.S.C./ any other Examinations.	Exclusion of the Student from University or College or Institution examination for five additional examinations
13.	Revealing identity in any form in the answer written or in any other part of the Answer book by the student at the University or College or Institution Examination	Annulment of the performance of the student at the University or College or Institution Examination in full.
14.	Student found having written on palms or on the Body, or on the clothes while in the	Annulment of the performance of the student at University or College or

	Examination	Institution Examination in full.
15.	All other mal-practices not covered in the aforesaid categories.	Annulment of the performance of the student at the University or college or Institution Examination in full and severe punishment depending upon the gravity or the offence.
16.	If on previous occasion a disciplinary action was taken against a student for malpractice used at examination and he/she is caught 'again for malpractices used at the examinations, in this event he/she shall be dealt with severely. Enhanced punishment can be imposed on such student. This enhanced punishment may extend to double the punishment provided for the offence when committed at the second or subsequent examination.	
17.	**PRACTICAL/DISSERTATION/PROJECT REPORT EXAMS.**	
	Student involved in malpractices at practical/ dissertation/ project report examination shall be dealt with as per the punishment provided for the theory examination.	
18.	The competent authority in addition to the above mentioned punishments may impose a fine not exceeding Rs. 300/- on the student declared guilty.	
	Note:- The term annulment of performance in full' includes performance of the student of the theory as well as annual practical examination, but does not include performance at term work, project work and dissertation examination unless malpractice used thereat.	

FACULTY OF ENGINEERING AND TECHNOLOGY

Revised Structure

[Second Engineering (Mechanical/Production)]

Subject No.	SEMESTER-I	Contact Hours / Week				Examination Scheme					
	Subject	L	T	P	Total	CT	TH	TW	P	Total	Duration of Theory Examination
BSH201	Engineering Maths-III	3	1		4	20	80			100	3 Hrs
MED202	Thermodynamics-I	4			4	20	80			100	3 Hrs
MED203	Machine Drawing	4			4	20	80			100	4 Hrs
MED204	Strength of Materials	4			4	20	80			100	3 Hrs
MED205	Production Processes-I	4			4	20	80			100	3 Hrs
MED221	Lab-I Thermodynamics-I			2	2			25	25	50	
MED222	Lab-II Machine Drawing			4	4			50	50	100	
MED223	Lab-III Strength of Materials			2	2			25		25	
MED224	Lab-IV Workshop - III			2	2			25	50	75	
	Total	19	1	10	30	100	400	125	125	750	

Subject No.	SEMESTER-II	Contact Hours / Week				Examination Scheme					
	Subject	L	T	P	Total	CT	TH	TW	P	Total	Duration of Theory Examination
BSH251	Engineering Maths-IV	3	1		4	20	80			100	3 Hrs
MED253	Theory of Machines-I	4			4	20	80			100	4 Hrs
MED254	Thermodynamics-II	4			4	20	80			100	3 Hrs
MED255	Electrical Machines & Applied Electronics	4			4	20	80			100	3 Hrs
MED256	Production Processes-II	4			4	20	80			100	3 Hrs
MED271	Lab-V Theory of Machines-I			2	2			25	25	50	
MED272	Lab-VI Thermodynamics-II			2	2			25	25	50	
MED273	Lab-VII Electrical Machines & Applied Electronics			2	2			25		25	
MED274	Lab-VIII Workshop - IV			2	2			25	50	75	
BSH275	Lab-IX Communication Skill			2	2			50		50	
	Total	19	1	10	30	100	400	150	100	750	

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD
FACULTY OF ENGINEERING AND TECHNOLOGY
Second Year Mechanical Engineering
Semester-I
BSH201-Engineering Mathematics-III
SE (ALL)

Teaching Scheme
Theory: 4 hours/week
Tutorial: 1 hours/week/Batch of 30 Students

Examination Scheme
Class Test: 20 Marks
Theory: 80 Marks
Duration of theory examination: 3 Hrs

Objectives:

- To develop Logical understanding of the subject
- To develop mathematical skill so that students are able to apply mathematical methods & Principle's in solving problems from Engineering fields
- To produce graduates with mathematical knowledge & computational skill.

Unit 1: Linear Differential Equations: **(6 Hrs)**
Linear Differential Equations with constant coefficients General method, shortcut methods to find particular integral, Homogenous Linear differential equations (Cauchy's & Legendre's form), method of variation of parameters.

Unit 2: Application of LDE: **(6 Hrs)**
To Electrical circuits & to Mechanical system (Analogous study of two systems).To Civil Engineering, Free oscillations / vibrations, Forced oscillation /vibrations, Damped Free oscillations / vibrations, Damped Forced oscillations / vibrations.

Unit 3: Statistics & Probability: **(8 Hrs)**
Measures of Dispersion, Moments, coefficient of skewness and Kurtosis, Probability distribution for random variables, Binomial, Poisson and Normal distributions, Curve fitting: Principle of least squares, Fitting of linear curve, parabola, exponential curve.

Unit4: Vector Differentiation: **(6 Hrs)**
Differentiation of vectors, Gradient of scalar point function, Directional derivative, Divergence of vector point function, Curl of a vector point function. Irrotational and solenoidal vector field.

Unit 5: Vector Calculus (Integral calculus): **(6 Hrs)**
The line integral, Surface integral, volume integral, Gauss Divergence theorem, Stoke's theorem, Green's theorem.

Unit 6: Numerical Methods: **(8 Hrs)**
Solution of transdental equations by Newton Raphson method, Gauss Seidel method to solve simultaneous linear equations, Lagranges Interpolation formula for unequal intervals, Numerical Differentiation: - Newton's forward and Newton's Backward difference formulae, Solution of ordinary differential equation by Euler's modified method, and Runge-Kutta IVth order method.

Note: All Theorems are without proofs
Section A: Unit 1, 2, 3
Section B: Unit 4, 5, 6

Reference Books:

1. **A Text Book of Engineering Mathematics (Volume-I, II,III)** by P. N. Wartikar and J. N. Wartikar, Pune Vidyarthi Griha Prakashan, Pune.
2. **Higher Engineering Mathematics** by B. S. Grewal, Khanna Publications, New Delhi.
3. **Advanced Engineering Mathematics** by H.K. Das, S. Chand & Company.
4. **Higher Engineering Mathematics** by B.V. Ramana (Tata McGraw-Hill).
5. **Advanced Engineering Mathematics** by Erwin Kreyszig, Wiley Eastern Ltd.
6. **Engineering Mathematics A Tutorial Approach** by Ravish R Singh, Mukul Bhat ,Mc Graw Hill

Pattern of Question Paper:

The units in the syllabus shall be divided in two equal sections. Question paper shall be set having two sections A and B. Section A questions shall be set on first three units (1,2,3) and Section B questions on remaining three units (4,5,6) . Question paper should cover the entire syllabus.

