MAHATMA GANDHI UNIVERSITY

Kottayam, Kerala

B.Tech. –Degree Courses 2010-2011

Revised Scheme and Syllabus

And

Syllabus for Combined I & II Sem

Contents

From,

M.C.Philipose

Chairman

Board of Studies in Engg (UG)

M.G.University

Kottayam

To

The Registrar

M.G.University

Kottayam

Sir,

Sub: Regulation,scheme&syllabus

I am herewith submitting the following approved by the Board of Studies in Engg (UG) held on 31.05.2010 at M.G.university mini conference hall.

1. Regulation for B.Tech degree(2010 onwards)

2. Scheme for first to eighth semesters

3. Syllabus for combined first & second (common for all branches)

I request you to take the necessary action in this regard

Thanking you

Yours sincerely

31.05.2010

Mahatma Gandhi University

Course Regulations

of

B.Tech. –Degree Courses

(With effect from 2010 admissions)

1. Conditions for Admissions

Candidates for admission to the B.Tech. degree course shall be required to have passed the Higher Secondary Examination of State Board of Kerala or 12th Standard V.H.S.E., C.B.S.E., I.C.S.E. or examinations recognized equivalent by any Universities of Kerala thereto with mathematics, physics and chemistry as optional subjects, with 50% marks in Mathematics and 50% marks in Physics, Chemistry, and Mathematics put together. Candidates belonging to scheduled caste and scheduled tribe need only a pass in the qualifying examination.

Candidates have to qualify the State Level Entrance examination conducted by the Commissioner of Entrance Examinations or State level/National level Entrance Examination approved by the Government of Kerala as equivalent. They shall also satisfy the conditions regarding age and physical fitness as prescribed by the Mahatma Gandhi University

Criteria for selection and method of admission to merit/management seats for Engineering degree courses conducted by Government/Aided/Self-financing colleges affiliated to Mahatma Gandhi University shall be governed by the rules/regulations framed by the Commissioner of Entrance Examinations or other competent authority appointed by the Government of Kerala, in consultation with the University and without contravening with the stipulation of the All India Council for Technical Education (AICTE). In all matters related to selection and admission, the decisions of the University shall be final. The students admitted by affiliated colleges violating the above regulations will not be eligible for registration to University Examinations and contravention of the regulations shall lead to withdrawal/suspension of affiliation.

2. Admission to Diploma Holders

A candidate who has a diploma in engineering awarded by the State Board of Technical Examination or an examination recognized equivalent by the State Board of Technical Education after undergoing regular course of 3 years in an institute approved by AICTE, securing a cumulative minimum of 50% marks in the second and third years diploma examination shall be eligible to be admitted to the first year B.Tech. programme of the Mahatma Gandhi University (hereafter, the University, unless otherwise specified) if he/she has qualified the entrance examination conducted by the Commissioner of Entrance Examinations or State level/National level Entrance Examination approved by the Government of Kerala as equivalent.

Diploma holders with 60% marks (50% in case of SC/ST) are also eligible for admission to the 3rd semester (regular full-time batch) engineering degree course (B.Tech.) under the lateral entry scheme provided they qualify the Entrance Examination conducted for the lateral entry scheme by the state Government. These students are not required to study any deficiency papers of the combined first and second semesters. Admission of all candidates under the lateral entry scheme shall be completed latest by commencement of 3rd semester classes.

3. Subjects of Study

The subjects of study, both theory and practical, shall be in accordance with the prescribed scheme and syllabi of each branch of study.

4. Duration of the Course

The course for the B.Tech degree shall extend over a period of four academic years comprising of eight semesters. The first and second semesters shall be combined; the scheme and syllabi for combined first and second semesters ($S_{1\&}S_2$) will be common for all branches of study. The maximum duration permissible for taking the B.Tech. Degree is fixed as 8 years. For lateral entry students maximum duration permissible for taking the B.Tech. Degree is fixed as 7 years.

Classes of combined first and second semesters shall be started latest by 1st August in all affiliated engineering colleges of Mahatma Gandhi University; however admission to first year shall be completed by 31st August.

The minimum number of working days in combined first and second semesters shall be 150 days. In 3rd to 8th semesters, there shall be minimum 90 working days.

5. Branches of Study

1. Civil Engineering (CE)
2. Mechanical Engineering (ME)
3. Electrical and Electronics Engineering (EE)
4. Electronics and Communication Engineering (EC)
5. Electronics & Instrumentation Engineering (EI)
6. Instrumentation and Control Engineering (IC)
7. Applied Electronics and Instrumentation Engineering (AI)
8. Computer Science and Engineering (CS)

9. Information Technology (IT)

10. Polymer Engineering (PO)

11. Automobile Engineering (AU)

12. Aeronautical Engineering (AN)

6. Course Calendar

The course calendar, published by the University, shall be followed by all affiliated engineering colleges. Within a week after the commencement of classes of each semester, Head of each Institution should forward the list of faculty members working in the college along with their qualification and years of teaching experience, to the University. This is a mandatory requirement which should be strictly followed by Head of each Institution. Head of each Institution shall ensure the availability of sufficient number of regular faculty members having experience and qualifications (as per AICTE guidelines) in the institution.

7. Assessment of Students

Assessment of students for each subject will be done by internal continuous assessment and Semester-End examinations. Internal assessment shall be conducted throughout the semester. It shall be based on internal examinations, assignments (such as home assignment, problem solving, group discussions, quiz, literature survey, seminar, term-project, software exercises, etc.) as decided by the faculty handling the course, and regularity in the class. Assignments of every semester shall preferably be submitted in Assignment Book, which is a bound book similar to laboratory record.

Semester-End examinations of theory and practical subjects will be conducted by the University. Semester-End examinations of combined first and second semesters and 3^{rd} to 6^{th} semesters will be conducted only once in a year; failed or improvement candidates will have to appear for the Semester-End examinations along with regular students. However, Semester-End examinations of 7^{th} and 8^{th} semesters will be conducted once in every semester. Head of institution should take necessary steps to prevent any malpractices in the Semester-End examinations. If any such instances are detected, they should be reported to the University without any delay.

Internal assessment marks of each theory subject should have a class average limited to 80%. If the class average of internal assessment marks of any theory subjects is greater than 80%, standard normalization procedure should be applied to limit it to 80%. If the class average is not greater than 80%, absolute marks should be given.

For practical subjects, internal assessment marks and Semester-End examination marks individually should have a class average limited to 75%. If the class average of internal assessment marks or Semester-

End examination marks of practical subjects is greater than 75%, the standard normalization procedure should be applied to limit the class average to 75%. If it is not greater than 75%, absolute marks should be given.

All the students in the nominal roll of the class on the closing day of semester should be considered for normalization of internal marks. All the students who have passed the Semester-End practical examination should be considered for normalisation of marks of Semester-End practical examinations.

Internal assessment marks of theory and practical subjects, both absolute and normalised, should be published in the college 10 days before sending it to the University so as to enable the students to report any corrections.

(a) Assessment in Theory Subjects

The marks allotted for internal continuous assessment and Semester-End university examinations shall be 50 marks and 100 marks respectively with a maximum of 150 marks for each theory subject.

The weightage to award internal continuous assessment marks should be as follows:

Test papers (minimum two) – 60%

Assignments (minimum two) such as home assignment,
problem solving, group discussions, quiz,
literature survey, seminar, term-project,
software exercises, etc. – 20%

Regularity in the class – 20%

The sessional marks allotted for attendance shall be awarded in direct proportion to the percentage of attendance secured by the candidate in the subject. Full credit for regularity in the class can be given only if the candidate has secured minimum 90% attendance in the subject.

(b) Assessment in Practical Subjects

Internal continuous assessment and Semester-End practical examinations will have weightage in the student's performance of practical subjects, with 50 marks allotted for internal continuous assessment and 100 marks for Semester-End examinations.

The weightage to award internal continuous assessment marks should be as follows:

Test papers – 30%

Regular work/drawing/workshop record/lab record/

Class performance – 50%

Regularity in the class – 20%

An external examiner and an internal examiner, appointed by the University, shall conduct the Semester-End examinations of practical subjects. These examiners should necessarily have minimum two years teaching experience at engineering degree level.

Award of marks in the Semester-End practical examinations (except Project) should be as follows:

Viva voce – 30%

Procedure and tabulation form,

Conducting experiment, results and inference – 70%

No candidate will be permitted to attend the Semester-End practical examinations unless he/she produces certified record of the laboratory.

Strict measures will be taken by the University to monitor the laboratory facilities, laboratory experiments conducted, standard of Semester-End practical examinations, etc. in every affiliated engineering college. In this regard, an expert team comprising of at least three subject experts from government/government-aided engineering colleges from within/outside the University shall be formulated to assess these aspects in affiliated engineering colleges. This expert team should visit each engineering college at least once in a semester and submit a detailed report to the University regarding the laboratory facilities, laboratory experiments conducted, and standard of Semester-End practical examinations in each college.

8. Pattern of Questions for Semester-End Examinations of Theory Subjects

The question papers of Semester-End examinations of theory subjects shall be able to perform achievement testing of the students in an effective manner. The question paper shall be prepared

(a) covering all sections of the course syllabus

(b) unambiguous and free from any defects/errors

(c) emphasizing knowledge testing, problem solving & quantitative methods

(d) containing adequate data/other information on the problems assigned

(e) having clear and complete instructions to the candidates.

Duration of Semester-End examinations will be 3 hours. The pattern of questions for theory subjects shall be as follows:

PART A: Short answer questions (one/two sentences) 5 x 3 marks=15 marks

All questions are compulsory. There should be at least one question from each module.

PART B: Analytical/Problem solving questions 5 x 5 marks=25 marks

All questions are compulsory. There should be at least one question from each module.

PART C: Descriptive/Analytical/Problem solving questions 5 x 12 marks=60 marks

Two questions from each module with choice to answer one question.

Maximum Total Marks: 100

Weightage for categories such as problem solving, descriptive, drawing, or diagrammatic questions shall be specified along with the syllabus of any subject, if necessary. Model question paper shall be prepared for each subject at the time of framing the syllabus. This same model question paper along with the syllabus must be sent to the question-paper setter every time for framing the questions. The model question paper shall be made available to students.

It is permitted to have an entirely different pattern of questions especially for subjects involving drawing, design, etc. However, the modified pattern to be followed shall be clearly specified along with the syllabus of the particular subject. All question paper setters should supplement the scheme and key for the evaluation

9. Minimum for Pass

A candidate shall be declared to have passed in an individual subject of a semester examination if he/she secures not less than 40% marks for the subject in the university examination and not less than 50% of the total marks of the subject *i.e. university examination marks and sessional marks in that subject put togather.*

A candidate shall be declared to have passed in a semester examination in full in first appearance (first registration is considered as first appearance) if he satisfies the above criteria for each theory and practical subjects

Candidates will be assigned grades according to the marks scored.

For Seminar, Project, and Viva Voce (in 7^{th} & 8^{th} semester), the minimum for a pass shall be 50% of the total marks assigned to the respective examination.

If a candidate has passed all examinations of B.Tech. course (at the time of publication of results of eighth semester) except Viva-Voce in the eighth semester, a re-examination for the Viva-Voce should be conducted within one month after the publication of results. Each candidate should apply for this 'Save a Semester examination' within one week after the publication of eighth semester results.

10. Credit System

Each subject shall have a certain number of credits assigned to it depending upon the academic load and the nature and importance of the subject. The credit associated with each subject will be shown in the prescribed scheme and syllabi. Each course shall have an integer number of credits, which reflects its weightage.

11. Grading

The university shall award the letter grade to students based on the marks secured by them in both internal assessment and Semester-End examinations taken together in the subjects registered. Each letter grade indicates a qualitative assessment of the student's performance and is associated with a specified number of grade points. The grading system along with the grade points for each grade, applicable to passed candidates is shown below. All passed candidate will be allotted a grade S, A, B, C, D, or E according to the total marks scored by him/her.

If a candidate does not a pass a subject as per the conditions given in Section (9), he/she will be assigned an Unsatisfactory grade 'U' irrespective of his/her total marks. If a student does not pass a subject in two attempts, the maximum grade he/she can get is 'C' when he/she passes the subject in any subsequent examination, whatever be the marks scored by him/her.

A student is considered to have completed a subject successfully and earned the credits if he/she secures a letter grade other than 'U' in that course. Letter grade 'U' has zero grade point and the candidate has to write the examination again to improve the grade. A student's performance is measured by the number of credits that he/she has earned and by the cumulative grade point average (CGPA) maintained by him/her..

Total marks scored by the passed candidate	Corresponding Grade allotted	Grade Points
136-150	S	10
121-135	A	8.5
106-120	B	7.5
96-105	C	6.5
86-95	D	5.5
75-85	E	4.5

12. Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA)

(a) A Semester Grade Point Average (SGPA*)* shall be computed for all the students for each semester, as follows:

$$SGPA = \frac{\sum_{i=1}^{n} C_i G_i}{\sum_{i=1}^{n} C_i}$$

where, n is the number of subjects registered during the semester, C_i is the number of credits allotted to i^{th} subject as per the scheme, and G_i is the grade points corresponding to the grade awarded to the student for the subject.

(b) A Cumulative Grade Point Average (CGPA) shall be computed for all the students at the end of each semester by taking into consideration their performance in the present and the past semesters as follows:

$$CGPA = \frac{\sum_{i=1}^{m} C_i G_i}{\sum_{i=1}^{m} C_i}$$

where, m is the number of courses registered up to that semester, C_i is the number of credits allotted to i^{th} subject as per the scheme, and G_i is the grade points corresponding to the grade awarded to the student for the subject.

An up-to-date assessment of overall performance of a student is obtained by calculating CGPA. CGPA is weighted average of the grade points obtained in all the subjects registered by the students since he entered the B.Tech. course.

(c) Both the SGPA and CGPA shall be rounded off to the second place of decimal and recorded as such for ease of presentation. Whenever the CGPAs are to be used for the purpose of determining the merit ranking in a group of students, only the rounded off values shall be made use of.

13. Improvement

Candidates shall be allowed to improve the grade of any two theory subjects in a semester. This can be done only in the immediate subsequent chance. If the candidate gets more marks in the improvement chance, marks scored in the improvement chance will be considered for grading in the subject; otherwise marks scored in the first attempt will be retained. No candidate shall be permitted to improve the marks scored in practical examinations and internal continuous assessment.

