B.TECH. DEGREE COURSE

SCHEME AND SYLLABI
(2002-03 ADMISSION ONWARDS)

MAHATMA GANDHI UNIVERSITY
KOTTAYAM
KERALA
1. **Conditions for admission**

Candidates for admission to the B.Tech. Degree course shall be required to have passed the higher secondary/+2/XII Std. examination conducted by boards/departments recognized/accepted by the University, obtaining not less than 50% marks in Mathematics and not less than 50% marks in Mathematics, Physics and Chemistry put together or the diploma examination in Engineering, Kerala or any examination accepted by the Government of Kerala as equivalent there to with 50% marks in the final qualifying examination, subject to the usual concession allowed for backward and other communities as specified from time to time.

2. **Duration of the course**

   a) The course for the B.Tech. Degree shall extend over a period of four academic years comprising of 8 semesters. The first and second semester combined and each semester from third semester onwards shall cover the groups of subjects as given in the scheme of studies and examinations.

   b) Each semester shall normally comprise of 16 weeks.

   c) The course calendar will be as follows.

<table>
<thead>
<tr>
<th>Semesters</th>
<th>Commencement</th>
<th>Closing</th>
<th>Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>I &amp; II Semesters</td>
<td>After the admissions are over.</td>
<td>31st of March</td>
<td>15th April</td>
</tr>
<tr>
<td>IV, VI and VIII</td>
<td>December 1st</td>
<td>31st of March</td>
<td>15th April</td>
</tr>
<tr>
<td>Semesters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>III, V and VII</td>
<td>First working day of June</td>
<td>30th of September</td>
<td>15th October</td>
</tr>
<tr>
<td>Semesters</td>
<td></td>
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</tr>
</tbody>
</table>

3. **Eligibility for the Degree**

Candidates for admission to the Degree of B.Tech. shall be required to have undergone the prescribed course of study in an institution maintained or affiliated to Mahatma Gandhi University for a period of not less than four academic years and to have passed all examinations specified in the scheme. The first academic year of study shall be from the date of commencement of admission till the closure of the academic year. The remaining 6 semester will have to be completed within 3 subsequent academic years.

4. **Subjects of Study**

The subjects of study shall be in accordance with the scheme and syllabi given in the Annexure.

5. **Electives**
All students shall choose electives in VII and VIII semesters, from a prescribed set of elective subjects offered by the institution, as indicated in the scheme. There should be at least 20% students of the class for an elective subject to be offered. New electives may be introduced according to the needs of emerging fields in technology. The name of the elective and its syllabus should be approved by the university before the course is offered.

6. **Sessional work**

Sessional marks for Theory, Drawing, Workshops, Laboratories and Practical will be awarded by the teaching faculty based on the day to day performance of the students. The allocation of sessional marks for the individual subjects shall be on the following basis.

<table>
<thead>
<tr>
<th>Theory Subjects</th>
<th>Practical Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance</td>
<td>Attendance</td>
</tr>
<tr>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>Assignments</td>
<td>Regular class work/Drawing/Workshop Record/Lab Record</td>
</tr>
<tr>
<td>20%</td>
<td>and Class Performance</td>
</tr>
<tr>
<td>Tests</td>
<td>Tests</td>
</tr>
<tr>
<td>60%</td>
<td>20%</td>
</tr>
</tbody>
</table>

The sessional marks allotted for attendance shall be awarded in direct proportion to the percentage of attendance secured by the candidate in the subject. However full sessional marks for attendance shall be awarded to those who are securing 80% attendance and above.

7. **Examination**

There shall be University Examinations at the end of the first academic year and at the end of every semester from third semester onwards in subjects as prescribed in the scheme of examination.

8. **Eligibility for appearing examination is subject to the following**

a) The student should have successfully completed the course work for the year/semester.

b) The student should have not less than 75% attendance for the particular year in the case of I & II semesters combined or the particular semester in the case of higher semesters.