For 80 marks Paper:

1. Minimum ten questions
2. Five questions in each section
3. Question no 1 and 6 be made compulsory and should have at least ten bits of two marks out of which FIVE to be solved.
4. Two questions from remaining questions from each section be asked to solve having weightage of 15 marks

MED202-THERMODYNAMICS-I

Teaching Scheme
Theory: 4 hours/week

Examination Scheme
Class Test: 20 Marks
Theory: 80 Marks
Duration of theory examination: 3 Hrs

Unit1: FIRST LAW OR THERMODYNAMICS APPLIED TO FLOW PROCESS **(7 Hrs)**

Concept of Flow work, control volume and steady flow process, assumptions, Steady flow energy equation on time and mass basis, difference between steady flow and non flow process, study and applications of SFEE to some steady flow devices viz nozzles, diffusers, throttling valve, turbine, compressors, I.C. Engine, Heat Exchangers etc. Limitations of First law of Thermodynamics, Concept of PMM-I (Descriptive and Numerical Treatment)

Unit2: SECOND LAW OF THERMODYNAMICS **(7 Hrs)**

Various statements, Heat engine, Refrigerator and Heat pump. COP of Heat pump and Refrigerator, Reversed heat engine, Equivalence of Kelvin-Planck and Clausius statements, PMM-II, Carnot theorem, Thermodynamic temperature scale. (Descriptive and Numerical Treatment)

Unit3: ENTROPY **(6 Hrs)**

Concept of Entropy, Clausius Theorem, Clausius inequality, temperature-entropy diagrams, Entropy changes for an ideal gas during reversible processes, entropy of isolated system in real processes, Principle of increase of Entropy, total entropy changes, Applications of Entropy principle, Available and unavailable energy.(Descriptive treatment).

Unit4: POWER CYCLE **(7 hrs)**

Concept of air standard cycle, assumptions, Carnot, Otto, Diesel and dual air standard cycles with representation on P-V & T-S planes, mathematical analysis for efficiency, mean effective pressure and power output, comparison. Brayton cycles, Atkinson cycle, Ericsson Cycle. (Descriptive and Numerical Treatment)

Unit5: PROPERTIES OF STEAM OR PURE SUBSTANCE **(7 Hrs)**

Pure substance, phase, phase transformation of water at constant pressure, p-v phase diagram, critical point, Triple point, Different stages, Entropy of steam, steam tables, processes of steam, Enthalpy-Entropy diagram, steady flow process and determination of dryness fraction of steam
(Descriptive and Numerical Treatment)

Unit6: FUELS AND COMBUSTION: **(6 Hrs)**

Definition of Fuel, calorific values, Definition of combustion, mass fraction, mol fraction, combustion equation, stoichiometric air, excess air, and deficient air, analysis of product of combustion, gravimetric and volumetric analysis and their conversion, determination of actual and excess air quantity from combustion analysis and stoichiometric and actual air to fuel ratios. Orsat apparatus, method to determine flue gas analysis – CO, CO_2, CO_2.
(Descriptive and Numerical Treatment)

RECOMMENDED BOOKS

1. Nag P.K., "Engineering Thermodynamics", TMH Publishing Co. New Delhi
2. Rajput R.K., "A Text Book of Engineering Thermodynamics", Laxmi Publication, New Delhi
3. Ballaney P.L., "Thermal Engineering",
4. Domkundwar & Domkundwar, "Introduction to Thermal Power Engineering", Dhanpatrai and Sons,New Delhi
5. Rao, "Engineering Thermodynamics",
6. Radhakrishnan, "Fundamentals of Engineering Thermodynamics", PHI

Pattern of Question Paper:

The units in the syllabus shall be divided in two equal sections. Question paper shall be set having two sections A and B. Section A questions shall be set on first three units (1,2,3) and Section B questions on remaining three units (4,5,6) . Question paper should cover the entire syllabus.

For 80 marks Paper:

1. Minimum ten questions
2. Five questions in each section
3. Question no 1 and 6 be made compulsory and should have at least ten bits of two marks out of which FIVE to be solved.
4. Two questions from remaining questions from each section be asked to solve having weightage of 15 marks

MED203-MACHINE DRAWING

Teaching Scheme
Lectures: 4 Hrs/week

Examination Scheme
Theory: 80 Marks
Class Test: 20 Marks
Duration of Theory Examination: 4 Hrs.

OBJECTIVES:

- Enhancing imagination, visualization, and interpretation skills
- To make students to draw correct production drawing.
- To understand the standard practice followed in industries for drawings.
- To understand the methodology of communicating all the required information that will allow a manufacturer to produce parts.

COURSE CONTENT: (First Angle projection to be adopted)

Unit 1: Engineering curves **(06Hrs)**

Construction of ellipse, parabola, hyperbola, cycloid, epicycloids, hypocycloids and Involutes. Normal and Tangents to curves.

Unit 2: Isometric and Auxiliary views : **(08 Hrs)**

Isometric view of complex machine parts. Auxiliary view of inclined objects and surfaces of Complex objects and machine parts.

Unit 3: Intersection of Solids : **(06 Hrs)**

Intersection of solids, prism to prism, cylinder to cylinder, cylinder to cylinder, cone to cylinder, cone to prism, curves on forged parts.

Unit 4:Drawing standards: **(08 Hrs)**

Conventional Representation -: Conventions used to represent materials in section and machine elements in machine drawings.
Dimensioning -: General Principals of Dimensioning, methods of Dimensioning, Arrangement of Dimensions, standard abbreviations used in dimensioning.
Limits, Fits and Tolerances-: Limit system, Types and representation of Tolerances, Fits, GD&T
Welding symbols : Weld joints and symbols, Conventional signs, position and dimensioning of weld symbol in drawing.
Machining Symbols : surface roughness, indication of surface roughness on production drawing, indication of machining allowances.

Unit 5: Assembly Drawing: . **(06Hrs)**

Drawings assembled views for the part drawings of following assemblies. Importance of BOM, Preparation of BOM
a) Engine parts – stuffing box, cross heads, Eccentrics, Petrol Engine connecting rod, piston assembly etc.
b) Machine parts - Screws jacks, Machine Vices , Plummer block, Tool Post, Tailstock, etc.
c) Valves : Steam stop valve, spring loaded safety valve, feed check valve and air cock.

Unit 6: Detailed Part Drawings : **(06Hrs)**

Drawing of parts details given assembled views - screw jack - connecting rod ends - cross heads – Jigs and fixtures, press tools, gauges, etc.

PATERN OF QUESTION PAPER
(Note: The theory paper of MD will include the detailed syllabus covered in MD Theory)

SECTION A (All Questions compulsory) – Questions to be based on unit 1 to unit 3.