14. Attendance

A candidate shall be permitted to appear for the Semester-End examinations only if he/she satisfies the following requirements:

(a) He/she must secure not less than 75% attendance in the total number of working periods during the first year and in each semester thereafter; and shall be physically present for a minimum of 65% of the total working periods. In addition, he/she also shall be physically present in at least 20% of total attendance for each subject.

(b) He/she must earn a progress certificate from the head of the institution stating that he/she has satisfactorily completed the course of study prescribed in the semester as required by these regulations.

(c) His/her conduct must be satisfactory

It shall be open to the Vice Chancellor to grant condonation of shortage of attendance on the recommendation of the head of the institution in accordance with the following norms.

- The shortage shall not be more than 10%
- Shortage shall not be condoned more than twice during the entire course.
- Candidate who is not eligible for condonation of shortage of attendance shall repeat the semester.

15. Eligibility for Promotion to Higher Semester – Procedure for completing the course

(a) A student who has secured 75% of attendance and has exhibited satisfactory progress in the class will be eligible for promotion to the next higher semester.

(b) However, before being admitted to the VIII semester classes, the student should have passed in all subjects in the combined first and second semester examination in full.

Note: As this is an academic prerequisite, no exemption should be granted in this case, whatever be the causes.

A candidate shall complete the programme and pass all examinations within Eight (8) years since his first admission to the B.Tech programme.

16. Registration for end Semester examination

Every candidate should register for all subjects of the Semester-End examinations of each semester. A candidate who does not register will not be permitted to attend the Semester-End examinations; he/she shall not be permitted to attend the next semester.

A candidate shall be eligible to register for any higher semester (i.e. 3rd semester onwards) if he/she has satisfactorily completed the course of study and registered for the examination of the immediate previous semester. He/she should register for the semester at the start of the semester before the stipulated date. University will notify the starting and closing dates for each semester.

17. Additional Requirements for the degree

In addition to the requirement prescribed for the award of B.Tech. degree, each student must complete compulsory social service for a total duration of 15 days during 3rd to 7th semesters of the course, A record is to be kept showing the details of social service activities undertaken and it should be approved by the Staff Advisor. Head of Institution should verify this compulsory requirement before permitting the student to register for the eighth semester.

Students are expected to undertake industrial training(s) of total 10 days minimum duration or industrial visits (to minimum 2 industries) for studying about the industries of importance to the branch concerned during 4th to 7th semester. Students may also undertake an educational tour, the tour period shall be considered as part of the working periods of a semester. The tour maybe conducted during the vacation/holidays taking not more than 3 working days, combined with the vacation/holidays if required, between 5th and 8th semesters for visiting industries (at least two) of importance to the branch concerned. Faculty members shall accompany the students for the industrial visits/educational tour. Each student shall submit detailed bound report(s) of the training/visit/tour to the Head of Department within two weeks after the programme. These bound report(s), signed by the staff advisor or faculty in charge of tour/training/visit and by the head of department, shall also be brought during the final Viva-Voce.

18. Examination Monitoring Cell

Head of the each institution should formulate an Examination Monitoring Cell at the institution for supervising all examinations, especially the internal examinations. This cell, with a senior staff member as Convener, shall consist of minimum three members (one shall be a lady).

The collective responsibilities of the examination monitoring cell are

(a) officiate as the examination squad to keep a vigil on all Semester-End examinations.

If any malpractices are found/reported by invigilators, inform these to the Head of Institution along with a report about the incident. Head of Institution shall forward all such complaints to the University.

(b) schedule all examinations conducted as part of internal assessment of students.

(c) to receive any complaint from students regarding issues like out-of-syllabus questions, printing mistakes, etc. of Semester-End examinations of theory and practical subjects. The cell shall investigate these complaints and if necessary forward it to university with specific comments.

(d) to receive any complaints from students regarding internal examinations, enquire such incidents, and give a report to the Head of Institution for necessary action.

To conduct all the theory examinations, a Chief Superintendent and a Senior Assistant Superintendent should be appointed internally by the Head of Institution. At least one external Additional Chief Superintendent from government/government-aided engineering colleges within the University should be appointed by the University for conducting theory examinations in all affiliated self financing Engineering Colleges.

19. Electives

All students shall choose four elective subjects, one in the sixth, one in the seventh and two in eighth semesters from a set of elective subjects prescribed in the syllabus and offered by the institution. There should be at least 25% students of the class for an elective subject to be offered. However, any student having a CGPA of not less than 7.5 shall be permitted to select an elective of his/her choice and register under a faculty subject to the permission from the faculty and Head of Department. The student will have to study this subject on his own (self-study mode) or the classes of this subject shall be taken during off-hours.

A student can opt for interdisciplinary electives, termed as global electives in the syllabus, maximum one during 8^{th} semesters subject to the permission from both Heads of Departments and the faculty handling the elective subject. Minimum number of students for a global elective shall be 15 and maximum 60.

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 subject is offered as an

elective.

20. Class Committee

Head of institution shall take necessary steps to form a class committee for each class at the start of classes of each semester. This class committee shall be in existence for the semester concerned. The class committee shall consist of the Head of Department, Staff Advisor of the class, a senior faculty member of the department, a faculty member from another department, and two student representatives (one of them should be a girl in a mixed class). There should be at least two meetings of the class committee every semester; it shall be the responsibility of the Head of Department to convene these meetings. The decisions of the Class Committee shall be recorded in a register for further reference. Each class committee will communicate its recommendations to the Head of Institution.

The responsibilities of the class committee are:

(a) to review periodically the progress and conduct of students in the class.

(b) to discuss any problems concerning any subjects in the semester concerned.

(c) to identify weaker students of the class and suggest remedial measures.

(d) to review teaching effectiveness and coverage of syllabus.

(e) discuss any other issue related to the students of the class.

21. Eligibility for the Degree

No candidate shall be eligible for the B.Tech. degree unless he has undergone the prescribed course of study for a period of not less than four academic years in an institution in the state of Kerala and recognized by affiliated /recognized to the Mahatma Gandhi University and has passed all subjects as per the prescribed syllabus.

No candidate under lateral entry scheme shall be eligible for the B.Tech. degree unless he has undergone the prescribed course of study for a period of not less than three academic years in an institution affiliated to the Mahatma Gandhi University and has passed all subjects of 3^{rd} to 8^{th} semesters as per the prescribed syllabus.

22. Classification of Successful Candidates

(a) A candidate who qualifies for the degree, passing all the subjects of the eight semesters within 5 academic years after the commencement of his course of study and secures not less than a CGPA of 8.0 of all the semesters shall be declared to have passed the B.Tech. degree examination in First Class with Honours.

(b) A candidate who qualifies for the degree, passing all the subjects of the eight semesters within 5 academic years after the commencement of his course of study and secures not less than a CGPA of 6.5 of all the semesters shall be declared to have passed the B.Tech. degree examination in First Class.

(c) All other candidates who qualify for the degree passing all the subjects of the eight semesters and not covered as per Sections 22 (a) and (b) shall be declared to have passed the B.Tech. degree examination in second class.

(d) Classification of the lateral entry student shall be given based on the CGPA of 3^{rd} to 8^{th} semesters. The final mark-list of lateral entry students should indicate that (i) the student was admitted through lateral entry scheme (ii) classification is based on CGPA of 3^{rd} to 8^{th} semesters. In case of lateral entry students, clause 22(a) and 22(b) shall hold good except for the number of academic years which shall be 4 academic years after the commencement of the course of study.

It may be indicated in each mark-list that the internal assessment marks and Semester-End examination marks of practical subjects are normalised.

23. Grievance Cell

Each college should setup a Grievance Cell with at least four faculty members to look into grievances of the students, if any.

24. Anti-Ragging Cell

Head of Institution shall take necessary steps to constitute anti-ragging committee and squad at the commencement of each academic year. The committee and the squad shall take effective steps as specified by the Honorable Supreme Court of India, to prevent ragging.

Notwithstanding all that has been stated above, the University has right to modify any of the above regulations from time to time as per University rules.

Annexure

Equivalency of Diploma Streams for Lateral entry B.Tech. Admission

Sl. No.	Specialisation in Diploma	Branch Equate for B.Tech. Admission
1	Applied Electronics	Electronics and Communication Engineering
2	Electronics	
3	Medical Electronics	
4	Electronics and Avionics	
5	Telecommunication Technology	
6	Electronics and Instrumentation	
7	Electronics and Medical Instrumentation	
8	Electronics Production Technology	
9	Medical Instrumentation	
10	Power Electronics	
11	Biomedical Engineering	
12	Civil	Civil Engineering
13	Architecture	
14	Quantity Survey and Construction	

	Management	
15	Mechanical	Mechanical Engineering
16	Automobile	
17	Tool and Die	
18	Wood and Paper Technology	
19	Computer Engineering	Computer Science and Engineering
20	Computer Application and Business Management	
21	Computer Hardware Maintenance	
22	Information Technology	
23	Electrical	Electrical and Electronics Engineering
24	Instrument Technology	
25	Chemical Engineering	Chemical Engineering

Revised Scheme For

B Tech Syllabus

2010-11

Mahatma Gandhi University Revised Scheme For

B Tech Syllabus Revision 2010

(Aeronautical Engineering Branch)

Common for All Branches

SCHEME S1S2

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 101	Engineering Mathematics I	2	1	-	50	100	3	5
EN010 102	Engineering Physics	1	1	-	50	100	3	4
EN010 103	Engineering. Chemistry & Environmental Studies	1	1	-	50	100	3	4
EN010 104	Engineering Mechanics	3	1	-	50	100	3	6
EN010 105	Engineering Graphics	1	3	-	50	100	3	6
EN010 106	Basic Civil Engineering	1	1	-	50	100	3	4
EN010 107	Basic Mechanical Engineering	1	1	-	50	100	3	4
EN010 108	Basic Electrical Engineering	1	1	-	50	100	3	4
EN010 109	Basic Electronics Engineering. & Information Technology	2	1	-	50	100	3	5
EN010 110	*Mechanical Workshop*	0	-	3	50	-	3	1
EN110 111	*Electrical and Civil Workshops*	-	-	3	100	-	3	1
	Total	**13**	**11**	**6**			**30**	**44**

3rd Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 301	Engineering Mathematics II	2	2	-	50	100	3	4
EN010 302	Economics and Communication	2	2	-	50	100	3	4

	Skills							(3+1)
AN010 303	Fluid Mechanics	2	2	-	50	100	3	4
AN 010 304	Basic Thermodynamics	3	1	-	50	100	3	4
AN 010 305	Elements of Aeronautics	3	1	-	50	100	3	4
AN010 306	Basic Strength of Materials	3	1	-	50	100	3	4
AN 010 307(CE)	*Basic Strength of materials Lab*	-	-	3	50	100	3	2
AN 010 308(ME)	*Fluid Mechanics Lab*	-	-	3	50	100	3	2
	Total	**15**	**9**	**6**				**28**

4th Semester

		Hours/week			Marks		End-sem duration-hours	
Code	**Subject**	**L**	**T**	**P/D**	**Inte-rnal**	**End-sem**		**Credits**
EN010 401	Engineering Mathematics III	2	2	-	50	100	3	4
AN010 402	Gas Dynamics	3	1	-	50	100	3	4
AN 010 403	Propulsion I	2	2	-	50	100	3	4
AN 010 404	Aerodynamics I	3	1	-	50	100	3	4
AN 010 405	Aircraft Structures I	3	1	-	50	100	3	4
AN 010 406	Electrical technology & Machines	3	1	-	50	100	3	4
AN 010 407	*Structures Lab*	-	-	3	50	100	3	2
AN 010 408	*Propulsion Lab*	-	-	3	50	100	3	2
	Total	**16**	**8**	**6**				**28**

5th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 501A	Engineering Mathematics IV N	2	2	-	50	100	3	4
EN 010 502(ME)	Principles of Management	3	1		50	100	3	4
AN 010 503	Computer Programming	2	2	-	50	100	3	4
AN 010 504	Flight Dynamics I	3	1	-	50	100	3	4
AN 010 505	Aerodynamics II	3	1	-	50	100	3	4
AN 010 506	Propulsion II	3	1	-	50	100	3	4
AN 010 507	*Wind tunnel Lab*	-	-	3	50	100	3	2
AN 010 508	*Propulsion LabII*	-	-	3	50	100	3	2
	Total	**16**	**8**	**6**				**28**

6th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
AN 010 601	Avionics	2	2	-	50	100	3	4
AN 010 602	Experimental Aerodynamics	2	2	-	50	100	3	4
AN 010 603	Aircraft Structures II	3	1	-	50	100	3	4
AN 010 604	Heat Transfer	3	1	-	50	100	3	4
AN 010 605	Theory of Vibration	3	1	-	50	100	3	4
AN 010 606Lxx	Elective I	2	2	-	50	100	3	4

AN 010 607	*Heat Engines Lab*	-	-	3	50	100	3	2
AN 010 608	*Aero EnginesLab*	-	-	3	50	100	3	2
	Total	**15**	**9**	**6**				**28**

Elective I

AN 010 606L01 Composite structures

AN 010 606L02 Fatigue and fracture

AN 010 606L03 Finite Elément Analysis

AN 010 606L04 Operation Research

AN 010 606L05 Ecology & Environment

AN 010 606L06 Non Destructive Testing

7th Semester

Code	Subject	Hours/week			Marks		End-sem duration -hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
AN 010 701	Computational Fluid Dynamics	2	2	-	50	100	3	4
AN 010 702	Experimental stress analysis	2	2	-	50	100	3	4
AN 010 703	Aircraft design	2	1	-	50	100	3	3
AN 010 704	Flight dynamics II	2	1	-	50	100	3	3
AN 010 705	Aircraft systems and instrumentation	2	1	-	50	100	3	3
AN 010 706Lxx	Elective II	2	2	-	50	100	3	4
AN 010 707	*Experimental stress analysis Lab*	-	-	3	50	100	3	2
AN 010 708	*Vibration Lab*	-	-	3	50	100	3	2
AN 010 709	Seminar	-	-	2	50	-	-	2

AN 010 710	*Project*	-	-	1	50	-	-	1
	Total	**12**	**9**	**9**				**28**

Elective II

AN 010 706L01Theory of plates and shells

AN 010 706L02 Advanced Materials in aircraft manufacturing

AN 010 706L03 Failure analysis

AN 010 706L04 Helicopter Aerodynamics

AN 010 706L05 Optimization methods in Design

AN 010 706L06 Rotor Dynamics

8th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
AN 010 801	Rockets & Missiles	3	2	-	50	100	3	4
AN 010 802	Introduction to space technology	2	2	-	50	100	3	4
AN 010 803	Air transportation & Aircraft maintenance	2	2	-	50	100	3	4
AN 010 804Lxx	Elective III	2	2	-	50	100	3	4
AN 010 805Gxx	Elective IV	2	2	-	50	100	3	4
AN 010 806	Aerodynamics Lab	-	-	3	50	100	3	2
AN 010 807	Project	-	-	6	100	-	-	4
AN 010 808	Viva Voce	-	-	-	-	50	-	2
	Total	**11**	**10**	**9**				**28**