However, he is eligible for condonation of attendance (once in case of I & II semesters combined or twice in the case of higher semesters) subject to the conditions given below in the entire course.

i) His conduct must be satisfactory.

ii) The shortage shall not be more than 10% of actual working days.

iii) Condonation is given only on medical grounds.

iv) The condonation shall be granted subject to rules and procedures prescribed by the University from time to time.
v) It is open to the Vice Chancellor to grant condonation of shortage of attendance on the recommendation of Principal.

9. Repetition of the course work

a) A student who is not eligible for condonation of shortage of attendance shall repeat the course in full including the sessional work in the next immediate chance. The sessional marks earned during repetition of course alone will be counted in such case.
b) A student can repeat the course only once in each semester/year.
c) A student can also repeat the course work for improving sessional marks subject to the following conditions.
   i) He shall repeat the course work in full (including sessionals) in a particular semester/year once and that too at the earliest available opportunity.
   ii) He shall not combine his course work with regular course work of any other semester.
   iii) A candidate who has satisfactorily completed the VIII semester course will not be allowed to repeat the course work in any semester.
   iv) He shall not be allowed to repeat the course work of any semester if he has already passed that semester examination in full.
   v) A candidate who has been registered for the higher semester examination will not be allowed to repeat the course work, in lower semester.
   vi) The sessional marks obtained during the repeated course only shall be considered for all purposes.
d) For repeating the course in any of the above cases the character and conduct of the student must be satisfactory as certified by the Head of the Institution.

10. Conduct of Examination

To conduct all the theory examinations, a Chief Superintendent and an Assistant Chief Superintendent should be appointed by the Principal. An external Chief Superintendent should also be appointed by the University as an Observer for conducting all theory examinations in Self-financing Engineering Colleges.

The examination in theory papers will be conducted in accordance with the following schedule as far as possible.

<table>
<thead>
<tr>
<th></th>
<th>Fore Noon</th>
<th>After Noon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tues.</td>
<td>day 1</td>
<td>1 &amp; 2, 6</td>
</tr>
<tr>
<td>Wed.</td>
<td>day 2</td>
<td>5</td>
</tr>
<tr>
<td>Thurs.</td>
<td>day 3</td>
<td>1 &amp; 2, 6</td>
</tr>
<tr>
<td>Fri.</td>
<td>day 4</td>
<td>5</td>
</tr>
<tr>
<td>Mon.</td>
<td>day 5</td>
<td>1 &amp; 2, 6</td>
</tr>
<tr>
<td>Tues.</td>
<td>day 6</td>
<td>5</td>
</tr>
<tr>
<td>Wed.</td>
<td>day 7</td>
<td>1 &amp; 2, 6</td>
</tr>
<tr>
<td>Day</td>
<td>Day</td>
<td>Date</td>
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</tr>
<tr>
<td>Thurs.</td>
<td>day 8</td>
<td>5</td>
</tr>
<tr>
<td>Fri.</td>
<td>day 9</td>
<td>1 &amp; 2, 6</td>
</tr>
<tr>
<td>Mon.</td>
<td>day 10</td>
<td>1 &amp; 2, 6</td>
</tr>
<tr>
<td>Tues.</td>
<td>day 11</td>
<td>5</td>
</tr>
<tr>
<td>Wed.</td>
<td>day 12</td>
<td>1 &amp; 2</td>
</tr>
<tr>
<td>Thurs.</td>
<td>day 13</td>
<td>5</td>
</tr>
<tr>
<td>Fri.</td>
<td>day 14</td>
<td>1 &amp; 2</td>
</tr>
<tr>
<td>Mon.</td>
<td>day 15</td>
<td>1 &amp; 2</td>
</tr>
</tbody>
</table>

(Main and supplementary examinations will alternate)

**Conduct of Practical Examinations**

The Principals of the concerned Engineering Colleges with the help of the Chairmen of all branches will conduct the practical examination for all semesters with the approval from the University and bonafide laboratory record, workshop record/project record, seminar report are mandatory for appearing practical/viva voce university examinations.