1. Question no 1 for 16 Marks
2. Question no. 2 OR Question no 2 for 12 marks
3. Question no 3 OR Question no 3 for 12 marks

SECTION B (All Questions compulsory) – Questions to be based on unit 4 to unit 6)

1. Question no 4 for 15 Marks (Based on unit 4)
2. Question no. 5 OR Question no 5 for 25 marks (Based on unit 5 & 6)

TEXT BOOKS:

1. Elementary Engineering Drawing N D Bhatt Charotar Publication House
2. Machine Drawing-By N.D. Bhatt.
3. Machine Drawing by Sidheswar, N., Kanniah, P. and Sastry, V.V.S., Tata McGraw Hill.
4. Machine Drawing by K.I. Narayana, P. Kannaiah, K.Venkata Reddy, New Edge publications
5. Machine Drawing by Ajeet Singh (Tata McGraw Hill)
6. Machine Drawing by Sonaversity publications.
7. Machine Drawing – P.S.Gill.
8. Machine Drawing – Luzzader

MED204-STRENGTH OF MATERIALS

Teaching Scheme
Lectures : 4 Hrs/Week

Examination Scheme
Theory Exam: 80 Marks
Class Test : 20 Marks
Duration of Theory Exam: 3 Hrs

SECTION – A

Unit 1 : **(9 hrs)**

Simple Stresses and Strains : Stress and strain, (tensile, compressive & shear), Hooke's Law, Modulus of elasticity, Modulus of rigidity, Stress-strain diagram for ductile and brittle material, Working stress, Factor of safety, Principle of superposition, Stresses in composite bars. Thermal stresses and strains in simple and composite members. Linear and Lateral strains, Poisson's ratio, Volumetric strain, Bulk modulus, Interrelationship between elastic constants.

Unit 2 : **(4 hrs)**

Shear Force and Bending Moment Diagrams for Beams : Shear force and bending moment in determinate beams due to concentrated loads, U.D.L., U.V.L. and couples, Relation between S.F. and B.M., Determination of position of point of contraflexure and maximum bending moment.
Construction of loading diagram & BMD from SFD, Construction of loading diagram & SFD from BMD.

Unit 3 : **(4 + 3 = 7 hrs)**

Bending Stresses in Beams : Theory of simple bending, Assumptions, Flexural formula, Moment of resistance and Section modulus. Determination of bending stresses and bending stress distribution diagram for the beams with commonly used sections like rectangular, square, circular, symmetrical and unsymmetrical I, T-sections etc. Flitched beams.

Shear Stresses in Beams : Shear stress in beams subjected to bending, Shear stress distribution formula, Maximum and average shear stress, Determination of shear stresses and shear stress distribution diagram for beams with commonly used sections like circular, symmetrical and unsymmetrical I, T-sections etc.

SECTION – B

Unit 4 : **(3 + 4 = 7 hrs)**

Direct and Bending Stresses in Columns : Bending stresses in column due to eccentric loading, (eccentricity about one axis and two axis), Condition for no tension, Core or Kernel of sections.

Torsion of Circular Shafts : Theory of torsion of circular shafts, Assumptions, Torsion formula, Determination of torsional shear stress and angular twist for solid, hollow and composite circular shafts-shafts in series and parallel.

Unit 5 : **(4 + 3 + 2 = 9 hrs)**

Principal Stresses and Strains : Principal planes and principal stresses, Maximum shear stress, Determination of positions of principal planes, planes of maximum shear (2 D cases only),
Graphical method : Mohr's circle of stresses.

Thin Cylinders and Spheres : Circumferential (Hoop) stress and longitudinal stress, Change in dimensions of thin cylinders and spheres due to internal fluid pressure.

Strain Energy : Strain energy, Proof resilience, Modulus of resilience, Strain energy in a uniform bar due to gradual load, suddenly applied load and impact load. Strain energy due to shear stress.

Unit 6 : **(4 hrs)**

Slope and deflection of beams : Relation between bending moment and slope, determination of slope and deflection of statically determinate beams (simply supported, cantilever and overhanging beams) subjected to point loads, uniformly distributed loads, moments by double integration method, McCauley's method.

Pattern of Question Paper:

The units in the syllabus shall be divided in two equal sections. Question paper shall be set having two sections A and B. Section A questions shall be set on first three units (1,2,3) and Section B questions on remaining three units (4,5,6) . Question paper should cover the entire syllabus.

For 80 marks Paper:

1. Minimum ten questions
2. Five questions in each section
3. Question no 1 and 6 be made compulsory and should have at least ten bits of two marks out of which FIVE to be solved.
4. Two questions from remaining questions from each section be asked to solve having weightage of 15 marks

Text Books :

1. Ramamrutham S., Strength of materials, Dhanpat Rai & Co. (P) Ltd., Delhi
2. Basu A. R., Strength of materials, Dhanpat Rai & Co. (P) Ltd., Delhi
3. Khurmi R. S. & Gupta J. K., Strength of materials, S. Chand & Co.Ltd.,New Delhi
4. Rajput R. K., Strength of materials, S. Chand & Co.Ltd., New Delhi
5. Bansal R.K. , Strength of materials, Laxmi publications (P) Ltd., New Delhi

Reference Books:

1. Timoshenko & Young, Strength of materials, CSB Publishers
2. Gere & Timoshenko, Mechanics of materials, CSB Publishers
3. Singer & Pytel, Strength of materials, Harper & Row publications
4) E.P. Popov - Introduction to Mechanics of Solids, Prentice Hall Publication.
5) Beer and Johnston - Strength of materials, CBS Publication.
6) S.S. Rattan Strength of material – Tata McGraw Hill Publication Co. Ltd.

MED205-PRODUCTION PROCESSES-I

Teaching Scheme
Lectures: 4 Hrs

Examination Scheme
Theory: 80 Marks
Class Test: 20 Marks
Duration of Theory paper: 3Hrs.

OBJECTIVE

- Introduction of primary production processes.
- To introduce the student to manufacturing methods in Mechanical Engineering.

PURPOSE

- This subject will give a broad classification and information of the primary shaping and joining processes that are employed in manufacturing a product.
- Convey all the required information that will be helpful in design and development for manufacturer for production.

COURSE CONTENT

INTRODUCTION: Classification of manufacturing processes, scope of study, industrial safety concepts. (no question be asked on this topic in the exam) (1)

Unit1: FOUNDRY: **(8 Hrs)**

Pattern making : patterns and core boxes, Pattern materials, Types of patterns, core boxes, pattern allowances.

Moulding sand: Constituents , types of moulding sands, properties, conditioning, testing of moulding sand.

Sand mould: Moulding boxes, sand mould, gating system. types of gate, Risers, Metal flow. Classification of sand moulds, steps involved in making a general sand mould., core making.

Melting Furnaces: Types of Melting furnaces: pit furnace, open hearth furnace, gas fired furnace, cupola, electric furnaces – Direct Arc, Indirect Arc and coreless induction furnace. Molten metal handling.

Casting methods : sand mould and permanent mould casting, slush casting, shell molding. Investment or lost wax casting, Die casting methods, equipments and pressure and vacuum casting methods. Centrifugal casting, continuous casting, .

Cleaning and inspection of castings. Defects in castings. Inspection methods.

Unit2: MECHANICAL WORKING OF METALS: **(6 Hrs)**

Classification of cold and hot working methods. Advantages and effects of these processes.