Electives III

AN 010 804L01 Project management & TQM

AN 010 804L02 Air navigation

AN 010 804L03 Aircraft rules & regulations

AN 010 804L04 Industrial aerodynamics

AN 010 804L05 Acoustics & Noise control

AN 010 804L06 Transport process in reacting flows

Electives IV

AN 010 805G01 Boundary layer theory

AN 010 805G02 Disaster Management

AN 010 805G03 Cryogenics

AN 010 805G04 Advanced strength of materials

AN 010 805G05 High temperature gas dynamics

AN 010 805G06 Turbo Machines

Mahatma Gandhi University Revised Scheme For

B Tech Syllabus Revision 2010

(Applied Electronics & Instrumentation Engineering)

Common for All Branches

SCHEME S1S2

Code	Subject	Hours/week	Marks	End-sem	Credits

							duration-hours	
		L	T	P/D	Inte-rnal	End-sem		
EN010 101	Engineering Mathematics I	2	1	-	50	100	3	5
EN010 102	Engineering Physics	1	1	-	50	100	3	4
EN010 103	Engineering. Chemistry & Environmental Studies	1	1	-	50	100	3	4
EN010 104	Engineering Mechanics	3	1	-	50	100	3	6
EN010 105	Engineering Graphics	1	3	-	50	100	3	6
EN010 106	Basic Civil Engineering	1	1	-	50	100	3	4
EN010 107	Basic Mechanical Engineering	1	1	-	50	100	3	4
EN010 108	Basic Electrical Engineering	1	1	-	50	100	3	4
EN010 109	Basic Electronics Engineering. & Information Technology	2	1	-	50	100	3	5
EN010 110	*Mechanical Workshop*	0	-	3	50	-	3	1
EN110 111	*Electrical and Civil Workshops*	-	-	3	100	-	3	1
	Total	**13**	**11**	**6**			**30**	**44**

3rd Semester

		Hours/week			**Marks**		**End-sem duration -hours**	
Code	**Subject**	**L**	**T**	**P/D**	**Inte-rnal**	**End-sem**		**Credits**
EN010 301	Engineering Mathematics II	2	2	-	50	100	3	4
EN010 302	Economics and Communication Skills	2	2	-	50	100	3	4 (3+1)
AI010 303	Network Theory	2	2	-	50	100	3	4

AI010 304	Solid State devices	3	1	-	50	100	3	4
AI010 305	Analog Circuits I	3	1	-	50	100	3	4
AI010 306	Computer Programming (LASN)	3	1	-	50	100	3	4
AI010 307	Analog circuits Lab	-	-	3	50	100	3	2
AI010 308	Programming Lab	-	-	3	50	100	3	2
	Total	**15**	**9**	**6**				**28**

4th Semester

		Hours/week			Marks		End-sem duration -hours	
Code	**Subject**	**L**	**T**	**P/D**	**Inte-rnal**	**End-sem**		**Credits**
EN010 401	Engineering Mathematics III	2	2	-	50	100	3	4
EN010 402(ME)	Principles of Management	3	1	-	50	100	3	4
AI010 403	Signals and Systems	2	2	-	50	100	3	4
AI010 404	Digital Electronics	3	1	-	50	100	3	4
AI010 405	Signal Communication	3	1	-	50	100	3	4
AI010 406	Analog circuits II	3	1	-	50	100	3	4
AI010 407	Analog circuits II lab			3	50	100	3	2
AI010 408	Digital IC lab	-	-	3	50	100	3	2
	Total	16	8	6				**28**

5th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 501	Engg Mathematics IV	2	2	-	**50**	**100**	3	4
AI010 502	Industrial Electronics and Applications	3	1	-	**50**	**100**	3	4
AI010 503	Basic Instrumentation & recording system	3	1	-	50	100	3	4
AI010 504	Data Acquisition system	3	1	-	50	100	3	4
AI010 505	Control Engineering I	2	2	-	50	100	3	4
AI010 506	Microprocessors and microcontrollers	3	1	-	50	100	3	4
AI010 507	Industrial Electronics Lab	-	-	3	50	100	3	2
AI010 508	Measurements lab	-	-	3	50	100	3	2
	Total	**16**	**8**	**6**				**28**

6th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
AI010 601	Process Control Instrumentation	3	1	-	50	100	3	4
AI010 602	Digital Signal Processing	2	2	-	50	100	3	4
AI010 603	Industrial Instrumentation I	3	1	-	50	100	3	4
AI010 604	Microcontroller based system design	3	1	-	50	100	3	4
AI010 605	Control Engineering II	2	2	-	50	100	3	4
AI010 606Lxx	Elective I	3	1	-	50	100	3	4
AI010 607	Microprocessors &	-	-	3	50	100	3	2

	microcontrollers lab							
AI010 608	Mini Project	-	-	3	50	100	3	2
	Total	15	9	6				**28**

Elective I

AI 010 606L01 Mechatronics

AI 010 606L02 Micro Electronics

AI 010 606L03 Digital system design

AI 010 606L04 Industrial safety engineering

AI 010 606L05 Reliability Engineering

AI 010 606L06 Energy management

7th Semester

Code	Subject	Hours/week			Marks		End-sem duration -hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
AI010 701	VLSI	2	2	-	50	100	3	4
AI010 702	Computerised Process control	2	2	-	50	100	3	4
AI010 703	Biomedical Instrumentation	2	1	-	50	100	3	3
AI010 704	Analytical instrumentation	2	1	-	50	100	3	3
AI010 705	Industrial Instrumentation II	2	1	-	50	100	3	3
AI010 706Lxx	Elective II	2	2	-	50	100	3	4
AI010 707	Industrial Instrumentation Lab	-	-	3	50	100	3	2
AI010 708	DSP lab	-	-	3	50	100	3	2
AI010 709	Seminar	-	-	**2**	50	-	-	2

AI 010 710	Project	-	-	-	50	-	-	1
	Total	**12**	**9**	**9**				**28**

Elective II

AI010 706L01 Robotics

AI010 706L02 Real Time system

AI010 706L03 Optimization techniques

AI010 706L04 Fuzzy Logic

AI010 706L05 Digital Image processing

AI010 706L06 Advanced microcontrollers

8th Semester

		Hours/week			**Marks**		**End-sem duration-hours**	**Credits**
Code	Subject	L	T	P/D	**Inte-rnal**	**End-sem**		
AI010 801	Instrumentation system design	3	2	-	50	100	3	4
AI010 802	Instrumentation in process industries	2	2	-	50	100	3	4
AI010 803	Computer Networks	2	2	-	50	100	3	4
AI010 804 Lxx	Elective III	2	2	-	50	100	3	4
AI010 805 Gxx	Elective IV	2	2	-	50	100	3	4
AI010 806	Process Control Lab	-	-	3	50	100	3	4
AI010 807	Project	-	-	6	100	-	-	2
AI010 808	Viva Voce	-	-	-	-	50	-	2
	Total	**11**	**10**	**9**				**28**

Electives III

AI010	804L01	Neural networks
AI010	804L02	Advanced DSP
AI010	804L03	Embedded systems
AI010	804L04	Artificial Intelligence
AI010	804L05	VHDL
AI010	804L06	BioInformatics

Electives IV

AI010	805G01	Total quality management
AI010	805G02	Human factors engineering
AI010	805G03	System engineering
AI010	805G04	Professional Ethics
AI010	805G05	Industrial Pollution control
AI010	805G06	Simulation and modelling

Mahatma Gandhi University Revised Scheme For

B Tech Syllabus Revision 2010

(Automobile Engineering)

Common for All Branches

SCHEME S1&S2

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 101	Engineering Mathematics I	2	1	-	50	100	3	5

EN010 102	Engineering Physics	1	1	-	50	100	3	4
EN010 103	Engineering. Chemistry & Environmental Studies	1	1	-	50	100	3	4
EN010 104	Engineering Mechanics	3	1	-	50	100	3	6
EN010 105	Engineering Graphics	1	3	-	50	100	3	6
EN010 106	Basic Civil Engineering	1	1	-	50	100	3	4
EN010 107	Basic Mechanical Engineering	1	1	-	50	100	3	4
EN010 108	Basic Electrical Engineering	1	1	-	50	100	3	4
EN010 109	Basic Electronics Engineering. & Information Technology	2	1	-	50	100	3	5
EN010 110	*Mechanical Workshop*	0	-	3	50	-	3	1
EN110 111	*Electrical and Civil Workshops*	-	-	3	100	-	3	1
	Total	**13**	**11**	**6**			**30**	**44**

3rd Semester

		Hours/week			Marks		End-sem duration-hours	
Code	**Subject**	**L**	**T**	**P/D**	**Inte-rnal**	**End-sem**		**Credits**
EN010 301	Engineering Mathematics II	2	2	-	50	100	3	4
EN010 302	Economics and Communication Skills	2	2	-	50	100	3	4 (3+1)
AU010 303	Fluid Mechanics and Hydraulic Machinery	2	2	-	50	100	3	4
AU010 304(ME)	Metallurgy & Material Science	3	1	-	50	100	3	4
AU010 305(ME)	Programming in C	3	1	-	50	100	3	4

AU010 306(CE)	Strength of Materials & Structural Engineering	3	1	-	50	100	3	4
AU010 307	*Computer Lab*	-	-	3	50	100	3	2
AU010 308(ME)	*Fluid Mechanics Lab*	-	-	3	50	100	3	2
	Total	**15**	**9**	**6**				**28**

4th Semester

		Hours/week			Marks		End-sem duration-hours	
Code	**Subject**	**L**	**T**	**P/D**	**Inte-rnal**	**End-sem**		**Credits**
EN010 401	Engineering Mathematics III	2	2	-	50	100	3	4
EN010 402(ME)	Principles of Management	3	1	-	50	100	3	4
AU010 403	Auto Power Plant	2	2	-	50	100	3	4
AU010 404(ME)	Manufacturing Process	3	1	-	50	100	3	4
AU010 405	Machine Drawing	3	1	-	50	100	3	4
AU010 406(EE)	Electrical Technology	3	1	-	50	100	3	4
AU010 407	*Auto Workshop I*	-	-	3	50	100	3	2
AU010 408(CE)	*Strength of Materials Lab*	-	-	3	50	100	3	2
	Total	**16**	**8**	**6**				**28**

5th Semester

		Hours/week			Marks		End-sem duration-hours	
Code	**Subject**	**L**	**T**	**P/D**	**Inte-rnal**	**End-sem**		**Credits**
EN010 501A	Engineering Mathematics IV	**2**	**2**	-	**50**	**100**	3	4

	N							
AU010 502	Computer Aided Design & Manufacturing	**3**	**1**		**50**	**100**	3	4
AU010 503	Auto Chassis	2	2	-	50	100	3	4
AU010 504(ME)	Kinematics of Machinery	3	1	-	50	100	3	4
AU010 505(ME)	I C Engines & Combustion	3	1	-	50	100	3	4
AU010 506(ME)	Thermodynamics	3	1	-	50	100	3	4
AU010 507	*Computer Graphics & Drafting*	-	-	3	50	100	3	2
AU010 508(EE)	*Electrical & Electronics Lab*	-	-	3	50	100	3	2
	Total	**16**	**8**	**6**				**28**

6th Semester

		Hours/week			**Marks**		**End-sem duration -hours**	
Code	**Subject**	**L**	**T**	**P/D**	**Inte-rnal**	**End-sem**		**Credits**
AU010 601	Mechanics of Machines	2	2	-	50	100	3	4
AU010 602(ME)	Heat & Mass Transfer	2	2	-	50	100	3	4
AU010 603	Automotive Transmission	3	1	-	50	100	3	4
AU010 604(ME)	Metrology & Machine Tools	3	1	-	50	100	3	4
AU010 605(ME)	Mechatronics & Control Systems	3	1	-	50	100	3	4
AU010 606Lxx	Elective I	2	2	-	50	100	3	4
AU010 607	Heat Engines Lab	-	-	3	50	100	3	2
AU010 608	*Machine Tool Lab*	-	-	3	50	100	3	2
	Total	**15**	**9**	**6**				**28**

Elective I

AU010 606L01 Vehicle Transport Management

AU010 606L02 Computer Aided vehicle Design

AU010 606L03 Computer Simulation of I C Engines

AU010 606L04 Tribology

AU010 606L05 Alternate Fuels and Energy systems

AU010 606L06 Quantitative Techniques

7th Semester

Code	Subject	Hours/week			Marks		End-sem duration -hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
AU010 701(ME)	Design of Machine Elements	2	2	-	50	100	3	4
AU010 702	Advanced Automotive Technology	2	2	-	50	100	3	4
AU010 703	Auto Electrical & Electronics	2	1	-	50	100	3	3
AU010 704(ME)	Refrigeration & Air Conditioning	2	1	-	50	100	3	3
AU010 705(ME)	Industrial Engineering	2	1	-	50	100	3	3
AU010 706Lxx	Elective II	2	2	-	50	100	3	4
AU010 707(ME)	Mechanical Measurements Lab	-	-	3	50	100	3	2
AU010 708	*Auto Workshop II*	-	-	3	50	100	3	2
AU010 709	Seminar	-	-	2	50	-	-	2
AU010 710	*Project*	-	-	1	50	-	-	1
	Total	**12**	**9**	**9**				**28**

Elective II

AU010 706L01 Vehicle Body Engineering

AU010 706L02 Vehicle Performance and Testing

AU010 706L03 Automotive Pollution and Control

AU010 706L04 Project Management

AU010 706L05 Industrial Safety

AU010 706L06 Non Traditional Machining Processes

8th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
AU010 801(ME)	Design of Transmission Elements	3	2	-	50	100	3	4
AU010 802(ME)	Operations Management	2	2	-	50	100	3	4
AU010 803	Special Types of Vehicles	2	2	-	50	100	3	4
AU010 804Lxx	Elective III	2	2	-	50	100	3	4
AU010 805Gxx	Elective IV	2	2	-	50	100	3	4
AU010 806	Auto Workshop III	-	-	3	50	100	3	2
AU010 807	Project	-	-	6	100	-	-	4
AU010 808	Viva Voce	-	-	-	-	50	-	2
	Total	**11**	**10**	**9**				**28**