To conduct each practical examination, an External Examiner and an Internal Examiner should be appointed by the University. In Self-financing Engineering Colleges, no practical examination should be conducted without the presence of an External Examiner appointed by the University.

**11. Minimum for a pass**

A candidate shall be declared to have passed in any individual subject of a semester/year examination if he secures not less than 40% marks for the subject in University examination and not less than 50% of the total marks for the subject, i.e., University examination marks and sessional marks in that subject put together. A candidate who passes in all the subjects of a semester examination shall be declared to have passed the examination in full.

**12. Improvement of marks**

A candidate shall be allowed to re-appear for any theory examination in order to improve the marks already obtained subject to the following conditions.

a) The candidate shall be permitted to take the improvement examination only during the chance immediately after the first appearance.

b) The candidate shall not be allowed to appear for an improvement examination for the subject of the VIII semester.

c) The improved marks (better of the two) obtained by the candidate for each subject he has appeared for shall be counted for all purposes.
d) A candidate can apply for improvement in three subjects in combined SI&II provided he/she has passed all the theory subjects.

e) A candidate can apply improvement in two subjects in combined SI&II if he/she has only one supplementary theory examination.

f) A candidate can improve one subject in combined SI&II if he/she has only two supplementary theory examinations.

g) Those candidates who have to write supplementary examination in three or more theory papers in combined SI&II will not be eligible for improvement of any paper.

h) For higher semesters (SIII to SVII) (i) a candidate can apply for improvement in two subjects if he/she has passed all theory subjects (ii) a candidate can apply for improvement in one subjects if he/she has passed five theory subjects (iii) a candidate shall not be eligible for improvement of any paper if he/she has failed for two or more theory subjects.

i) No candidate shall be permitted to improve the marks for practical examination.

j) A candidate shall be allowed to withdraw from the whole examination of a semester in accordance with the rules for cancellation of examinations, of the University.

13. Promotion to Higher semesters

A student is eligible to be promoted to the higher semesters subject to the following conditions.

i) He should have successfully completed the lower semester.

ii) He should have obtained 75% attendance in the lower semester or obtained condonation as per University rules.

iii) A student shall be permitted to register for any semester examination only if he had registered for the previous semester examination.

iv) A student can be permitted to register for the V semester University examination only if he has passed fully the combined I & II semester examination.

v) A student can be permitted to register for the VII semester examination only if he has passed fully the III and IV semester examination.

14. Completion of the course

The degree will be awarded to the candidate only if he successfully completes the course work and has passed all the examinations within a period of 8 years from the time of admission.

15. Classification of Successful candidates

a) A candidate who qualifies for the Degree passing all the semester examinations within five academic years (10 consecutive semesters) after commencement of his course of study and has secured not less than 75% of the aggregate of the total marks in all the 8 semesters shall be declared to have passes B.Tech. Examination in First Class with Distinction.
b) A candidate who qualifies for the Degree passing all the semester examinations within five academic years (10 consecutive semesters) after the commencement of the course of study and has secured not less than 60% of the aggregate of the total marks in all the 8 semesters shall be declared to have passes B.Tech. Examination in First Class.

c) All other successful candidates shall be declared to have passed B.Tech. Degree Examination in Second Class.

d) Successful candidates who complete the examination in four academic years (8 consecutive semesters and chances) after the commencement of the course of study shall be ranked branch-wise on the basis of the aggregate of the total marks for all the eight semesters.

16. Industrial visit

It is desirable to conduct Industry/Establishment/Site visits of one day duration as suggested by the department in 3rd to 8th semesters. Such visits should be limited to 15 numbers during the course and these days will be counted for attendance.