Different types of hot working processes, Rolling, types of rolling mills, spinning, forging, extrusion, piercing, manufacture of seamless pipe and tubing.

Machine forging: Types of power hammers and forging machines and presses. Closed and open die forging. Inspection methods and Defects.

Cold working processes: cold rolling, roll forming, pipe and tube production, spinning, embossing, wire and tube drawing, extrusion, coining, cold forging, rotary swaging.

Unit3: SHEET METAL WORKING: **(5 Hrs)**

Sheet metals used in manufacturing. Operations: shearing, slitting, nibbling, blanking, punching, piercing, hand forming, bending, flanging, ribbing, hemming, lancing, curling, edge formation, Types of sheet metal joints.

Press working, types of presses and machines used in sheet metal. Manual, mechanical, hydraulic power presses. Press brake, roll bending.(Block diagram, working principles and applications). Introduction to Press tools and die.

Unit4: PROCESSING OF PLASTICS: **(5 Hrs)**

Types of plastics, polymers, additives. Classifications of plastics forming and fabrication processes. Study

of casting, Compression moulding, Transfer moulding, Injection moulding, Extrusion moulding, calendaring, Rotational moulding, Blow moulding, laminating plastics (high and low pressure). Plastic moulding dies.

Unit5: JOINING PROCESSES: **(10 Hrs)**

Classification of joining processes. Concept of welding. Weldability

Gas welding methods, gas cutting, equipment, working principle, and its application.

Arc welding: Electric arc Welding equipments, AC and DC power sources, wire feed mechanism and its control systems, filler metals, fluxes, safety equipments.

Classification of arc welding, study of shielded metal arc, submerged arc, MIG, TIG, carbon arc, electroslag, elecctrogas and plasma arc welding. (working principle advantages, disadvantages, specific equipment and its application)

Resistance welding: - Types, spot, seam, projection etc., process applications and limitations.

Special welding processes: Friction Welding, Thermit Welding. Ultrasonic, Electron Beam, Laser welding, under water welding (Introductory treatment is expected for the special welding processes)

Welding defects, Testing and Inspection of welds: Various welding defects, weld testing methods.

Unit6: SURFACE TREATMENT: **(5 Hrs)**

Purpose of surface treatment. Cleaning methods: mechanical and chemical cleaning, finishing methods and surface coatings, types of coatings ,powder coating. Metallic coating: electroplating, galvanizing, metal spraying, anodizing , polishing.

BOOKS RECOMMENDED:

TEXT BOOKS:

a) Workshop Technology vol -1, B S Raghuwanshi, Dhanpat Rai and Sons 2001
b) Workshop TechnologyVol-I, Hajra Chaudhary, Dhanpat Rai and Sons 2001
c) Manufacturing Process II H.S. Bawa, Tata Mc Graw hill Publishing Co. Ltd. 2004
d) Production Technology, Jain R.K., Khanna Publications .
e) Introduction to basic manufacturing processes and workshop Technology, by Rajender Singh, New Age International ltd,publication. 2010

REFERENCES BOOKS:

a) Processes and Materials of Manufacture By R.A. LindBerg PH Pub 2001
b) Workshop Technology, O.P. Khanna Dhanpat Rai and Sons 2001

Pattern of Question Paper:

The units in the syllabus shall be divided in two equal sections. Question paper shall be set having two sections A and B. Section A questions shall be set on first three units (1,2,3) and Section B questions on remaining three units (4,5,6) . Question paper should cover the entire syllabus.

For 80 marks Paper:

1. Minimum ten questions
2. Five questions in each section
3. Question no 1 and 6 be made compulsory and should have at least ten bits of two marks out of which FIVE to be solved.
4. Two questions from remaining questions from each section be asked to solve having weightage of 15 marks

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD
FACULTY OF ENGINEERING AND TECHNOLOGY
Second Year Mechanical Engineering
Semester-I

MED221 LAB-I THERMODYNAMICS-I

Teaching Scheme
Practical : 2 Hrs/Week

Examination Scheme
Term work: 25 Marks
Practical: 25 Marks

All the experiments from the following list should be conducted /studied during the course and record for the same should be submitted:

1. Determination of C.V. of solid / liquid fuels by using calorimeter.
2. Determination of C.V. of gaseous fuels by using calorimeter
3. Study of determination of dryness fraction of steam.
4. Study and performance of flue gas analysis by using Orsat apparatus
5. Study of Redwood's Viscometer and determination of viscosity of lubricants
6. Determination of Cloud point and Pour point of lubricants
7. Assignments based on descriptive as well as at least five numerical from 1, 2, 4, 5 and 6 units.

Term work

The term work will consist of submitting a file for all the experiments with neatly written records of the study and diagrams. The term work will be assessed by the subject teacher.

Practical Examination

The Practical Examination will comprise of performing the experiments and viva voce on the Syllabus. The practical examination will be assessed by two examiners, one will be the subject teacher and other examiner appointed by Dr. B.A.M.U. Aurangabad.

MED222-LAB-II MACHINE DRAWING

Teaching Scheme
Practical: 4 Hrs/Week

Examination Scheme
Term work: 50 Marks
Practical: 50 Marks

OBJECTIVES:

- To make student to draw correct production drawing.
- To understand standard practice followed in industries for drawings.
- To understand the methodology of communicating all the required information that will allow a manufacturer to produce parts.
- To learn preparation of product drawing and assembly drawing using 2D CAD tools.

TERM-WORK: (First Angle projection to be adopted)

A. SKETCHBOOK SHOULD CONTAINED

1) Engineering Curves
2) Drawing standards :
   Conventions are used to represent materials in section and machine elements.Methods of Dimensioning, Arrangement of Dimensions, standard abbreviations used in dimensioning. Limit system, representation of tolerances in Drawing, Types of Fits, GD&T symbols. Welding symbols, Machining symbols.

B. TOTAL 5 NUMBERS OF DRAWING SHEETS

1. One drawing sheet on Auxiliary views (Minimum Two problems)
2. One drawing sheet on Intersection of Solids (Minimum Two problems)
3. One drawing sheet on details to assembly drawing (Based on unit 5 of MD theory syllabus)
4. Two drawing sheets on assembly to details (Based on unit 6 of MD theory syllabus)

C. PRACTICALS IN CAD

By using any 2-D CAD packages Computer Aided Drawing of

1. Setting up of drawing environment by setting drawing limits, drawing units, naming the drawing, naming layers, setting line types using various type of lines in engineering drawing, saving the file .
2. Layout drawing using different layer and line colors. Name the details using text commands, Make a title Block.
3. Two exercises on Drawing of simple machine components with dimensions.
4. One exercise on Assembly to Details or Details to Assembly

Practical Examination should be based on Viva-Voce on the above syllabus.