Electives III

AU010 804L01 Transport Refrigeration and Air Conditioning

AU010 804L02 Engineering Economics and Automotive Cost Estimation

AU010 804L03 Vehicle Dynamics

AU010 804L04 Finite Element Method

AU010 804L05 Microprocessor Application in Automobiles

AU010 804L06 Foundry and Welding Technology

Electives IV

AU010 805G01 System Modeling and Simulation

AU010 805G02 Robotics and Robot Application

AU010 805G03 Farm Machinery and Equipment

AU010 805G04 Aerospace Engineering

AU010 805G05 Management Information systems

AU010 805G06 Petrochemical Engineering

Mahatma Gandhi University Revised Scheme For

B Tech Syllabus Revision 2010

Common for All Branches

SCHEME S1S2

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 101	Engineering Mathematics I	2	1	-	50	100	3	5
EN010 102	Engineering Physics	1	1	-	50	100	3	4
EN010 103	Engineering. Chemistry & Environmental Studies	1	1	-	50	100	3	4
EN010 104	Engineering Mechanics	3	1	-	50	100	3	6
EN010 105	Engineering Graphics	1	3	-	50	100	3	6

EN010 106	Basic Civil Engineering	1	1	-	50	100	3	4
EN010 107	Basic Mechanical Engineering	1	1	-	50	100	3	4
EN010 108	Basic Electrical Engineering	1	1	-	50	100	3	4
EN010 109	Basic Electronics Engineering. & Information Technology	2	1	-	50	100	3	5
EN010 110	*Mechanical Workshop*	0	-	3	50	-	3	1
EN110 111	*Electrical and Civil Workshops*	-	-	3	100	-	3	1
	Total	**13**	**11**	**6**			**30**	**44**

MAHATMA GANDHI UNIVERSITY
CIVIL ENGINEERING
Scheme for BTech. Degree III to VIII Semesters 2010

3rd Semester

Code	Subject	Hours/week			Marks		End-sem duration -hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 301	Engineering Mathematics II	2	2	-	50	100	3	4
EN010 302	Economics and Communication Skills	2	2	-	50	100	3	4 (3+1)
CE010 303	Fluid Mechanics	2	2	-	50	100	3	4
CE010 304	Mechanics of Solids I	3	1	-	50	100	3	4
CE010 305	Surveying I	3	1	-	50	100	3	4
CE010 306	Engineering Geology	3	1		50	100	3	4
CE010 307	*Material Testing Lab I*	-	-	3	50	100	3	2
CE010 308	*Surveying Practical I*	-	-	3	50	100	3	2
	Total	**15**	**9**	**6**				**28**

4th Semester

-

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 401	Engineering Mathematics III	2	2	-	50	100	3	4
CE010 402	Construction Engineering and Management	3	1	-	50	100	3	4
CE010 403	Mechanics of Solids II	2	2	-	50	100	3	4
CE010 404	Open Channel Flow and Hydraulic Machines	3	1	-	50	100	3	4
CE010 405	Surveying II	3	1	-	50	100	3	4
CE010 406	Civil Engineering Drawing			4	50	100	3	4
CE010 407	*Surveying Practical II*	-	-	3	50	100	3	2
CE010 408(ME)	*Hydraulics Lab*	-	-	3	50	100	3	2
	Total	**16**	**8**	**6**				**28**

5th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 501A	Engineering Mathematics IV N	**2**	**2**	-	**50**	**100**	3	4
		3	**1**		**50**	**100**	3	4

CE010 502	Computer Programming							
CE010 503	Design of Concrete Structures I	2	2	-	50	100	3	4
CE010 504	Geotechnical Engineering I	3	1	-	50	100	3	4
CE010 505	Quantity Surveying and Valuation	3	1	-	50	100	3	4
CE010 506	Structural Analysis I	3	1	-	50	100	3	4
CE010 507	*Computing Techniques Lab*	-	-	3	50	100	3	2
CE010 508	*Geotechnical Engineering Lab*	-	-	3	50	100	3	2
	Total	**16**	**8**	**6**				**28**

6th Semester

		Hours/week			Marks		End-sem duration -hours	
Code	**Subject**	**L**	**T**	**P/D**	**Inte-rnal**	**End-sem**		**Credits**
CE010 601	Design of Steel Structures	2	2	-	50	100	3	4
CE010 602	Geotechnical Engineering II	2	2	-	50	100	3	4
CE010 603	Structural Analysis II	3	1	-	50	100	3	4
CE010 604	Transportation Engineering I	3	1	-	50	100	3	4
CE010 605	Water Resources Engineering	3	1	-	50	100	3	4
CE010 606Lxx	Elective I	2	2	-	50	100	3	4
CE010 607	Computer Aided Design and Drafting Lab	-	-	3	50	100	3	2
CE010 608	*Material Testing Lab II*	-	-	3	50	100	3	2
	Total	**15**	**9**	**6**				**28**

Elective I

CE010 606L01 Advanced Surveying

CE010 606L02 Open Channel and Coastal Hydraulics

CE010 606L03 Airport Engineering

CE010 606L04 Advanced Mechnics of Materials

CE010 606L05 Concrete Technology

CE010 606L06 Soil Stability Analysis.

7th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
CE010 701	Design of Hydraulic Structures	2	2	-	50	100	3	4
CE010 702	Environmental Engineering I	2	2	-	50	100	3	4
CE010 703	Design of Concrete Structures II	2	1	-	50	100	3	3
CE010 704	Architecture and Town Planning	2	1	-	50	100	3	3
CE010 705	Transportation Engineering II	2	1	-	50	100	3	3
CE010 706Lxx	Elective II	2	2	-	50	100	3	4
CE010 707	Computer Applications Lab	-	-	3	50	100	3	2
CE010 708	*Transportation Engineering Lab*	-	-	3	50	100	3	2
CE010 709	Seminar	-	-	2	50	-	-	2
CE010 710	*Project*	-	-	1	50	-	-	1
	Total	**12**	**9**	**9**				**28**

Elective II

CE010 706L01 Building Automation and Smart Structures

CE 010 706L02 Ground Improvement Technicques

CE 010 706L03. Prestressed Concrete.

CE 010 706L04 Environmental Impact Assessment

CE 010 706L05 Theory of Plates and Shells

CE 010 706L06 Traffic Engineering and Management

8th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
CE010 801	Advanced Structural Design	3	2	-	50	100	3	4
CE010 802	Building Technology and Management	2	2	-	50	100	3	4
CE010 803	Environmental Engineering II	2	2	-	50	100	3	4
CE010 804Lxx	Elective III	2	2	-	50	100	3	4
CE010 805Gxx	Elective IV	2	2	-	50	100	3	4
CE010 806	Environmental Engineering Lab	-	-	3	50	100	3	2
CE010 807	Project	-	-	6	100	-	-	4
CE010 808	Viva Voce	-	-	-	-	50	-	2
	Total	**11**	**10**	**9**				**28**

Electives III

CE010 804L01 Advanced Foundation Design

CE010 804L02 Environmental Geotechniques

CE010 804L03 Earthquake Engineering and Design

CE010 804L04 Advanced Hydrology and System Analysis

CE010 804L05 Highway and Airfield Pavements

CE010 804L06 Structural Dynamics and Stability Analysis

Electives IV

CE010 805G01 Finite Element Analysis

CE010 805G02 Environmental Pollution Control Techniques

CE010 805G03 Optimization Techniques

CE010 805G04 Land Use Planning

CE010 805G05 Numerical Methods

CE010 805G06 Remote Sensing and GIS Applications

Mahatma Gandhi University Revised Scheme For

B Tech Syllabus Revision 2010

(Computer Science & Engineering)

Common for All Branches

SCHEME S1&S2

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 101	Engineering Mathematics I	2	1	-	50	100	3	4
EN010 102	Engineering Physics	1	1	-	50	100	3	3
EN010 103	Engineering Chemistry & Environmental Studies	1	1	-	50	100	3	3
EN010 104	Engineering Mechanics	3	1	-	50	100	3	5
EN010 105	Engineering Graphics	1	3	-	50	100	3	5
EN010 106	Basic Civil Engineering	1	1	-	50	100	3	3
EN010 107	Basic Mechanical Engineering	1	1	-	50	100	3	3
EN010 108	Basic Electrical Engineering	1	1	-	50	100	3	3
EN010 109	Basic Electronics Engg. &	2	1	-	50	100	3	4

	Information Technology							
EN010 110	*Mechanical Workshop*	0	-	3	50	-	3	3
EN110 111	Electrical and Civil Workshops	-	-	3	100	-	3	2
	Total	**13**	**11**	**6**			**30**	**38**

3rd Semester

		Hours/week			Marks			
Code	**Subject**	**L**	**T**	**P/D**	**Inte-rnal**	**End-sem**		
EN010 301	Engineering Mathematics II	2	2	-	50	100	3	4
EN010 302	Economics and Communication Skills	2	2	-	50	100	3	4 (3+1)
CS010 303	Problem Solving and Computer Programming	2	2	-	50	100	3	4
CS010 304	Computer Organization	3	1	-	50	100	3	4
CS010 305	Switching Theory and Logic Design	3	1	-	50	100	3	4
CS010 306(EC)	Electronics Devices and Circuits	3	1	-	50	100	3	4
CS010 307	Programming lab	-	-	3	50	100	3	2
CS010 308(EC)	Logic Design lab	-	-	3	50	100	3	2
	Total	**16**	**8**	**6**				**28**

4th Semester

Code	**Subject**	**Hours/week**			**Marks**		**End-sem duration -hours**	**Credits**
		L	**T**	**P/D**	**Inte-**	**End-**		

					rnal	sem		
EN010 401	Engineering Mathematics III	2	2	-	50	100	3	4
CS010 402	Object Oriented Programming	3	1		50	100	3	4
CS010 403	Data Structures and Algorithms	2	2	-	50	100	**3**	4
CS010 404(EC)	Signals and Communication Systems	3	1	-	50	100	3	4
CS010 405	Microprocessor Systems	3	1	-	50	100	3	4
CS010 406	Theory of Computation	3	1	-	50	100	3	4
CS010 407	Data Structures lab	-	-	3	50	100	3	2
CS010 408(EC)	Electronic Circuits & Communication lab	-	-	3	50	100	3	2
	Total	**16**	**8**	**6**				**28**

5th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 501B	Engineering Mathematics IV	2	2	-	50	100	3	4
EN010 502(ME)	Principles of Management	3	1		50	100	3	4
CS010 503	Database Management Systems	2	2	-	50	100	3	4
CS010 504(EC)	Digital Signal Processing	3	1	-	50	100	3	4
CS010 505	Operating Systems	3	1	-	50	100	3	4
CS010 506	Advanced Microprocessors & Peripherals	3	1	-	50	100	3	4

CS010 507	Database Lab	-	-	3	50	100	3	2
CS010 508	Hardware & Microprocessors lab	-	-	3	50	100	3	2
	Total	**16**	**8**	**6**				**28**

6th Semester

		Hours/week			Marks			
Code	**Subject**	**L**	**T**	**P/D**	**Inte-rnal**	**End-sem**	**End-sem duration -hours**	**Credits**
CS010 601	Design and Analysis of Algorithms	2	2	-	50	100	3	4
CS010 602	Internet Computing	2	2	-	50	100	3	4
CS010 603	System Software	3	1	-	50	100	3	4
CS010 604	Computer Networks	3	1	-	50	100	3	4
CS010 605	Software Engineering	3	1	-	50	100	3	4
CS010 606Lxx	Elective I	2	2	-	50	100	3	4
CS010 607	Operating Systems Lab	-	-	3	50	100	3	2
CS010 608	Mini Project	-	-	3	50	100	3	2
	Total	**16**	**8**	**6**				**28**

Elective I

CS010 606L01	Distributed Systems
CS010 606L02	Micro controller Based Systems
CS010 606L03	User Interface Design
CS010 606L04	Unix Shell Programming

CS010 606L05 Embedded Systems

CS010 606L06 Advanced Software Environments

7th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
CS010 701	Web Technologies	2	2	-	50	100	3	4
CS010 702	Compiler Construction	2	2	-	50	100	3	4
CS010 703	Computer Graphics	2	1	-	50	100	3	3
CS010 704	Object Oriented Modelling & Design	2	1	-	50	100	3	3
CS010 705	Principles of Programming Languages	2	1	-	50	100	3	3
CS010 706Lxx	Elective II	2	2	-	50	100	3	4
CS010 707	Systems Programming Lab	-	-	3	50	100	3	2
CS010 708	Networking lab	-	-	3	50	100	3	2
CS010 709	Seminar	-	-	2	50	-	-	2
CS010 710	Project	-	-	1	50	-	-	1
	Total	**12**	**9**	**9**				**28**

Elective II

CS010 706L01 Real Time Systems

CS010 706L02 Data Mining and Data Warehousing

CS010 706L03 Operating System Kernel Design

CS010 706L04 Digital image processing

CS010 706L05 Data Processing and File Structures

CS010 706L06 Client Server and Applications

8th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
CS010 801	High Performance Computing	3	2	-	50	100	3	4
CS010 802	Artificial Intelligence	2	2	-	50	100	3	4
CS010 803	Security in Computing	2	2	-	50	100	3	4
CS010 804Lxx	Elective III	2	2	-	50	100	3	4
CS010 805Gxx	Elective IV	2	2	-	50	100	3	4
CS010 806	Computer Graphics Lab	-	-	3	100	-	-	2
CS010 807	Project	-	-	6	50	100	3	4
CS010 808	Viva Voce	-	-	-	-	50	-	2
	Total	**11**	**10**	**9**				**28**

Elective III

CS010 804L01 E-commerce
CS010 804L02 Grid Computing
CS010 804L03 Bioinformatics

CS010 804L04 Optimization Techniques

CS010 804L05 Mobile Computing

CS010 804L06 Advanced networking trends

Elective IV

CS010 805G01 Multimedia Techniques

CS010 805G02 Neural networks

CS010 805G03 Advanced Mathematics

CS010 805G04 Software Architecture

CS010 805G05 Natural Language Processing

CS010 805G06 Pattern Recognition

Mahatma Gandhi University Revised Scheme For

B Tech Syllabus Revision 2010

(ELECTRICAL & ELECTRONICS ENGINEERING)