17. Co-curricular Activities and Extra Murals

a) ‘Students’ Counselling

Students counselling must be undertaken either during Saturdays or after regular working hours or on other holidays depending upon the convenience of students and faculty members. A team of 3 faculty members including group tutor of the class is expected to conduct regular counselling for duration of 5 hours/week in order to help the students in their curricular and personal problems.

b) Industrial/Field Training & Literature Overview

In order to promote Industry-Institute Interaction and to impart hands-on experience in the field work/literature overview, 3 hours/week must be set apart for each class in addition to regular working hours under the supervision of the faculty members.

c) Seminar, Symposium, Group Discussions etc.

Orientation lectures, Seminars etc. will be presented by the faculty and experts from Industries or other Educational institutions. Also there will be Seminars, Debates and Group Discussions presented by the students to develop their communication skill. 3 hours/week from 4 P.M. to 5 P.M. is to be apart for this, which is to be, supervised by the faculty members.

d) Project work

For the students in final semester, in addition to 4 hours allotted to regular project work, 5 hours/week must also be added on during Saturdays or other holidays in order to improve the quality of the projects undertaken. A candidate will not be permitted to appear for the project work/viva voce examinations unless, he/she submits the project report within the prescribed date (March 15th).
18. Question Papers

Question papers for Mathematics of all semesters and Engineering Graphics of I & II semesters combined shall contain two questions from each module of the relevant syllabus, one of which will have to be answered. All other theory papers will normally have the question papers in the following pattern.

Part A Short answer questions covering the whole syllabus with maximum 40% marks for this part. All questions are compulsory.

Part B Two questions from each module of the syllabus out of which one is to be answered. Maximum marks for this part is 60%.

19. Revision of Regulations

The University may from time to time revise, amend or change the Regulations, scheme of studies, and examination and syllabi. The changes, unless specified otherwise, will have effect from the beginning of the academic year/semester following the Notification from the UNIVERSITY.
Scheme – I & II Semesters Combined

Scheme – I & II (Common to all branches)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course No.</th>
<th>Subject</th>
<th>Teaching Period</th>
<th>Duration of Uty. Exam (hrs)</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lect.</td>
<td>Tut.</td>
<td>Prac.</td>
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<tr>
<td>CME LRPTA</td>
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<td>CME LRPTA</td>
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<td>0</td>
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<tr>
<td>A</td>
<td>101</td>
<td>Engineering Mathematics I</td>
<td>3</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>B</td>
<td>102</td>
<td>Engineering Physics</td>
<td>1</td>
<td>1</td>
<td>-</td>
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<tr>
<td>C</td>
<td>103</td>
<td>Engineering Chemistry</td>
<td>1</td>
<td>1</td>
<td>-</td>
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<tr>
<td>D</td>
<td>104</td>
<td>Engineering Mechanics</td>
<td>2</td>
<td>2</td>
<td>-</td>
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<tr>
<td>E</td>
<td>105</td>
<td>Engineering Graphics</td>
<td>1</td>
<td>-</td>
<td>3</td>
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<tr>
<td>F</td>
<td>106</td>
<td>Basic Civil Engineering</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
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<td>G</td>
<td>107</td>
<td>Basic Mechanical Engineering</td>
<td>1</td>
<td>1</td>
<td>-</td>
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<tr>
<td>H</td>
<td>108</td>
<td>Basic Electrical Engineering</td>
<td>1</td>
<td>1</td>
<td>-</td>
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<tr>
<td>I</td>
<td>109</td>
<td>Basic Electronics Engineering</td>
<td>1</td>
<td>1</td>
<td>-</td>
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<tr>
<td>J</td>
<td>110</td>
<td>Workshop</td>
<td>-</td>
<td>-</td>
<td>6*</td>
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<tr>
<td>Total</td>
<td></td>
<td></td>
<td>12</td>
<td>9</td>
<td>9</td>
</tr>
</tbody>
</table>

*3 periods will be in Mechanical Engineering Workshop and 3 periods in Civil Engineering Workshop & Electrical Engineering Workshop alternately.