TEXT BOOKS:

1. Elementary Engineering Drawing N D Bhatt Charotar Publication House
2. Machine Drawing-By N.D. Bhatt.
3. Machine Drawing by Sidheswar, N., Kanniah, P. and Sastry, V.V.S., Tata McGraw Hill.
4. Machine Drawing by K.I. Narayana, P. Kannaiah, K.Venkata Reddy, New Edge publications
5. Mahine Drawing by Sonaversity publications.
6. Engineering Drawing and Graphics + AutoCAD by K. Venugopal, New Age International Pub.
7. Engineering Drawing with an Introduction to AutoCAD by D.A. Jolhe, Tata-McGraw-Hill Co.

MED223-LAB-III STRENGTH OF MATERIALS

Teaching Scheme
Practical: 2 Hrs/Week

Examination Scheme
Term work: 25 Marks

List of the Experiments

1. Tension test on metals.
2. Compression test on materials.
3. Shear test on metals.
4. Modulus of rupture test.
5. Impact test on metals.
6. Hardness test on metals.
7. Torsion test on metals.
8. Deflection of beams.
9. Bucking of columns.
10. Deflection of springs.

Term work

The term work will consist of submitting a file for all the experiments with neatly written records of the study and diagrams. The term work will be assessed by the subject teacher.

MED224-LAB IV WORKSHOP-III

Teaching Scheme
Practical: 2 Hrs

Examination Scheme
Term work: 25 Marks
Practical: 50 Marks
Duration of exam: 8 hrs.

COURSE CONTENT

TURNING SHOP:

Study of different simple operations to be carried on the lathe machine. plane turning, facing, step turning, taper turning, knurling.
JOB: Preparing a job on lathe machine performing the above operations

PATTERN MAKING:

Study of patterns-material, type of patterns and cores, allowances, pattern making tools, method.
JOB: At least one pattern in Wood, involving details like allowances, core prints (if required) parting line of multi piece pattern etc. in the cope, drag.

FOUNDRY SHOP:

Sand moulding, types of sands, preparing sand for moulding, equipments, sand moulds (cope, drag, check etc.)
JOB: Preparing sand moulds for single, multi-piece patterns in at least two or multi-piece moulding boxes and details like runners, risers, gates etc mould cavity finishing, obtain wax casting. Demonstration of at least one casting using ferrous or non-ferrous metal for every batch.

TERM WORK

Term work shall consist of submission of the above jobs, a File containing the write-up (principle, tools, operations and application) of the three sections and a Workshop Diary in regular format which should have the record of job drawing, tools used, operations to be performed on the job, dates etc., certified by each Section Instructor and the Workshop Superintendent.
Assessment of the term work shall be done by the Workshop Superintendent and a teachers appointed by the Head of the Institute.

PRACTICAL EXAMINATION

The Practical Examination will comprise of two jobs. One Job in Turning Shop is compulsory and another in any one of the remaining shops. The job of foundry will be a wax casting obtained from the mould. The jobs should involve all the operations studied during the semester. Duration will be Four hours for each job. Question paper will be set by University.

The jobs will be assessed by two examiners, one will be the Internal and other will be External examiner appointed by University.

Recommended books:

1) *Workshop Technology, Vol I, and Vol II by Hazra Chaudhury;* Media Promotors & Pub
2) *Workshop Technology, Vol I and Vol II, by Raghuvanshi; Dhanpatrai and Sons.*

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD
FACULTY OF ENGINEERING AND TECHNOLOGY
Second Year Mechanical Engineering
Semester-II
BSH251-Engineering Mathematics-IV
(MECH/PROD/CIVIL)

Teaching Scheme	Examination Scheme
Theory: 4 hours/week	Class Test: 20 Marks
Tutorial: 1 hours/week/Batch of 30 Students	Theory examination: 3 Hrs.
	Theory examination: 80

Objectives:

- To develop Logical understanding of the subject
- To develop mathematical skill so that students are able to apply mathematical methods & Principal's in solving problems from Engineering fields
- To produce graduates with mathematical knowledge & computational skill.

Unit 1: Function of complex variable (Differential calculus): **(7 Hrs)**

Introduction, Analytic function Cauchy Riemann equations in Cartesian and Polar form, Harmonic function, Taylor's series & Laurent's series (without proof), Conformal mapping (geometrical representation of function of complex variable), bilinear transformation.

Unit 2: Function of complex variable: (Integral calculus): (7 Hrs)

Line integral, contour integral: Cauchy's integral theorem, Cauchy's integral formula (without proof), Residues, Cauchy's residue theorem, Integration along unit circle and along upper half of semi circle.

Unit 3: Application of PDE: **(6 Hrs)**

solutions of partial differential equation by method of separations of variables, Application to vibration of string, one dimensional heat flow equations, Laplace equation in two dimensions with boundary conditions.

Unit 4: Laplace transform: **(6 Hrs)**

Definition, Transforms of elementary functions, Properties & theorems of Laplace transforms(without proof), transforms of periodic function, Heaviside unit step function, displaced unit step function, Dirac delta function, error function, Bessel' function of zero order.

Unit 5: Inverse Laplace transform and its applications : (6 Hrs)

Inverse Laplace transforms by using properties, ii) partial fractions, iii) Convolution theorem, Applications to solve linear differential equations with constant coefficients (Initial value problems), Simultaneous Linear differential equations.

Unit 6: Fourier Transform and its applications: **(8 Hrs)**

Fourier integral, Fourier sine and cosine integral, complex form of Fourier integral, Fourier transforms Fourier sine and cosine transform and inverse Fourier transforms Finite Fourier sine and cosine transforms. Solution of one dimensional heat equation by using Fourier transform.

Note: All Theorems are without proofs
Section A: Unit 1, 2, 3
Section B: Unit 4, 5, 6

Reference Books:

1. **A Text Book of Engineering Mathematics (Volume-I, II,III)** by P. N. Wartikar and J. N. Wartikar, Pune Vidyarthi Griha Prakashan, Pune.
2. **Higher Engineering Mathematics** by B. S. Grewal, Khanna Publications, New Delhi.
3. **Advanced Engineering Mathematics** by H.K. Das, S. Chand & Company.
4. **Higher Engineering Mathematics** by B.V. Ramana (Tata McGraw-Hill).
5. **Advanced Engineering Mathematics** by Erwin Kreyszig, Wiley Eastern Ltd.
6. **Engineering Mathematics A Tutorial Approach** by Ravish R Singh, Mukul Bhat ,Mc Graw Hill

Pattern of Question Paper:

The units in the syllabus shall be divided in two equal sections. Question paper shall be set having two sections A and B. Section A questions shall be set on first three units (1,2,3) and Section B questions on remaining three units (4,5,6) . Question paper should cover the entire syllabus.

For 80 marks Paper:

1. Minimum ten questions
2. Five questions in each section
3. Question no 1 and 6 be made compulsory and should have at least ten bits of two marks out of which FIVE to be solved.
4. Two questions from remaining questions from each section be asked to solve having weightage of 15 marks

MED253-THEORY OF MACHINES-I

Teaching Scheme

Lectures: 4 Hrs

Examination Scheme

Theory: 80 Marks

Class Test :20 Marks

Duration of Theory Examination :4 Hrs.