Common for All Branches

SCHEME S1S2

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 101	Engineering Mathematics I	2	1	-	50	100	3	5
EN010 102	Engineering Physics	1	1	-	50	100	3	4
EN010 103	Engineering. Chemistry & Environmental Studies	1	1	-	50	100	3	4
EN010 104	Engineering Mechanics	3	1	-	50	100	3	6
EN010 105	Engineering Graphics	1	3	-	50	100	3	6
EN010 106	Basic Civil Engineering	1	1	-	50	100	3	4
EN010 107	Basic Mechanical Engineering	1	1	-	50	100	3	4
EN010 108	Basic Electrical Engineering	1	1	-	50	100	3	4
EN010 109	Basic Electronics Engineering. & Information Technology	2	1	-	50	100	3	5
EN010 110	*Mechanical Workshop*	0	-	3	50	-	3	1
EN110 111	*Electrical and Civil Workshops*	-	-	3	100	-	3	1

	Total	**13**	**11**	**6**			**30**	**44**

3rd Semester

		Hours/week			Marks		End-sem duration -hours	
Code	**Subject**	**L**	**T**	**P/D**	**Inte-rnal**	**End-sem**		**Credits**
EN010 301	Engineering Mathematics II	2	2	-	50	100	3	4
EN010 302	Economics and Communication Skills	2	2	-	50	100	3	4 (3+1)
EE 010 303	Electric Circuit Theory	2	2	-	50	100	3	4
EE010 304	Electrical Measurements and Measuring Instruments	3	1	-	50	100	3	4
EE 010 305	Electronic Circuits	3	1	-	50	100	3	4
EE 010 306(ME)	Mechanical Technology	3	1	-	50	100	3	4
EE010 307	Electrical Measurements Lab	-	-	3	50	100	3	2
EE 010 308	Mechanical Lab	-	-	3	50	100	3	2
	Total	**15**	**9**	**6**				**28**

4th Semester

		Hours/week			Marks		End-sem duration -hours	
Code	**Subject**	**L**	**T**	**P/D**	**Inte-rnal**	**End-sem**		**Credits**

EN010 401	Engineering Mathematics III	2	2	-	50	100	3	4
EE 010 402	DC Machines and Transformers	3	1	-	50	100	3	4
EE 010 403	Linear System Analysis	2	2	-	50	100	3	4
EE010 404	Electromagnetic Theory	3	1	-	50	100	3	4
EE 010 405	Digital Systems and Computer Organization	3	1	-	50	100	3	4
EE 010 406	Computer Programming	3	1	-	50	100	3	4
EE 010 406	Computer Programming Lab			3	50	100	3	2
EE 010 408	Electronic Circuits Lab	-	-	3	50	100	3	2
	Total	16	8	6				**28**

5th Semester

6th Semester

Code	Subject	Hours/week			Marks		End-sem duration -hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EE010 601	Power Generation and Distribution	2	2	-	50	100	3	4
EE 010 602	Induction Machines	3	1	-	50	100	3	4
EE 010 603	Control System Engineering	2	2	-	50	100	3	4
EE010 604	Digital Signal Processing	3	1	-	50	100	3	4
EE 010 605	Microcontrollers and Embedded Systems	3	1	-	50	100	3	4
EE 010 606Lxx	Elective I	2	2	-	50	100	3	4
EE010 607	Power Electronics Lab	-	-	3	50	100	3	2
EE010 608	Mini project/ Microprocessor and Microcontroller Lab	-	-	3	50	100	3	2
	Total	15	9	6				**28**

Elective I

EE 010 606L01 H V Engineering

EE 010 606L02 VLSI systems

EE 010 606L03 Artificial Neural Networks

EE 010 606L04 Object Oriented Programming

EE 010 606L05 Bio - medical engineering

EE 010 606L06 Renewable energy Sources

7th Semester

Code	Subject	Hours/week			Marks		End-sem duration -hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 701	Electrical Power Transmission	2	**2**	-	50	100	3	4
EE 010 702	Synchronous Machines	2	**1**	-	50	100	3	4
EE010 703	Drives and Control	2	**2**	-	50	100	3	3
EE010 704	Modern Control Theory	2	**1**	-	50	100	3	3
EE010 705	Communication Engineering	2	**1**	-	50	100	3	3
EE 010 706Lxx	Elective II	2	**2**	-	50	100	3	4
EE010 707	Electrical CAD	-	-	**3**	50	100	3	2
EE 010 708	Electrical Machines Lab II	-	-	**3**	50	100	3	2
EE010 709	Seminar	-	-	**2**	50	-	-	2
EE 010 710	Project	-	-	-	50	-	-	1
	Total	**12**	**9**	**9**				**28**

Elective II

EE010 706L01 H V D C Transmission

EE010 706L02 Industrial Instrumentation

EE010 706L03 Power Quality

EE010 706L04 PLC Based system

EE010 706L05 MEMS

EE010 706L06 Special Electrical Machines

8th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EE010 801	Power System Analysis	2	2	2	50	100	3	4
EE010 802	Switch Gear and Protection	2	2	-	50	100	3	4
EE 010 803	Electrical System Design	3	2	-	50	100	3	4
EE010 804Lxx	Elective III	2	2	-	50	100	3	4
EE 010 805Gxx	Elective IV	2	2	-	50	100	3	4
EE 010 806	Project	-	-	6	50	100	3	4
EE010 807	Control and Simulation Lab	-	-	3	100	-	-	2
EE 010 808	Viva Voce	-	-	-	-	50	-	2
	Total	**11**	**10**	**9**				**28**

Electives III

EE010 804L01 Advanced Power System

EE010 804L02 Computer Networks

EE010 804L03 Generalized Machine Theory

EE010 804L04 Finite Element applications in Electrical Engineering.

EE010 804L05 Digital Signal Processors

EE010 804L06 Opto Electronics

Electives IV

EE010 805G01 Soft Computing Techniques

EE010 805G02 Intellectual property rights

EE010 805G03 Advanced Mathematics

EE010 805G04 Virtual Instrumentation

EE010 805G05 Digital Image Processing

EE010 805G06 Distributed Power Systems

Mahatma Gandhi University Revised Scheme For

B Tech Syllabus Revision 2010

(Electronics & Communication Engineering)

Common for All Branches

SCHEME S1S2

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 101	Engineering Mathematics I	2	1	-	50	100	3	5
EN010 102	Engineering Physics	1	1	-	50	100	3	4
EN010 103	Engineering. Chemistry & Environmental Studies	1	1	-	50	100	3	4
EN010 104	Engineering Mechanics	3	1	-	50	100	3	6
EN010 105	Engineering Graphics	1	3	-	50	100	3	6
EN010 106	Basic Civil Engineering	1	1	-	50	100	3	4
EN010 107	Basic Mechanical Engineering	1	1	-	50	100	3	4
EN010 108	Basic Electrical Engineering	1	1	-	50	100	3	4
EN010 109	Basic Electronics Engineering. & Information Technology	2	1	-	50	100	3	5
EN010 110	*Mechanical Workshop*	0	-	3	50	-	3	1
EN010 111	*Electrical and Civil Workshops*	-	-	3	100	-	3	1

	Total	**13**	**11**	**6**			**30**	**44**

3rd Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 301	Engineering Mathematics II	2	2	-	50	100	3	4
EN010 302	Economics and Communication Skills	2	2	-	50	100	3	4 (3+1)
EC010 303	Network Theory	2	2	-	50	100	3	4
EC010 304	Solid State Devices	3	1	-	50	100	3	4
EC010 305	Analog Circuits - I	3	1	-	50	100	3	4
EC010 306	Computer Programming	3	1	-	50	100	3	4
EC010 307	*Analog Circuits Lab*	-	-	3	50	100	3	2
EC010 308	*Programming Lab*	-	-	3	50	100	3	2
	Total	**15**	**9**	**6**				**28**

4th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 401	Engineering Mathematics III	2	2	-	50	100	3	4
EN010 402(ME)	Principles of Management	3	1	-	50	100	3	4
EC010 403	Signals and Systems	2	2	-	50	100	3	4

EC010 404	Digital Electronics	3	1	-	50	100	3	4
EC010 405	Analog Communication	3	1	-	50	100	3	4
EC010 406	Analog Circuits -II	3	1	-	50	100	3	4
EC010 407	*Analog Circuits -II Lab*	-	-	3	50	100	3	2
EC010 408	*Analog Communication Lab*	-	-	3	50	100	3	2
	Total	**16**	**8**	**6**				**28**

5th Semester

6th Semester

Code	Subject	Hours/week			Marks		End-sem duration -hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EC010 601	Digital Communication Techniques	2	2	-	50	100	3	4
EC010 602	Digital Signal Processing	2	2	-	50	100	3	4
EC010 603	Radiation and Propagation	3	1	-	50	100	3	4
EC010 604	Computer Architecture and Parallel Processing	3	1	-	50	100	3	4
EC010 605	Microcontrollers and Applications	3	1	-	50	100	3	4
EC010 606Lxx	Elective I	3	1	-	50	100	3	4
EC010 607	*Microprocessor and Microcontroller Lab*	-	-	3	50	100	3	2
EC010 608	*Mini Project Lab*	-	-	3	50	100	3	2
	Total	**16**	**8**	**6**				**28**

Elective I

EC010 606L01 – Data Structures and Algorithms

EC010 606L02 – Data Base Management Systems

EC010 606L03 – High Speed Digital Design

EC010 606L04 – Medical Electronics

EC010 606L05 – Soft Computing Techniques

EC010 606L06 – Television and Radar Engineering

7th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EC010 701	VLSI Design	2	2	-	50	100	3	4
EC010 702	Information Theory and Coding	2	2	-	50	100	3	4
EC010 703	Microwave Engineering	2	1	-	50	100	3	3
EC010 704	Electronic Instrumentation	2	1	-	50	100	3	3
EC010 705	Embedded Systems	2	1	-	50	100	3	3
EC010 706Lxx	Elective II	2	2	-	50	100	3	4
EC010 707	*Advanced Communication Lab*	-	-	3	50	100	3	2
EC010 708	*VLSI and Embedded Systems Lab*	-	-	3	50	100	3	2
EC010 709	Seminar	-	-	2	50	-	-	2
EC010 710	*Project*	-	-	1	50	-	-	1
	Total	**12**	**9**	**9**				**28**

Elective II

EC010 706L01 – Optimization Techniques

EC010 706L02 – Speech and Audio Processing

EC010 706L03 – Digital Image Processing

EC010 706L04 – Wavelets and Applications

EC010 706L05 – Antenna Theory and Design

EC010 706L06 – System Software

8th Semester

Code	Subject	Hours/week	Marks	End-sem duration-	Credi

		L	T	P/D	Inte-rnal	End-sem	hours	ts
EC010 801	Wireless Communication	3	2	-	50	100	3	4
EC010 802	Communication Networks	2	2	-	50	100	3	4
EC010 803	Light Wave Communication	2	2	-	50	100	3	4
EC010 804Lxx	Elective III	2	2	-	50	100	3	4
EC010 805Gxx	Elective IV	2	2	-	50	100	3	4
EC010 806	*Systems lab*	-	-	3	50	100	3	2
EC010 807	Project	-	-	6	100	-	-	4
EC010 808	Viva Voce	-	-	-	-	50	-	2
	Total	**11**	**10**	**9**				**28**

Electives III

EC010 804L01 – Nano Electronics

EC010 804L02 – Micro Electro Mechanical Systems

EC010 804L03 – Secure Communication

EC010 804L04 – Management Information Systems

EC010 804L05 – Pattern Recognition

EC010 804L06 – R F Circuits

Electives IV

EC010 805G01 – Test Engineering

EC010 805G02 – E-Learning

EC010 805G03 – Mechatronics

EC010 805G04 – Bio Informatics

EC010 805G05 – Intellectual Property Rights

Mahatma Gandhi University Revised Scheme For

B Tech Syllabus Revision 2010

(ELECTRONICS AND INSTRUMENTATION ENGINEERING)

Common for All Branches

SCHEME S1S2

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 101	Engineering Mathematics I	2	1	-	50	100	3	5
EN010 102	Engineering Physics	1	1	-	50	100	3	4
EN010 103	Engineering. Chemistry & Environmental Studies	1	1	-	50	100	3	4
EN010 104	Engineering Mechanics	3	1	-	50	100	3	6
EN010 105	Engineering Graphics	1	3	-	50	100	3	6
EN010 106	Basic Civil Engineering	1	1	-	50	100	3	4
EN010 107	Basic Mechanical Engineering	1	1	-	50	100	3	4
EN010 108	Basic Electrical Engineering	1	1	-	50	100	3	4
EN010 109	Basic Electronics Engineering. & Information Technology	2	1	-	50	100	3	5
EN010 110	*Mechanical Workshop*	0	-	3	50	-	3	1
EN010 111	*Electrical and Civil Workshops*	-	-	3	100	-	3	1
	Total	**13**	**11**	**6**			**30**	**44**

3rd Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EI010 301	Engineering Mathematics II	2	2	-	50	100	3	4
EI010 302	Economics and Communication Skills	2	2	-	50	100	3	4 (3+1)
EI010 303	Network Theory	2	2	-	50	100	3	4
EI010 304	Electronic Devices and Circuits I	3	1	-	50	100	3	4
EI010 305	Basic Instrumentation	3	1	-	50	100	3	4
EI010 306	Computer Programming	3	1	-	50	100	3	4
EI010 307	*Electronic circuits lab I*	-	-	3	50	100	3	2
EI010 308	*Programming Lab(C,C++,Matlab)*	-	-	3	50	100	3	2
	Total	**15**	**9**	**6**				**28**

4th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 401	Engineering Mathematics III	2	2	-	50	100	3	4
EN010 402(ME)	Principles of Management	3	1	-	50	100	3	4
EI010 403	Signals&Systems	2	2	-	50	100	3	4
EI010 404	Digital Electronics	3	1	-	50	100	3	4
EI010 405	Electronic instrumentation	3	1	-	50	100	3	4
EI010 406	Elecronic Devices and Circuits II	3	1	-	50	100	3	4

EI010 407	*Electronic circuits Lab II*	-	-	3	50	100	3	2
EI010 408	*Basic Instrumentation Lab*	-	-	3	50	100	3	2
	Total	**16**	**8**	**6**				**28**

5th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 501A	Engineering Mathematics IV N	**2**	**2**	-	**50**	**100**	3	4
EI010 502	Industrial electronics and applications	**3**	**1**		**50**	**100**	3	4
EI010 503	Linear integrated circuits and applications	3	1	-	50	100	3	4
EI010 504	Transducer engineering	3	1	-	50	100	3	4
EI010 505	Control engineering I	2	2	-	50	100	3	4
EI010 506	Microprocessors and Microcontrollers	3	1	-	50	100	3	4
EI010 507	*Instrumentation lab I*	-	-	3	50	100	3	2
EI010 508	*Integrated circuits lab*	-	-	3	50	100	3	2
	Total	**16**	**8**	**6**				**28**