ENGINEERING MATHEMATICS - I

CM ELRPTA 101

3+1+0

Module 1 Matrix

Module 2 Partial Differentiation
Partial differentiation – chair rules – Eulers theorem for homogeneous functions – Taylors series for function of two variables – maxima and minima of function of two variables (proof of results not expected.)

Module 3 Multiple Integrals
Module 4  Laplace Transforms

Module 5  Fourier Series
Dirichlet conditions – Fourier series with period 2\* and 2\* – Half range sine and cosine series – simple problems – rms value.

References
1. Advanced Engg. Mathematics  Erwin Kreyszig
4. Laplace and Fourier Transforms  Goyal and Gupta
5. Advanced Mathematics for Engineers  E.S.Sokolinokoff
6. Methods of Applied Mathematics  F.B.Hilderbrand

ENGINEERING PHYSICS
CMELRPTA 102  1+1+0

Module 1  Optical Instruments and Applications

Module 2  Super Conductivity
Module 3  
**Crystallography and Lattice Planes**
Crystallography – space lattice – unitcell – crystal systems – Co-ordination number packing factor – lattice planes and Miller Indices – spacing between lattice planes – Bragg’s law and crystal structure analysis – Bragg’s X-ray spectrometer.

Module 4  
**Magnetic Materials**

Module 5  
**Fibre Optics and its Application**
General ideas of optical fibre – NA of fibre – step index and graded index fibre – multi mode and single mode fibre – applications of optical fibre – fibre optic communication system (block diagram) – Optical fibre sensors.

References

1. Engg. Physics  
   R.K.Gaur and S.L.Gupta
2. Engg. Physics  
   Dr. M.Arumugam
3. Solid State Physics  
   C.Kittel
4. Engg. Materials  
   Decker
5. Physics for Engineers  
   B.Premlet
Module 1  
**Electro Chemistry**

Module 2  
**Plastics and Elastomers**

Module 3  
**Corrosion and protective coatings**

Module 4  
**Domestic water supply**

Module 5  

References
1. Engg. Chemistry  
Jain and Jain
2. Engg. Chemistry  
O.P.aggarwal
J.C.Kuriakose and J.Rajam
4. Environmental Chemistry  
A.K.De
Module 1

Forces in Plane – Vector addition of concurrent forces in plane – problems involving the equilibrium of particles – free body diagrams.
Definition of rigid body – moment of a force about an axis – varignon’s theorem of moment – couple – properties of force couples – resolution of a given force into force acting at a given point and a couple – reduction of a system of coplanar forces acting on a rigid body into a single force and a single couple – equilibrium of a rigid body under coplanar forces – types of supports – reaction at supports of beams and frames – graphical method.

Module 2


Module 3


Module 4

Dynamics: Kinematics (Velocity – acceleration) rectilinear motion of a particle under variable acceleration
Relative velocity – simple cases only. Circular motion with uniform acceleration – relation between angular and rectilinear motion – normal and tangential acceleration – motion of rotation and translation – instantaneous centre of zero velocity (elementary treatment only)

Module 5


References
1. Shames I.H., Engineering Mechanics, Prentice hall of India

ENGINEERING GRAPHICS

Module 1
Scales – plain scale – vernier scale – diagonal scale.
Conic sections – construction of ellipse, parabola, hyoperbola and rectangular hyperbola. Construction of cycloids, involute, archimedian spiral and logarithmic spiral – drawing tangents and normals to these curves.

Module 2
Introduction to orthographic projections: planes of projection – projection of points in different quadrants. Orthographic projection of straight lines parallel to one plane and inclined to the other plane – straight lines inclined to both the planes – true length and inclination of lines with reference planes – traces of lines – projection of planes.