OBJECTIVE

Student will be able to:

1. Know different machine elements and mechanisms.
2. Understand Kinematics and Dynamics of different machines and mechanisms.
3. Select Suitable Drives and Mechanisms for a particular application.
4. Appreciate concept of balancing.
5. Develop ability to come up with innovative ideas.

OUTCOMES:

1. Students shall be able to define and identify links, pairs, and mechanisms, etc.
2. Students shall be capable of selecting, suitable mechanism for required motion transformation.
3. Students shall be capable to determine velocity and acceleration using graphical and numerical methods.
4. Students shall be capable to determine inertia force and inertia torque using graphical and numerical methods.
5. Students shall be capable of identify the types and application of brakes and dynamometers.
6. Students shall be capable to solve problems on brakes and dynamometers.
7. Students shall be capable to identify and select the type of cam follower for required application
8. Students shall be capable to draw cam profile for giving required motion to the follower
9. Students shall be capable to solve problems on balancing the rotating and reciprocating masses in engines.

Unit1: Introduction and Definitions: **(4 Hrs)**

Scope of the subject, Statics and kinetics, kinematics and dynamics. Definitions: Resistant body, Kinematic link or element; Kinematic pair; Classification of Kinematic Pairs and their types; Kinematic chain; degree of freedom; relation between no. of links & joints. Basic structure, mechanisms, types of mechanisms, inversion of a mechanism Kinematic chains: single slider crank chain, double slider crank chain and four bar chains.

Unit2: Velocity Acceleration Analysis : **(8 Hrs)**

Velocity analysis of mechanisms using Relative velocity method, Instantaneous centre method (using Kennedy's theorem), and relative velocity method for determination of linear and angular velocities and their directions. Acceleration analysis of mechanisms using relative acceleration method. Problems involving Coriolis component of acceleration. Determination of linear and angular acceleration for mechanisms having maximum four links. Ritterhaus construction method and Klein's construction method for simple engine mechanisms and offset engine mechanisms. Modified Klein's construction method for four bar mechanisms. Analytical method for acceleration analysis for engine mechanisms.

Unit3: Dynamics of Engine Mechanisms : **(6 Hrs)**

Dynamically Equivalent systems, application of dynamically equivalent system for connecting rod of the engine, determination of inertia force and inertia torques on the crank shaft of horizontal and vertical engine mechanisms.

Unit4: Brakes and Dynamometers : **(8 Hrs)**

Function of Brakes and Dynamometers, Different types of brakes such as Short shoe brakes, Band brakes and Band & block brakes. Types of Dynamometers: Absorption type and Transmission type. Absorption type dynamometers such as Prony brake, Rope brake dynamometers. Transmission type dynamometers such as Belt transmission, Epicyclic gear train dynamometers, Torsion dynamometers.

Unit5: Cams **(7 Hrs)**

Types of Cams and Followers, types of specified motions such as uniform velocity, uniform and equal/ unequal acceleration and retardation, simple harmonic motion and cycloidal motion, drawing radial cam profiles using these motions,

Unit6: Balancing: **(7 Hrs)**

Balancing of revolving masses, when they are acting in one or more planes. Static and dynamic balancing. Balancing of reciprocating engines. Primary and secondary forces and couples acting on single cylinder two cylinder engines. Balancing of non-identical and identical in-line engines. Balancing of radial engines, V-Engines. Balancing of engines such as V-8 & W-12 engines.

Books and References:

1. Theory of Machines – Thomas Bevan
2. Theory of Machines and Mechanisms- Shigley
3. Theory of Machines and Mechanisms-Ghosh & Mallik
4. Theory of Machines and Mechanisms- Rao & Dukkipati
5. Theory of Machines-S.S. Rattan
6. Kinematics of Machines-Dr. Sadhu Singh
7. Mechanics of Machines – V. Ramamurti
8. Theory of Machines – Khurmi & Gupta
9. Theory of Machines – R. K. Bansal
10. Theory of Machines – V. P. Singh

Pattern of Question Paper:

The units in the syllabus shall be divided in two equal sections. Question paper shall be set having two sections A and B. Section A questions shall be set on first three units (1,2,3) and Section B questions on remaining three units (4,5,6) . Question paper should cover the entire syllabus.

For 80 marks Paper:

1. Minimum ten questions
2. Five questions in each section
3. Question no 1 and 6 be made compulsory and should have at least ten bits of two marks out of which FIVE to be solved.
4. Two questions from remaining questions from each section be asked to solve having weightage of 15 marks

MED254-THERMODYNAMICS-II

Teaching Scheme
Theory: 4 hours/week

Examination Scheme
Class Test: 20 Marks
Theory: 80 Marks
Duration of theory exam: 3 Hrs

Unit1: STEAM GENERATORS AND PERFORMANCE OF BOILERS **(7 Hrs)**

Classification, constructional details of process and power boilers, equivalent evaporation, boiler efficiency, energy balance, steam generation controls, introduction to IBR laws, principle and working of high pressure boilers. (Descriptive and Numerical Treatment)

Unit2: BOILER DRAUGHT **(6 Hrs)**

Introduction, classification, determination of height and diameter of chimney, efficiency of chimney, condition for maximum discharge, artificial, forced and induced draught, Advantages. (Descriptive and Numerical Treatment)

Unit3: STEAM NOZZLES **(7 Hrs.)**

Types of nozzles, equation of continuity of nozzle, isentropic flow through nozzle, use of Mollier chart, velocity of steam leaving a nozzle, effect of friction, mass of steam discharged, nozzle efficiency, critical pressure ratio and maximum discharge, supersaturated flow through the nozzle, effect of back pressure on nozzle characteristics. (Descriptive and Numerical Treatment)

Unit4: STEAM CONDENSERS **(6 Hrs.)**

Classifications, comparison between Jet and Surface condensers, vacuum, vacuum efficiency, Daltons law of partial pressure, vacuum measurement, mass of circulating water required in a condenser, air removal, capacity of air extraction pumps, introduction to cooling towers. (Descriptive and Numerical Treatment)

Unit5: VAPOUR POWER CYCLES **(7 Hrs)**

Carnot cycle, ideal Rankine cycle, modified Rankine cycle, Reheat and Regenerative cycles with bleeding of steam, thermal efficiency, specific steam consumption, work ratio, power output, effect of superheat, inlet pressure and back pressure on performance of Rankine cycle. (Descriptive and Numerical Treatment)

Unit6: AIR COMPRESSORS: **(7 hrs)**

(a) Classifications and working principles, reciprocating compressors. Terminologies used effect of clearance volume, actual indicated diagram, and multistage compression. (Descriptive and Numerical Treatment)

(b) Rotary compressors, working principles Centrifugal compressor, and axial flow compressor. Comparison between reciprocating and rotary compressors. Vacuum pumps, air motor. (Descriptive Treatment)