6th Semester

Code	Subject	Hours/week	Marks	End-sem	Credits

							duration -hours	
		L	T	P/D	Inte-rnal	End-sem		
EI010 601	Process Control Instrumentation	3	1	-	50	100	3	4
EI010 602	Digital Signal Processing	2	2	-	50	100	3	4
EI010 603	Industrial instrumentation I	3	1	-	50	100	3	4
EI010 604	Data acquisition and communication	3	1	-	50	100	3	4
EI010 605	Control engineering II	2	2	-	50	100	3	4
EI010 606Lxx	Elective I	3	1	-	50	100	3	4
EI010 607	*Microprocessor and Microcontroller Lab*	-	-	3	50	100	3	2
EI010 608	*Mini Project*	-	-	3	50	100	3	2
	Total	**16**	**8**	**6**				**28**

Elective I

EI010 606L01 – Digital system design

EI010 606L02 – Data Base Management Systems

EI010 606L03 – Computer networks

EI010 606L04 – micro controller based system design

EI010 606L05 – Telimetry and remote control

EI010 606L06 – Robotics and automation

7th Semester

Code	Subject	Hours/week			Marks		End-sem duration -hours	Credits
		L	T	P/D	Inte-rnal	End-sem		

EI010 701	Fibre Optics and Laser Instrumentation	2	2	-	50	100	3	4
EI010 702	Computerised Process Control	2	2	-	50	100	3	4
EI010 703	Biomedical Instrumentation	2	1	-	50	100	3	3
EI010 704	Analytical Instrumentation	2	1	-	50	100	3	3
EI010 705	Industrial Instrumentation II	2	1	-	50	100	3	3
EI010 706Lxx	Elective II	2	2	-	50	100	3	4
EI010 707	*Instrumentation lab II*	-	-	3	50	100	3	2
EI010 708	*System simulation lab*	-	-	3	50	100	3	2
EI010 709	Seminar	-	-	2	50	-	-	2
EI010 710	*Project*	-	-	1	50	-	-	1
	Total	**12**	**9**	**9**				**28**

Elective II

EI010 706L01 – Optimization Techniques

EI010 706L02 – VLSI Technology

EI010 706L03 – Digital Image Processing

EI010 706L04 – Applied soft computing

EI010 706L05 – Instrumentation in petrochemical industries

EI010 706L06 – Reliability and safety engineering

8th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EI010 801	Instrumentation System Design	3	2	-	50	100	3	4
EI010 802	Instrumentation in Process Industries	2	2	-	50	100	3	4

EI010 803	Advanced Instrumentation and Applications	2	2	-	50	100	3	4
EI010 804Lxx	Elective III	2	2	-	50	100	3	4
EI010 805Gxx	Elective IV	2	2	-	50	100	3	4
EI010 806	*Process control lab*	-	-	3	50	100	3	2
EI010 807	Project	-	-	6	100	-	-	4
EI010 808	Viva Voce	-	-	-	-	50	-	2
	Total	**11**	**10**	**9**				**28**

Electives III

EI010 804L01 – Nano Electronics

EI010 804L02 – Micro Electro Mechanical Systems

EI010 804L03 –Biomedical signal processing

EI010 804L04 –Real time embedded systems

EI010 804L05 –Environmental monitoring instruments

EI010 804L06 –Air craft instrumentation

Electives IV

EI010 805G01 – Test Engineering

EI010 805G02 – Total quality management

EI010 805G03 –Human factors engineering

EI010 805G04 – Bio Informatics

EI010 805G05 – Intellectual Property Rights

EI010 805G06 – Professional Ethics

Mahatma Gandhi University Revised Scheme For

B Tech Syllabus Revision 2010

(Information Technology)

Common for All Branches

SCHEME S1S2

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 101	Engineering Mathematics I	2	1	-	50	100	3	5
EN010 102	Engineering Physics	1	1	-	50	100	3	4
EN010 103	Engineering. Chemistry & Environmental Studies	1	1	-	50	100	3	4
EN010 104	Engineering Mechanics	3	1	-	50	100	3	6
EN010 105	Engineering Graphics	1	3	-	50	100	3	6
EN010 106	Basic Civil Engineering	1	1	-	50	100	3	4
EN010 107	Basic Mechanical Engineering	1	1	-	50	100	3	4
EN010 108	Basic Electrical Engineering	1	1	-	50	100	3	4
EN010 109	Basic Electronics Engineering. & Information Technology	2	1	-	50	100	3	5
EN010 110	*Mechanical Workshop*	0	-	3	50	-	3	1
EN110 111	Electrical and Civil Workshops	-	-	3	100	-	3	1
	Total	**13**	**11**	**6**			**30**	**44**

3rd Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 301	Engineering Mathematics II	2	2	-	50	100	3	4
EN010 302	Economics and Communication Skills	2	2	-	50	100	3	4 (3+1)
IT010 303 (EC)	Discrete and Integrated Electronic Circuits	2	2	-	50	100	3	4
IT010 304	Switching Theory and Logic Design	3	1	-	50	100	3	4
IT010 305	Principles of Communication Engineering	3	1	-	50	100	3	4
IT010 306	Problem Solving and Computer Programming	3	1	-	50	100	3	4
IT010 307 (EC)	*Electronic Circuits and Communication Lab*	-	-	3	50	100	3	2
IT010 308	*Programming Lab*	-	-	3	50	100	3	2
	Total	**15**	**9**	**6**				**28**

4th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 401	Engineering Mathematics III	2	2	-	50	100	3	4
EN010 402(ME)	Principles of Management	3	1	-	50	100	3	4
IT010 403	Computer Organisation and Architecture	2	2	-	50	100	3	4
IT010 404	Theory of Computation	3	1	-	50	100	3	4

IT010 405	Data Structures and Algorithms	3	1	-	50	100	3	4
IT010 406	Object Oriented Techniques	3	1	-	50	100	3	4
IT010 407	*Logic Design Lab*	-	-	3	50	100	3	2
IT010 408	*Data Structures and Programming Lab*	-	-	3	50	100	3	2
	Total	**16**	**8**	**6**				**28**

5th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	**T**	**P/D**	**Inte-rnal**	**End-sem**		
EN010 501B	Engineering Mathematics IV N	**2**	**2**	-	**50**	**100**	3	4
IT010 502	Microprocessors and Microcontrollers	**3**	**1**		**50**	**100**	3	4
IT010 503	Digital Communication	2	2	-	50	100	3	4
IT010 504	Operating Systems	3	1	-	50	100	3	4
IT010 505	Language Translators	3	1	-	50	100	3	4
IT010 506	Database Management Systems	3	1	-	50	100	3	4
IT010 507	*PC Hardware and Microprocessors Lab*	-	-	3	50	100	3	2
IT010 508	*Systems Lab*	-	-	3	50	100	3	2
	Total	**16**	**8**	**6**				**28**

6th Semester

Code	Subject	Hours/week	Marks	End-sem	Credits

							duration -hours	
		L	**T**	**P/D**	**Inte-rnal**	**End-sem**		
IT010 601	Computer Networks	2	2	-	50	100	3	4
IT010 602	Digital Signal Processing	2	2	-	50	100	3	4
IT010 603	Information Theory and Coding	3	1	-	50	100	3	4
IT010 604	Software Engineering	3	1	-	50	100	3	4
IT010 605	Design and Analysis of Algorithms	3	1	-	50	100	3	4
IT010 606Lxx	Elective I	2	2	-	50	100	3	4
IT010 607	Network Programming Lab	-	-	3	50	100	3	2
IT010 608	*Mini Project*	-	-	3	50	100	3	2
	Total	**15**	**9**	**6**				**28**

Elective I

IT010 606L01 Simulation and Modelling

IT010 606L02 Management Information Systems

IT010 606L03 UNIX Shell Programming

IT010 606L04 Advanced Database Systems

IT010 606L05 Parallel Computing

IT010 606L06 Optimization Techniques

7th Semester

Code	Subject	Hours/week			Marks		End-sem duration -hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
IT010 701	Financial Management and E-Banking	2	2	-	50	100	3	4
IT010 702	Object Oriented Modelling and Design	2	2	-	50	100	3	4
IT010 703	Computer Graphics and Multimedia Systems	2	1	-	50	100	3	3
IT010 704	Internetworking	2	1	-	50	100	3	3
IT010 705	Web Applications Development	2	1	-	50	100	3	3
IT010 706Lxx	Elective II	2	2	-	50	100	3	4
IT010 707	Internetworking Lab	-	-	3	50	100	3	2
IT010 708	Computer Aided Software Engineering Lab	-	-	3	50	100	3	2
IT010 709	Seminar	-	-	2	50	-	-	2
IT010 710	*Project*	-	-	1	50	-	-	1
	Total	**12**	**9**	**9**				**28**

Elective II

IT010 706L01 Software Project Management

IT010 706L02 Optical Communication Networks

IT010 706 L03 Digital Speech and Image Processing

IT010 706L04 Real Time Systems

IT010 706L05 Operating System Kernel Design

IT010 706L06 Data Mining and Data Warehousing

8th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
IT010 801	Wireless Communication	3	2	-	50	100	3	4
IT010 802	Cryptography and Network Security	2	2	-	50	100	3	4
IT010 803	Artificial Intelligence	2	2	-	50	100	3	4
IT010 804Lxx	Elective III	2	2	-	50	100	3	4
IT010 805Gxx	Elective IV	2	2	-	50	100	3	4
IT010 806	Web Applications Lab	-	-	3	50	100	3	2
IT010 807	Project	-	-	6	100	-	-	4
IT010 808	Viva Voce	-	-	-	-	50	-	2
	Total	**11**	**10**	**9**				**28**

Electives III

IT010 804L01 Software Testing

IT010 804L02 Information Retrieval

IT010 804L03 High Speed Networks

IT010 804L04 Network Administration and Management

IT010 804L05 Enterprise Resource Planning

IT010 804L06 Grid Computing

Electives IV

IT010 805G01 Software Architecture

IT010 805G02 Advanced Mathematics

IT010 805G03 Ad Hoc and Sensor Networks

IT010 805G04 Electronic Business and Services

IT010 805G05 Neural Networks

IT010 805G06 Soft Computing

Mahatma Gandhi University Revised Scheme For

B Tech Syllabus Revision 2010 (Mechanical Engineering)

Common for All Branches

SCHEME S1S2

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 101	Engineering Mathematics I	2	1	-	50	100	3	5
EN010 102	Engineering Physics	1	1	-	50	100	3	4
EN010 103	Engineering. Chemistry & Environmental Studies	1	1	-	50	100	3	4
EN010 104	Engineering Mechanics	3	1	-	50	100	3	6

EN010 105	Engineering Graphics	1	3	-	50	100	3	6
EN010 106	Basic Civil Engineering	1	1	-	50	100	3	4
EN010 107	Basic Mechanical Engineering	1	1	-	50	100	3	4
EN010 108	Basic Electrical Engineering	1	1	-	50	100	3	4
EN010 109	Basic Electronics Engineering. & Information Technology	2	1	-	50	100	3	5
EN010 110	*Mechanical Workshop*	0	-	3	50	-	3	1
EN110 111	*Electrical and Civil Workshops*	-	-	3	100	-	3	1
	Total	**13**	**11**	**6**			**30**	**44**

3rd Semester

		Hours/week			Marks		End-sem duration -hours	
Code	**Subject**	**L**	**T**	**P/D**	**Inte-rnal**	**End-sem**		**Credits**
EN010 301	Engineering Mathematics II	2	2	-	50	100	3	4
EN010 302	Economics and Communication Skills	2	2	-	50	100	3	4 (3+1)
ME010 303	Fluid Mechanics	2	2	-	50	100	3	4
ME 010 304	Metallurgy & Material Science	3	1	-	50	100	3	4
ME 010 305	Programming in C	3	1	-	50	100	3	4
ME 010 306(CE)	Strength of Materials & Structural Engineering	3	1	-	50	100	3	4
ME 010 307	*Computer ProgrammingLab*	-	-	3	50	100	3	2
ME 010 308	*Fluid Mechanics Lab*	-	-	3	50	100	3	2
	Total	**15**	**9**	**6**				**28**

4th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 401	Engineering Mathematics III	2	2	-	50	100	3	4
EN010 402(ME)	Principles of Management	3	1	-	50	100	3	4
ME 010 403	Hydraulic Machines	2	2	-	50	100	3	4
ME 010 404	Manufacturing Process	3	1	-	50	100	3	4
ME 010 405	Machine Drawing			4	50	100	3	4
ME 010 406(EE)	Electrical Technology	3	1	-	50	100	3	4
ME 010 407	*Hydraulic Machines Lab*	-	-	3	50	100	3	2
ME 010 408(CE)	*Strength of Materials Lab*	-	-	3	50	100	3	2
	Total	**16**	**8**	**6**				**28**

5th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 501A	Engineering Mathematics IV N	**2**	**2**	-	**50**	**100**	3	4
ME 010 502	Computer Aided Design & Manufacturing	**3**	**1**		**50**	**100**	3	4
ME 010 503	Advanced Mechanics of Materials	2	2	-	50	100	3	4
ME 010 504	Kinematics of Machinery	3	1	-	50	100	3	4
ME 010 505	I.C.Engines & Combustion	3	1	-	50	100	3	4

ME 010 506	Thermodynamics	3	1	-	50	100	3	4
ME 010 507	*Computer Graphics & Drafting*	-	-	3	50	100	3	2
ME 010 508	*Electrical & Electronics Lab*	-	-	3	50	100	3	2
	Total	**16**	**8**	**6**				**28**

6th Semester

		Hours/week			Marks		End-sem duration -hours	
Code	**Subject**	**L**	**T**	**P/D**	**Inte-rnal**	**End-sem**		**Credits**
ME 010 601	Mechanics of Machines	2	2	-	50	100	3	4
ME 010 602	Heat & Mass transfer	2	2	-	50	100	3	4
ME 010 603	Thermal Systems & Applications	3	1	-	50	100	3	4
ME 010 604	Metrology & Machine Tools	3	1	-	50	100	3	4
ME 010 605	Mechatronics & Control System	3	1	-	50	100	3	4
ME 010 606Lxx	Elective I	2	2	-	50	100	3	4
ME 010 607	Heat Engines Lab	-	-	3	50	100	3	2
ME 010 608	*Machine Tools Lab*	-	-	3	50	100	3	2
	Total	**15**	**9**	**6**				**28**