Module 3
Projection of polyhedra and solids of revolution – cubes, prisms, cones, cylinders, pyramids, tetrahedron, octahedron and sphere – frustums.
Projection of solids with axis parallel to one plane and parallel, perpendicular of inclined to the other plane - projection of solids on auxiliary planes.
Sections of solids by planes inclined to horizontal or vertical planes.

Module 4
Development of surfaces of cubes, prisms, cylinders, pyramids and cones – development of funnels and pipe elbows.
Introduction to isometric projection – isometric scale – isometric views – isometric projections of prism, pyramids, cylinders, cones and spheres.

Module 5
Introduction to prespective projections: prespective views of prisms.
Intersection of surfaces – methods of determining lines of intersection – intersection of prism, cylinder in cylinder.

References

2. Geometrical Drawing – P.S.Gill.
3. Geometrical Drawing – V.Lakshmi Narayanan & M.C.Marhur
booking. Compass Surveying: Prismatic compass – Basic principles - Bearing of survey lines & local attraction.
Leveling: field work - reduction of levels - Height of instrument method.

**Module 5**

**Site plan** preparation for buildings (Sketch only) – Kerala Municipal Building Rules – 1999-general provisions regarding site and building requirements – Exterior and interior open air spaces – coverage and floor area ratio – provisions of the size, height and ventilation of rooms (residential buildings) disposal of domestic waste water through septic tank and soak pit. Classification of roads and components of roads – basics of traffic engineering – Road marking – Traffic Islands, signaling – (brief description only)

**References**

1. Jha and Sinha, Construction and foundation Engineering, Khanna Publishers
2. Punmia B. C., Surveying Vol –I, Laxmi Publications
3. Rangwala, Building Materials, Charotar Book stall
5. Nevile, Properties of Concrete, Mc Graw Hill

**BASIC MECHANICAL ENGINEERING**

**CMELRPTA 107**

**Module 1**

**Thermodynamics:** Basic concepts and definitions, Gas laws, specific heat – Universal gas constant – Isothermal, adiabatic and polytropic processes, work done and heat transferred: Carnot, Otto & Diesel Cycles – air standard efficiency.

**Module 2**

**I.C. Engines:** Working of two stroke and four stroke engines – petrol and diesel engines – fuel systems, injector and carburetor – ignition system – lubrication and cooling systems.


**Module 3**


**Module 4**
Power plants: General layout of hydraulic, diesel, thermal and nuclear power plants, nonconventional energy sources, general description only.

Module 5
Simple description of general purpose machines like lathe, shaping machines, drilling machine, milling machine and grinding machine.
Manufacturing process: moulding and casting, forging, rolling, welding – arc welding – gas welding (simple descriptions only)

References
1. Elements of Hear Engines R.C.Patel
2. Thermal Engineering P.L.Bellany
3. Elements of Mechanical Engineering S.Domkundwar
4. Power Plant Engineering Nagpal

BASIC ELECTRICAL ENGINEERING
CMELRPTA 108 1+1
Module 1

Module 2

Module 3
Module 4
D.C. Machine – Principle of Operations of a D.C. generator – Constructional Details – e.m.f. equation – Types of Generators.
Alternator – Principle of Operations – Types

Module 5
Requirements of Good Lighting System – Working Principle of Incandescent – Fluorescent and Mercury Vapour Lamps – Estimate the quantity of Materials required and Draw the wiring layout of (a) Residential Building with One or Two rooms. (b) Workshop with one Induction Motor.