RECOMMENDED BOOKS

1. Nag P.K., "Engineering Thermodynamics", TMH Publishing Co. New Delhi
2. Rajput R.K., "A Text Book of Engineering Thermodynamics", Laxmi Publication, New Delhi
3. Ballaney P.L., "Thermal Engineering",
4. Domkundwar & Domkundwar, "Introduction to Thermal Power Engineering", Dhanpatrai and Sons,New Delhi
5. Rao, "Engineering Thermodynamics",
6. Radhakrishnan, "Fundamentals of Engineering Thermodynamics", PHI

MED-255: ELECTRCAL MACHINES AND APPLIED ELECTRONICS

Teaching Scheme
Theory: 04 hrs/week

Examination scheme
Theory Examination : 80Marks
Class Test: 20Marks
Duration of Exam: 3 Hrs

Unit 1:Concept of general electrical drives and applications: (05)
Classification and comparison of electric drive system, cooling and heating of electric motors, selection of an electric drive for particular application such as steel mill, paper mill, cement, textile mill, electric traction, coal mining, thermal power station etc

Unit 2: DC Motors: (05)
Construction, working principle, types, characteristics, starting and breaking of DC Motors, comparision of electrical and mechanical breaking methods, conventional speed control methods, thyristorised armature voltage control of DC motor using phase control and chopper circuit.

Unit 3: AC Motors: (10)
Construction, working principle, types, characteristics of 3phase Induction Motor, Torque equation, applications, starting and breaking of 3 phase induction motor, conventional speed control methods. Thyristorised stator voltage control of 3phase induction motor, V/F control, slip power recovery scheme.
Special purpose machines: introduction, construction and working principle of DC servomotors, stepper motors, brushless DC motor, Universal motor, 1phase induction motor.

Unit 4: Sensors: (06)
Definition, classification of sensors, selection criteria of sensors, thermocouple, airflow sensor, LVDT, LDR, Proximity switch, piezo sensors, shaft encoder decoder, load cell, etc. different applications of sensors.

Unit 5: Actuators: (06)
Definition, classification of actuators, opto-couplers, solenoid valves, Relays and its types, starters, Buzzer, Alarm, 7 segment display, LCD display.

Unit 6: Industrial Electronics and applications: (08)
Theory and working principle of transistor, SCR, MOSFET, DIAC, TRIAC, Protection circuits, Heat sink, Light dimmer circuit, flash circuit, Temperature controller, sequential timer circuit.

Reference books:

1) Electric motor Drives- Modeling, analysis and control by R.Krishnan, Low price Edition, Pearson
2) Utilization of Electric Energy: H.Pratab
3) Power Electronics by M.H.Rashid
4) Power Electronics by Khanchandani

Text books:

1) Electrical Technology (AC and DC drives) by B.L.Thereja vol-II and vo-III
2) Electric machines by I.J Ngrath and D.P. Kothari (second edition) TMH.
3) Power electronics by Bhimbra

MED256-PRODUCTION PROCESSES- II

Teaching Scheme
Theory: 4 hours/week

Examination Scheme
Class Test: 20 Marks
Theory: 80 Marks
Duration of theory exam: 3 Hrs

OBJECTIVE

- Introduction to the Production processes.
- To introduce the student to the manufacturing methods in Mechanical Engineering.

PURPOSE

- Production Processes covers an introduction to the machining processes used in the Production fields of mechanical engineering.
- The students are expected to know all the basic manufacturing machining processes and their applications so that they can be useful in the product design and manufacturing process.
- Convey all the required information that will be helpful in design and development for manufacturer for production.

Unit1:INTRODUCTION, METAL CUTTING & CUTTING TOOLS. ADVANCES **(6 Hrs)**

Introduction to machine tools, their classification. Types of cutting tools used in machine tools (single point, multiple point etc), orthogonal and oblique cutting, types of chips, single point cutting tool nomenclature, cutting speed, feed and depth of cut and its effect on tool life., chip breakers, machinability, cutting tool materials, heat generated in machining , cutting fluids, economics of machining. Mechanization, automation and computer application in machine tools. CIM, CNC machines. (Introduction, concept and applications)

Unit2: LATHE: **(6 Hrs)**

Types, construction of centre lathe, operations, tool holding and workpiece holding devices. Procedure and calculation of taper turning, thread cutting. Attachments and lathe accessories.

Unit3: MILLING MACHINE: **(8 Hrs)**

Types, Construction of universal milling machine, milling tools (cutters), tool and workpiece holding devices, universal dividing head (working and applications). Operations on milling, calculations and procedure of gear cutting, helical cutting . Hobbing : gear hobbing.

Unit4: SHAPER SLOTTER AND PLANER: **(4 Hrs)**

Types, construction. Operations carried .

Unit5: DRILLING, BORING & GRINDING MACHINES **(10 Hrs)**

Drilling –, twist drill nomenclature, types of drilling machines, work holding devices, tool holding devices, Boring – Introduction, classification of boring machines, Jig boring, boring bars, boring heads, boring defects,

Introduction, grinding wheels, manufacturing of artificial abrasives, bonds and bonding processes, grit, grade and structure of grinding wheels, types of wheels, method of specifying grinding wheel, selection of grinding wheels, dressing and truing of grinding wheels, types of grinding machines.
Broaching- Introduction, principle parts of broarch, broaching machines, application of broach, advantages of broaches, limitations of broaches and broaching tools.

Unit6: NON TRADITIONAL MACHINING **(6 Hrs)**

Introduction, classification of machining processes, Study of principle of working, equipment and applications of abrasive jet machining (AJM), ultra sonic machining (USM), Chemical machining (CHM), electrochemical machining (ECM), Electrochemical grinding (ECG), electro discharge machining (EDM), electron beam machining (EBM), laser beam machining (LBM), plasma arc machining (PAM), ion beam machining.

REFERENCE

a) Gerling, "All about Machine Tools"
b) Krar S.F., "Technology of Machine Tools"
c) Boothroyd, "Fundamentals of Metal Machining and Machine Tools"
d) Raghuvanshi B.S., "Workshop Technology", Vol I
e) Hazra Choudhary, "Elements of Workshop Technology", Vol I
f) Jain R.K. "Production Technology"
g) Bawa H.S. "Workshop Technology" Vol I

Pattern of Question Paper:

The units in the syllabus shall be divided in two equal sections. Question paper shall be set having two sections A and B. Section A questions shall be set on first three units (1,2,3) and Section B questions on remaining three units (4,5,6) . Question paper should cover the entire syllabus.

For 80 marks Paper:

1. Minimum ten questions
2. Five questions in each section
3. Question no 1 and 6 be made compulsory and should have at least ten bits of two marks out of which FIVE to be solved.
4. Two questions from remaining questions from each section be asked to solve having weightage of 15 marks

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD
FACULTY OF ENGINEERING AND TECHNOLOGY
Second Year Mechanical Engineering
Semester-II

MED271-Lab-V THEORY OF MACHINES-I

Teaching Scheme
Practical: 2 Hrs

Examination Scheme
Term work: 25 Marks
Practical: 25 Marks

Practical:

1. Study of Kinematics and Definition
2. Solution of min.2 problem on topic Velocity Analysis, using Relative velocity method
3. Solution of min.2 problem on topic Velocity Analysis, using Instantaneous centre method
4. Solution of min.2 problem on topic Velocity & Acceleration analysis, using Relative acceleration method
5. Solution of min.2 problem on topic Velocity & Acceleration analysis, using Short cut methods.
6. Solution of min.2 problem on topic Dynamics of Engine Mechanisms, determination of inertia force and inertia torque.
7. Solution of min.2 problem on topic Cams
8. Study of Brakes
9. study of dynamometers

Term work

The term work will consist of submitting a file for all the experiments with neatly written records of the study and diagrams. The term work will be assessed by the subject teacher.