Elective I

ME 010 606L01 Computational Fluid Dynamics

ME 010 606L02 Composite Matérials Technology

ME 010 606L03 Automobile engineering

ME 010 606L04 Advanced strength of materials

ME 010 606L05 Industrial Hydraulics

ME 010 606L06 Project management

7th Semester

Code	Subject	Hours/week			Marks		End-sem duration -hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
ME 010 701	Design of Machine Elements	2	2	-	50	100	3	4
ME 010 702	Dynamics of Machines	2	2	-	50	100	3	4
ME 010 703	Gas Dynamics & Jet Propulsion	2	1	-	50	100	3	3
ME 010 704	Refrigeration & Air Conditioning	2	1	-	50	100	3	3
ME 010 705	Industrial Engineering	2	1	-	50	100	3	3
ME 010 706Lxx	Elective II	2	2	-	50	100	3	4
ME 010 707	Mechanical Measurements Lab	-	-	3	50	100	3	2
ME 010 708	*Advanced Machine Tools Lab*	-	-	3	50	100	3	2
ME 010 709	Seminar	-	-	2	50	-	-	2
ME 010 710	*Project*	-	-	1	50	-	-	1
	Total	**12**	**9**	**9**				**28**

Elective II

ME010 706L01 Plant Engineering & Maintenance

ME010 706L02 Turbomachines

ME010 706L03 Theory of vibration

ME010 706L04 Sales & Marketing Management

ME010 706L05 Failure analysis & design

ME010 706L06 Foundary & Welding Technology

8th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
ME010 801	Design of Transmission Elements	3	2	-	50	100	3	4
ME010 802	Operations Management	2	2	-	50	100	3	4
ME010 803	Production Engineering	2	2	-	50	100	3	4
ME010 804Lxx	Elective III	2	2	-	50	100	3	4
ME010 805Gxx	Elective IV	2	2	-	50	100	3	4
ME010 806	Mechanical Systems Lab	-	-	3	50	100	3	2
ME010 807	Project	-	-	6	100	-	-	4
ME010 808	Viva Voce	-	-	-	-	50	-	2
	Total	**11**	**10**	**9**				**28**

Electives III

ME010 804L01	Aerospace Engineering
ME010 804L02	Advanced Machining Process
ME010 804L03	Cryogenics
ME010 804L04	Acoustics & noise control
ME010 804L05	Non Destructive Testing
ME010 804L06	Advanced operations research

Electives IV

ME010 805G01 Industrial Safety

ME010 805G02 Disaster Management

ME010 805G03 Nano Technology

ME010 805G04 Finite element analysis

ME010 805G05 Optimization methods in design

ME010 805G06 Petrochemical Engineering

Mahatma Gandhi University Revised Scheme For

B Tech Syllabus Revision 2010

(Instrumentation & Control Engineering)

Common for All Branches

SCHEME S1S2

Code	Subject	Hours/week			Marks		End-sem duration -hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 101	Engineering Mathematics I	2	1	-	50	100	3	5
EN010 102	Engineering Physics	1	1	-	50	100	3	4
EN010 103	Engineering. Chemistry & Environmental Studies	1	1	-	50	100	3	4
EN010 104	Engineering Mechanics	3	1	-	50	100	3	6
EN010 105	Engineering Graphics	1	3	-	50	100	3	6
EN010 106	Basic Civil Engineering	1	1	-	50	100	3	4
EN010 107	Basic Mechanical Engineering	1	1	-	50	100	3	4
EN010 108	Basic Electrical Engineering	1	1	-	50	100	3	4
EN010 109	Basic Electronics Engineering. & Information Technology	2	1	-	50	100	3	5
EN010 110	*Mechanical Workshop*	0	-	3	50	-	3	1

EN010 111	*Electrical and Civil Workshops*	-	-	3	100	-	3	1
	Total	**13**	**11**	**6**			**30**	**44**

3rd Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 301	Engineering Mathematics II	2	2	-	50	100	3	4
EN010 302	Economics and Communication Skills	2	2	-	50	100	3	4 (3+1)
IC010 303	Network Theory	2	2	-	50	100	3	4
IC010 304	Analog Devices & Circuits	3	1	-	50	100	3	4
IC010 305	Basic Instrumentation & Measurements Engineering	3	1	-	50	100	3	4
IC010 306	Computer Programming	3	1	-	50	100	3	4
IC010 307	*Basic Electronics Laboratory*	-	-	3	50	100	3	2
IC010 308	*Programming Lab(C,C++,Matlab)*	-	-	3	50	100	3	2
	Total	**15**	**9**	**6**				**28**

4th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 401	Engineering Mathematics III	2	2	-	50	100	3	4
EN010	Principles of	3	1	-	50	100	3	4

402(ME)	Management								
IC010 403	Transducer Engineering	2	2	-	50	100	3	4
IC010 404	Digital Electronics	3	1	-	50	100	3	4
IC010 405	Electrical Engineering	3	1	-	50	100	3	4
IC010 406	Mechanical Engineering	3	1	-	50	100	3	4
IC010 407	*Electrical Machines Laboratory*	-	-	3	50	100	3	2
IC010 408	*Digital IC Laboratory*	-	-	3	50	100	3	2
	Total	**16**	**8**	**6**				**28**

5th Semester

		Hours/week			**Marks**		**End-sem duration-hours**	
Code	**Subject**	**L**	**T**	**P/D**	**Inte-rnal**	**End-sem**		**Credits**
EN010 501A	Engineering Mathematics IV N	**2**	**2**	-	**50**	**100**	3	4
IC010 502	Industrial Electronics & Applications	**2**	**2**		**50**	**100**	3	4
IC010 503	Electronic Instrumentation	3	1	-	50	100	3	4
IC010 504	Linear Integrated Circuits	3	1	-	50	100	3	4
IC010 505	Linear Control System	3	1	-	50	100	3	4
IC010 506	Microprocessors and Microcontrollers	3	1	-	50	100	3	4
IC010 507	*Microprocessor & Microcontroller Lab*	-	-	3	50	100	3	2
IC010 508	*Linear Integrated Circuits Lab*	-	-	3	50	100	3	2

	Total	**16**	**8**	**6**				**28**

6th Semester

Code	Subject	Hours/week			Marks		End-sem duration -hours	Credits
		L	**T**	**P/D**	**Inte-rnal**	**End-sem**		
IC010 601	Process Control Instrumentation	2	2	-	50	100	3	4
IC010 602	Principles of Telemetry & Communication	2	2	-	50	100	3	4
IC010 603	Industrial Instrumentation – I	3	1	-	50	100	3	4
IC010 604	Signals & Systems with Processing	3	1	-	50	100	3	4
IC010 605	Advanced Control Systems	3	1	-	50	100	3	4
IC010 606Lxx	Elective-I	3	1	-	50	100	3	4
IC010 607	*Industrial Instrumentation Laboratory*	-	-	3	50	100	3	2
IC010 608	*Mini Project*	-	-	3	50	100	3	2
	Total	**16**	**8**	**6**				**28**

Elective I

IC010 606L01 – Mechatronics

IC010 606L02 – Computer Networks & Protocols

IC010 606L03 – Advanced Microcontrollers

IC010 606L04 – Embedded System Design

IC010 606L05 – Digital System Design

IC010 606L06 – Data Structures & Algorithm

7th Semester

Code	Subject	Hours/week			Marks		End-sem duration -hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
IC010 701	Computer Control of Industrial Process	2	2	-	50	100	3	4
IC010 702	Optical and opto Electronic Instrumentation	2	2	-	50	100	3	4
IC010 703	Biomedical Instrumentation	2	1	-	50	100	3	3
IC010 704	Analytical Instrumentation	2	1	-	50	100	3	3
IC010 705	Industrial Instrumentation-II	2	1	-	50	100	3	3
IC010 706Lxx	Elective II	2	2	-	50	100	3	4
IC010 707	*Process Control Laboratory*	-	-	3	50	100	3	2
IC010 708	*Mechanical Measurements Laboratory*	-	-	3	50	100	3	2
IC010 709	Seminar	-	-	2	50	-	-	2
IC010 710	*Project*	-	-	1	50	-	-	1
	Total	**12**	**9**	**9**				**28**

Elective II

IC010 706L01 – Artificial Intelligence & Expert Systems

IC010 706L02 – Robotics & Automation

IC010 706L03 – Embedded Instrumentation System

IC010 706L04 – Ultrasonic Instrumentation

EC010 706L05 – VLSI Design

EC010 706L06 – Virtual Instrumentation

8th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
IC010 801	Instrumentation System Design	3	2	-	50	100	3	4
IC010 802	Power Plant Instrumentation	2	2	-	50	100	3	4
IC010 803	Instrumentation & Control in Petrochemical Industries	2	2	-	50	100	3	4
IC010 804Lxx	Elective III	2	2	-	50	100	3	4
IC010 805Gxx	Elective IV	2	2	-	50	100	3	4
IC010 806	*System Simulation Laboratory*	-	-	3	50	100	3	2
IC010 807	Project	-	-	6	100	-	-	4
IC010 808	Viva Voce	-	-	-	-	50	-	2
	Total	**11**	**10**	**9**				**28**

Electives III

IC010 804L01 – Intelligent Control System

IC010 804L02 – Automotive Instrumentation

IC010 804L03 – Instrumentation & Control Paper Industries

IC010 804L04 – Digital Image Processing techniques

IC010 804L05 – Instrumentation & Control in Aerospace & Navigation

IC010 804L06 – Telecommunication & Switching networks

Electives IV

IC010 805G01 – Test Engineering

IC010 805G02 – Multimedia Systems

IC010 805G03 – Total Quality Management

IC010 805G04 – Bio Informatics

IC010 805G05 – Intellectual Property Rights

IC010 805G06 – Professional Ethics

Mahatma Gandhi University Revised Scheme For

B Tech Syllabus Revision 2010

Common for All Branches

SCHEME S1S2

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 101	Engineering Mathematics I	2	1	-	50	100	3	5
EN010 102	Engineering Physics	1	1	-	50	100	3	4
EN010 103	Engineering. Chemistry & Environmental Studies	1	1	-	50	100	3	4
EN010 104	Engineering Mechanics	3	1	-	50	100	3	6
EN010 105	Engineering Graphics	1	3	-	50	100	3	6
EN010 106	Basic Civil Engineering	1	1	-	50	100	3	4
EN010 107	Basic Mechanical Engineering	1	1	-	50	100	3	4
EN010 108	Basic Electrical Engineering	1	1	-	50	100	3	4
EN010 109	Basic Electronics Engineering. & Information Technology	2	1	-	50	100	3	5
EN010 110	Mechanical Workshop	0	-	3	50	-	3	1
EN010 111	Electrical and Civil Workshops	-	-	3	100	-	3	1
	Total	**13**	**11**	**6**			**30**	**44**

3rd Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 301	Engineering Mathematics II	2	2	-	50	100	3	4
EN010 302	Economics and Communication Skills	2	2	-	50	100	3	4 (3+1)
PO010 303	Polymer Science - I	2	2	-	50	100	3	4
PO010 304(CS)	Computer Programming	3	1	-	50	100	3	4
PO010 305	Organic Chemistry	3	1	-	50	100	3	4
PO010 306(CE)	Strength of Materials & Structural Engineering	3	1	-	50	100	3	4
PO010 307	Chemistry Lab	-	-	3	50	100	3	2
PO010 308(CS)	Computer Lab	-	-	3	50	100	3	2
	Total	**15**	**9**	**6**				**28**

4th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 401	Engineering Mathematics III	2	2	-	50	100	3	4
EN010 402(ME)	Principles of Management	3	1	-	50	100	3	4
PO010 403	Polymer Physics	2	2	-	50	100	3	4
PO010 404	Polymer Science - II	3	1	-	50	100	3	4
PO010 405	Chemical Engineering - I	3	1	-	50	100	3	4

PO010 406 (EE)	Electrical Technology	3	1	-	50	100	3	4
PO010 407	Polymer Preparation & Characterisation Lab	-	-	3	50	100	3	2
PO010 408 (EE)	Electrical Machines Lab	-	-	3	50	100	3	2
	Total	**16**	**8**	**6**				**28**

5th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
EN010 501	Engineering Mathematics IV	**2**	**2**	-	**50**	**100**	3	4
PO010 502	Plastics – Science & Technology	**3**	**1**		**50**	**100**	3	4
PO010503	Polymer Processing - I	2	2	-	50	100	3	4
PO010 504	Chemical Engineering - II	3	1	-	50	100	3	4
PO010 505	Latex Technology	3	1	-	50	100	3	4
PO010 506	Rubbers – Science & Technology	3	1	-	50	100	3	4
PO010 507	Latex Specification Tests Lab	-	-	3	50	100	3	2
PO010 508	Polymer Analysis Lab	-	-	3	50	100	3	2
	Total	**16**	**8**	**6**				**28**

6th Semester

Code	Subject	Hours/week			Marks		End-sem duration -hours	Credits
		L	T	P/D	Inte-	End-		

					rnal	**sem**		
PO010 601	Engineering Statistics & Quality Control	2	2	-	50	100	3	4
PO010 602	Polymer Processing –II	2	2	-	50	100	3	4
PO010 603	Industrial Engineering	3	1	-	50	100	3	4
PO010 604	Chemical Engineering - III	3	1	-	50	100	3	4
PO010 605	Polymer Blends & Composites	3	1	-	50	100	3	4
PO010 606Lxx	Elective I	2	2	-	50	100	3	4
PO010 607	Latex Product Lab	-	-	3	50	100	3	2
PO010 608	Product Manufacturing Lab	-	-	3	50	100	3	2
	Total	**15**	**9**	**6**				**28**

Elective I

PO010 606L01… Bio Medical & Bio Polymers

PO 010 606L02…… Information Technology

PO 010 606L03.....Egineering Economics & Industrial Management.