References
1. Electrical Technology
2. Electrical Technology
3. Electrical Circuits
5. A Course in Electrical Power

H.Cotton
Hughese
Edminster J.A.
S.K.Bhattacharyya, K.B.Raina
M.L.Soni & P.V.Gupta

BASIC ELECTRONICS ENGINEERING

Module 1
Basic circuit components
Passive components: Resistors - Types of resistors - Fixed Resistors - Variable resistors, resistor tolerance, colour coding, power rating of resistors.
Capacitors: Types of capacitors: Fixed capacitors, Mica, Paper, Ceramic and Electrolytic capacitors, Variable capacitors, voltage rating of capacitors.
Inductors: Fixed and Variable inductors.
Semiconductor Components: Definition of insulators, semiconductors and conductors types: Intrinsic and extrinsic, p and n type materials, pn junction, Classifications: Germanium, Silicon, Zener, LEDs (working principle only).
Transistors: npn, pnp, working principle.
Integrated circuits: Advantages, classification, Linear and Digital ICs.

Module 2

Basic electronic circuits
Diode circuits: Forward and reverse characteristics, Rectifiers: Half wave, full wave, Bridge circuits, DC Power supply: Capacitor filter, Zener regulator, eliminator circuit.
Transistor circuits: CB, CE, CC characteristics, concept of α and β, Amplifiers, common emitter RC coupled amplifier, Frequency response, Bandwidth.

Module 3

Basic communication engineering
Communication: Frequency bands: RF, VHF, UHF. Modulation – need for modulation, basic principles of amplitude, frequency, phase and pulse modulation.
Radio engineering: block schematic of AM radio receiver and transmitter - function of each block.
Television Engineering: Basic principles of TV – CRT - scanning - simplified block schematic of a monochrome TV receiver.
Wireless communication: mobile, microwave and satellite (basic principles and block schematic only).

Module 4

Basic instrumentation and Digital electronics
Electronic instrumentation: Transducers: Basic principles of Strain guage, LVDT, Thermistor, Photodiode, microphones, Loud speaker.
Measurements: Multimeter and X-Y recorder.
Digital electronics: number systems - binary, octal and hexadecimal - conversion - representation of negative numbers using 1’s compliment and 2’s compliment method. Logic gates – truth table.

Module 5

Basic Computer engineering
Digital computer: Block schematic, function of each block: CPU, Memory, I/O devices.
Memory: RAM, ROM, Magnetic Tape, Floppy Discs, Hard Discs and CD.

References
2. Electronic Devices: Floyd, Pearson Education

WORKSHOP

A-MECHANICAL ENGINEERING WORKSHOP
CMELRPTA 110
0+0+6

Carpentry

Fitting
Practice in chipping – filing – cutting – male and female joints

Smithy
Forging of square and hexagonal prisms, hexagonal bolt – Forging Principles, materials and different operations.

Foundry
Preparation of Simple sand moulds – moulding sand characteristics, materials, gate, runner, riser, core, chaplets and casting defects. Demonstration & study of machine tool - lathe, drilling, boring, soltting shaping and milling machines, grinding, CNC and machining centers.

B-CIVIL ENGINEERING WORKSHOP
CMELRPTA 110

Masonry
English bond – flemish bond –wall –junction – one brick – one and a half brick - two brick two and a half brick—Arch setting.

Plumbing
Study of water supply and sanitary fittings—water supply pipe fitting –tap connections - sanitary fittings - urinal, wash basin—closet (European and Indian), manholes.

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**C - ELECTRICAL & ELECTRONICS ENGINEERING WORKSHOP**
**CMELRPTA 110**

1. Wiring of one lamp and one plug, control of two lamps in series and in parallel.
2. Stair case Wiring.
4. Hospital Wiring.
5. Wiring of fluorescent, C F L and mercury vapour lamp.
6. Wiring of Distribution Board including Power Plug using Isolator, M C B and E L C B.
7. Insulation megger – earth megger, measurement of Insulation resistance and earth resistance.
8. Identification of electronic components and soldering practice.
9. Soldering and testing of a H W and FW rectifier with capacitor filter in a P C B.
10. Soldering of typical I C circuit.

3 periods will be in Mechanical Engineering Workshop and 3 periods in Civil Engineering Workshop & Electrical Engineering Workshop alternately.