Practical Examination

The Practical Examination will comprise of performing the experiments and viva voce on the Syllabus. The practical examination will be assessed by two examiners, one will be the subject teacher and other examiner appointed by Dr. B.A.M.U. Aurangabad.

MED272-Lab-VI THERMODYNAMICS-II

Teaching Scheme
Practical: 2 hours/week

Examination Scheme
Term work: 25 Marks
Practical: 25 Marks

The list of experiments

[1] Study of any two boilers

[2] Study of boiler mounting and accessories

[3] Study of condensers

[4] Study of cooling towers

[5] Performance of single/multistage reciprocating air compressor

[6] Technical visit to steam power plant.

[7] Assignments based on descriptive as well as at least five numerical from 1, 2, 3, 5 and 6 units.

Term work
The term work shall consist of Performing / Studying following experiments. The candidate shall submit the report of each experiment and the assignments.

Practical Examination

The Practical Examination will comprise of performing the experiments and viva voce on the Syllabus. The practical will be assessed by two examiners, one will be the subject teacher and other will be examiner appointed by Dr. B.A.M.U. Aurangabad.

RECOMMENDED BOOKS

1. Nag P.K., "Engineering Thermodynamics", TMH Publishing Co. New Delhi
2. Rajput R.K., "A Text Book of Engineering Thermodynamics", Laxmi Publication, New Delhi
3. Ballaney P.L., "Thermal Engineering",
4. Domkundwar & Domkundwar, "Introduction to Thermal Power Engineering", Dhanpatrai and Sons,New Delhi
5. Rao, "Engineering Thermodynamics",
6. Radhakrishnan, "Fundamentals of Engineering Thermodynamics", PHI

MED273:Lab-VII ELECTRCAL MACHINES AND APPLIED ELECTRONICS

Teaching Scheme
Practical: 02 hrs/week

Examination scheme
Term work: 25 Marks

List of Experiments:

1) To perform speed control of DC motor
2) Speed control of 3phase Induction Motor
3) To Perform load test on DC series motor
4) Rheostatic speed breaking of DC shunt motor
5) To study single phase induction motor
6) To identify different parts and understand working of starters used for 3phase induction motors
7) To Study different sensors
8) To study different actuators
9) To study different types of heating
10) To study power devices

Term work

The term work will consist of submitting a file for all the experiments with neatly written records of the study and diagrams. The term work will be assessed by the subject teacher.

MED274-Lab-III WORKSHOP PRACTICE-IV

Teaching Scheme
Practical: 2 hours/week

Examination Scheme
Term work: 25 Marks
Practical: 50 Marks
Duration of exam: 8 Hrs.

COURSE CONTENT

TURNING SHOP:
Study of different advanced operations on the lathe machine, like taper turning by different methods thread cutting along with calculations, drilling, boring, internal threading, internal taper turning, facing, use of at least one attachment (like grinding attachment, taper turning attachment, milling attachment etc.).
JOB: Preparing at least one job on lathe machine to perform the above operations.

WELDING:
study of different arc welding processes.
Job: Preparation of at least one job using shielded metal arc welding and MIG or TIG welding.

BLACK SMITHY:
Study of forging parameters, forging tools, different operations like sizing, bending, upsetting, taper etc.
JOB: Prepare one job involving the above hand forging operations.

TERM WORK

Term work shall consist of submission of the above jobs, a File containing the write-up (principle, tools, operations and application) of the three sections and a Workshop Diary in regular format which should have the record of job drawing, tools used, operations to be performed on the job, dates etc., certified by each Section Instructor and the Workshop Superintendent.
Assessment of the term work shall be done by the Workshop Superintendent and a teachers appointed by the Head of the Institute.

PRACTICAL EXAMINATION

The Practical Examination will comprise of two jobs. One Job in Turning Shop is compulsory and another in any one of the remaining shops. The jobs should involve all the operations studied during the semester. Duration will be Four hours for each job. Question paper will be set by University.

The jobs will be assessed by two examiners, one will be the Internal and other will be External examiner appointed by University.

Recommended books:

1) *Workshop Technology, vol I, by Hazra Chaudhury;* Media Promotors & Pub
2) *Workshop Technology, vol I , by Raghuvanshi; Dhanpatrai and Sons.*

BSH 275 *Basics of Communication Skills*

Teaching Scheme
Practical: 2 Hrs/ Week

Examination Scheme
Term Work: 50 Marks

Course Curriculum

Unit I — ***Grammar and Usage*** — 7 Hrs

- Overview of basic Mid-level English Grammar.
- Parts of Speech
- Prepositions and Conditionals.
- Tense and concept of time.
- Sentence Construction (Concord).
- Vocabulary: Words, Idioms, Phrases, Antonyms and Synonyms.

Unit II — ***Speaking Skills*** — 5 Hrs

- Training in Sound Recognition
- Stress and Intonation pattern in spoken communication
- Rhythm and effective English communication
- Sound Recognition Exercise (Language Lab Exercise).
- Common Errors in English.

Unit III — ***Listening and Reading Skills*** — 3 Hrs

- Active and Passive Listening.
- Note taking tips
- Techniques of reading
- Types and Techniques – skimming and scanning of reading

Unit IV — ***Writing Skills*** — 5 Hrs

- Identification of different writing styles (Four Writing Styles).
- Business Letters
- E-mail Writing
- Report Writing
- Job Applications
- Resume Preparation
- Drafting: Memo, Circulars, Notices, Agendas etc.

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Term Work: The Term Work consists of 10 Experiments from the above said syllabus.

Texts:

1. Farhathullah, T. M. **Communication Skills for Technical Students**. Kolkata: Orient Blackswan (2008).
2. Bansal R.K. and J. B. Harrison. **Spoken English**. Chennai: Orient Longman Ltd. (1997).
3. A. V. Martinet and A. J. Thomson. **A Practical English Grammar**. Oxford: University Press (1986).

References:

- Murphy, Raymond. **Essential English Grammar**. Cambridge: University Press (2000).
- Hewings, Martin. **Advanced English Grammar**. Cambridge: University Press (2003).
- Apte, Madhavi. **A Course in English Communication**. New Delhi: Prentice Hall of India Pvt. (2008).

Web Links:

- http://www.bmconsultantsindia.com/advanced-english-speaking.html
- http://englishtrainer.blogspot.in
- http://www.englishclub.com/learn-english/language-skills.htm