PO 010 606L04.....Total Quality Management & Reliability Engineering

PO 010 606L05.....Production Engineering

PO 010 606L06.....Project Management

7th Semester

Code	**Subject**	**Hours/week**			**Marks**		**End-sem duration -hours**	**Credits**
		L	**T**	**P/D**	**Inte-rnal**	**End-sem**		
PO010 701	Polymer Machinery, Moulds & Dies	2	2	-	50	100	3	4
PO010 702	Polymer Testing	2	2	-	50	100	3	4

PO010 703	Plastic Products- Design &Testing	2	1	-	50	100	3	3
PO010 704	Chemical Engineering - IV	2	1	-	50	100	3	3
PO010 705	Tyre Technology	2	1	-	50	100	3	3
PO010 706 Lxx	ElectiveII	2	2	-	50	100	3	4
PO010 707	Chemical Engineering Lab	-	-	3	50	100	3	2
PO010 708	Polymer Testing Lab	-	-	3	50	100	3	2
PO010 709	Seminar	-	-	2	50	-	-	2
PO010 710	Project	-	-	1	50	-	-	1
	Total	**12**	**9**	**9**				**28**

Elective II

PO 010 706L01… Paints & Surface Coatings

PO 010 706L02.....Plastics Packaging Technology

PO 010 706L03.....Process Engineering Economics & Management

PO 010 706L04.....Process Control & Instrumentation

PO 010 706L05…… Object oriented programming

PO 010 706L06 Cryogenics

8th Semester

Code	Subject	Hours/week			Marks		End-sem duration-hours	Credits
		L	T	P/D	Inte-rnal	End-sem		
PO010 801	Polymers & Environment	3	2	-	50	100	3	4

PO010 802	Rubber products-design & testing	2	2	-	50	100	3	4
PO010 803	Speciality Polymers	2	2	-	50	100	3	4
PO010 804 Lxx	Elective III	2	2	-	50	100	3	4
PO010 805 Gxx	Elective IV	2	2	-	50	100	3	4
PO010 806	Polymer Blends & Composites Lab	-	-	3	50	100	3	2
PO010 807	Project	-	-	6	100	-	-	4
PO010 808	Viva Voce	-	-	-	-	50	-	2
	Total	**11**	**10**	**9**				**28**

Electives III

PO 010 804L01… Adhesive Technology

PO 010 804L02 …Dynamics of Machinery

PO 010 804L03 …Computer aided design & manufacturing

PO 010 804L04 …Combustion

PO 010 804L05 …Industrial hydraulics

PO 010 804L06 Introduction to photonics

Electives IV

PO 010 805G01…… Fibre Technology

PO 010 805G02……Nanomaterials

PO 010 805G03……Air polution

PO 010 805G04……Environmental Impact Analysis

PO 010 805G05 ……Marketing & sales management

PO 010 805G06 Structural analysis

Syllabus for combined Ist & IInd Sem

(Common for all branches)

EN010 101 ENGINEERING MATHEMATICS – I

Teaching Scheme Credits: 5

2 hour lecture and 1 hour tutorial per week

Objectives

- *To impart mathematical background for studying engineering subjects.*

MODULE I (18 hours) - MATRIX

Elementary transformation – echelon form – rank using elementary transformation by reducing in to echelon form – solution of linear homogeneous and non – homogeneous equations using elementary transformation. Linear dependence and independence of vectors – eigen values and eigen vectors – properties of eigen values and eigen vectors(proof not expected) – Linear transformation – Orthogonal transformation – Diagonalisation – Reduction of quadratic form into sum of squares using orthogonal transformation – Rank, index, signature of quadratic form – nature of quadratic form

MODULE 2 (18 hours) - PARTIAL DIFFERENTIATION

Partial differentiation : chain rules – statement of Eulers theorem for homogeneous functions – Jacobian – Application of Taylors series for function of two variables – maxima and minima of function of two variables (proof of results not expected)

MODULE 3 (18 hours) - MULTIPLE INTEGRALS

Double integrals in cartesian and polar co-ordinates – change of order of integration- area using double integrals – change of variables using Jacobian – triple integrals in cartesian, cylindrical and spherical co-ordinates – volume using triple integrals – change of variables using Jacobian – simple problems.

MODULE 4 (18 hours) - ORDINARY DIFFERENTIAL EQUATIONS

Linear differential equation with constant coefficients- complimentary function and particular integral – Finding particular integral using method of variation of parameters – Euler Cauchy equations- Legenders equations

MODULE 5 (18 hours) - LAPLACE TRANSFORMS

Laplace Transforms – shifting theorem –differentiation and integration of transform – Laplace transforms of derivatives and integrals – inverse transform – application of convolution property – Laplace transform of unit step function – second shifting theorem(proof not expected) – Laplace transform of unit impulse function and periodic function – solution of linear differential equation with constant coefficients using Laplace Transform.

REFERENCES

1. Erwin Kreyszig ;Advanced Engineering Mathematics Wiley Eastern Ltd
2. Grewal B.S ;Higher Engineering Mathematics ,Khanna Publishers
3. N. P. Bali ;Engineering Mathematics ,Laxmi Publications Ltd
4. Goyal & Gupta ; Laplace and Fourier Transforms
5. Dr. M.K.Venkataraman ;Engineering Mathematics Vol. I,National Publishing Co.
6. Dr. M.K.Venkataraman Engineering Mathematics Vol. 2, National Publishing Co
7. T.Veerarajan ,Engineering Mathematics for first year, Mc Graw Hill
8. S.S.Sastry Engineering Mathematics Vol. I,Prentice Hall India
9. S.S.Sastry Engineering Mathematics Vol. 2, Prentice Hall India
10. B.V. Ramana Higher Engineering Mathematics, Mc Graw Hill

EN010 102 ENGINEERING PHYSICS

Teaching Scheme Credits: 4

I hour lecture and 1 hour tutorial per week

Objectives

- *To provide students knowledge of physics of a problem and an overview of physical phenomena.*

MODULE I (12 hours) LASERS AND HOLOGRAPHY

Lasers- Principle of laser- Absorption- Spontaneous emission- Stimulated emission- Characteristics of laser - Population inversion- Metastable states- Pumping- Pumping Methods- Pumping Schemes- 3 level and 4 level pumping- Optical resonator- Components of laser- Typical laser systems like Ruby laser- He-Ne laser- Semiconductor laser- Applications of laser-

Holography- Basic principle -Recording and reconstruction- comparison with ordinary photography- Applications of Hologram

MODULE II (12 hours) NANOTECHNOLOGY AND SUPERCONDUCTIVITY

Introduction to nanoscale science and technology- nanostructures-nanoring, nanorod, nanoparticle, nanoshells- Properties of nanoparticles- optical, electrical, magnetic, mechanical properties and quantum confinement- Classification of nanomaterials- C_{60}, metallic nanocomposites and polymer nanocomposites- Applications of nanotechnology

B. Superconductivity- Introduction- Properties of super conductors- Zero electrical resistance- Critical temperature- Critical current- Critical magnetic field- Meissner effect- Isotope effect- Persistence of current- Flux quantization - Type I and Type II superconductors- BCS Theory (Qualitative study) – Josephson effect- D.C Josephson effect- A.C Joseph son effect- Applications of superconductors.

MODULE III (12 hours) CRYSTALLOGRAPHY AND MODERN ENGINEERING MATERIALS

A. Crystallography – Space lattice- Basis- Unit cell- Unit cell parameters- Crystal systems- Bravais lattices- Three cubic lattices-sc, bcc, and fcc- Number of atoms per unit cell- Co-ordination number- Atomic radius- Packing factor- Relation between density and crystal lattice constants- Lattice planes and Miller indices- Separation between lattice planes in sc- Bragg's law- Bragg's x-ray spectrometer- Crystal structure analysis.

Liquid crystals- Liquid crystals, display systems-merits and demerits- Metallic glasses- Types of metallic glasses (Metal-metalloid glasses, Metal-metal glasses) – Properties of metallic glasses (Structural, electrical,

magnetic and chemical properties)

Shape memory alloys- Shape memory effect, pseudo elasticity

.

MODULE IV (12 hours) ULTRASONICS

A. Ultrasonics- Production of ultrasonics- Magnetostriction method – Piezoelectric method- Properties of ultrasonics- Non destructive testing- Applications

B. Spectroscopy- Rayleigh scattering (Qualitative) - Raman effect – Quantum theory of Raman effect- Experimental study of Raman effect and Raman spectrum- Applications of Raman effect

C. Acoustics- Reverberation- Reverbaration time- Absorption of sound- Sabine's formula(no derivation)- Factors affecting acoustics properties

MODULE V (12 hours) FIBRE OPTICS

Principle and propagation of light in optical fibre- Step index (Single Mode and Multi Mode fibre) and graded index fibre- N.A. and acceptance angle—Characteristics of optical fibres (Pulse dispersion, attenuation, V-number, Bandwidth-distance product) –

Applications of optical fibres- Fibre optic communication system (Block diagram)- Optical fibre sensors (any five) – Optical fibre bundle.

REFERENCES

1) A Text book of Engineering Physics – M.N.Avadhanulu and P.G.Kshirsagar S.Chand& Company Ltd.

2) Nanomaterials- A.K.Bandhopadyaya – New Age International Publishers

3) Engineering Physics – A. Marikani
4) Engineering materials –V Rajendran and Marikani-Tata McGraw-Hill Publishing Company Limited

5) Engineering physics- Dr. M Arumugam - Anuradha Agencies

6) Nano ; The Essentials- T. Pradeep

7) Material Science-M Arumugham- Anuradha Agencies

8) Lasers and Non-Linear optics By B.B Laud- New Age International (P) Limited

EN010 103 Engineering Chemistry & Environmental Studies

(Common to all branches)

Teaching scheme **Credits:4**

1hr lecture and 1hr tutorial per week (total 60 hrs)

Objectives

- *To impart a scientific approach and to familiarize the applications of chemistry in the field of technology*
- *To create an awareness about the major environmental issues for a sustainable development.*

Module 1 Electrochemical Energy Systems (13 hrs)

Electrochemical cells - Galvanic cell - Daniel cell – EMF - determination by potentiometric method - Nernst equation – derivation- Single electrode potential-Types of electrodes-Metal/metal ion electrode, Metal/metal sparingly soluble salt electrode, Gas electrode and Oxidation/reduction electrode - Reference electrodes - Standard hydrogen electrode and Calomel electrode - Glass electrode – Determination of pH using these electrodes - Concentration cell – Electrolytic concentration cell without transfer - Derivation of EMF using Nernst equation for concentration cell - Cells and Batteries - Primary and secondary cells - Lead acid accumulator, Ni-Cd cell, Lithium–MnO_2 cell and Rechargeable Lithium ion cell – Polarization – Overvoltage - Decomposition potential - Numerical problems based on Nernst equations and pH determination.

Module 2 Corrosion and Corrosion Control (10 hrs)

Introduction - Types of corrosion – Chemical and Electrochemical corrosion – Chemical corrosion – Oxidation corrosion, By other gases and Liquid metal corrosion – Pilling-Bedworth rule - Electrochemical

corrosion – Mechanism - absorption of O_2 and evolution of H_2 - Types of electrochemical corrosion- Galvanic corrosion, Concentration cell corrosion, Differential aeration corrosion, Pitting corrosion, Waterline corrosion and Stress corrosion - Factors influencing the rate of corrosion - Nature of the metal and Nature of the environment - Corrosion control methods – Selection of metal and proper design, Cathodic protection (Sacrificial anodic protection and Impressed current cathodic protection), Modifying the environment, corrosion inhibitors and Protective coating - Metallic coating – Anodic coating and cathodic coating - Hot dipping (Galvanizing and Tinning), Electroplating, Electroless plating, Metal spraying, Metal cladding Cementation- sheradizing - chromizing- calorizing and Vacuum metallization - Non-metallic coating - Anodization

Module 3 Engineering Materials (13 hrs)

High polymers – Introduction - Degree of polymerization – Functionality – Tacticity - Types of polymerization (mechanisms not required) – Addition, Condensation and Copolymerization - Glass transition temperature-(Tg) Definition only, Compounding and moulding of plastics - Compression, Injection, Extrusion, Transfer and Blow moulding.

Fiber Reinforced Plastics - Glass reinforced plastics (GRP) - Manufacturing methods - Hand lay up, Spray up and Filament winding - properties and uses.

Conducting Polymers – Polyacetylene and Polyaniline - Applications (mechanism not required)

Rubber - Natural rubber – Properties – Vulcanization - Synthetic rubber - Preparation, properties and uses of Polyurethane rubber, NBR and Silicone rubber.

Carbon Nanotubes - Single walled (SWCNT) and Multi walled (MWCNT) - Properties and uses.

Module 4 Environmental Pollution (12 hrs)

Pollution - Types of pollution – a brief study of the various types of pollution - Air pollution - Sources and effects of major air pollutants – Gases - Oxides of carbon, nitrogen and sulphur – Hydrocarbons – Particulates -Control of air pollution - Different methods - Water pollution - Sources and effects of major pollutants - Inorganic pollutants- heavy metals cadmium , lead, mercury - Ammonia, Fertilizers and Sediments (silt) - Organic pollutants – Detergents, pesticides, food waste, - Radioactive materials - Thermal pollutants - Control of water pollution - General methods

Eutrophication - Definition and harmful effects

Desalination of water - Reverse osmosis and Electrodialysis

Module 5 Environmental Issues (12 hrs)

An overview of the major environmental issues - Acid rain – Smog - Photochemical smog - Green house effect - Global warming and climate change - Ozone layer depletion – Deforestation - Causes and effects - Wet land depletion – Consequences, Biodiversity – importance and threats, Soil erosion - Causes and effects, Solid waste disposal -Methods of disposal - Composting, Landfill, and Incineration, E-Waste

disposal - Methods of disposal –recycle(recovery) and reuse

Renewable energy sources - Solar cells – Importance - Photo voltaic cell - a brief introduction

Bio fuels - Bio diesel and Power alcohol.

Note: This course should be handled and examination scripts should be evaluated by the faculty members of Chemistry

Text Books

1. A text book of Engineering Chemistry - Shashi Chawla, Dhanpat Rai and Co.
2. A text book of Engineering Chemistry - Jain & Jain 15^{th} edition .
3. A text book of Engineering Chemistry – S. S. Dhara.
4. Modern Engineering Chemistry – Dr. Kochu Baby Manjooran. S.

References

1. Chemistry - John E. McMurry and Robert C. Fay, Pearson Education.
2. Polymer science –V. R. Gowariker, New Age International Ltd.
3. A text book of polymer - M. S. Bhatnagar Vol I, II,& III, S. Chand publications.
4. Nano materials – B. Viswanathan, Narosa publications.
5. Nano science & Technology – V. S. Muralidharan and A. Subramania, Ane Books Pvt. Ltd.
6. Nanotechnology - Er. Rakesh Rathi, S. Chand & Company Ltd.
7. Environmental Studies - Benny Joseph (2^{nd} edition), Tata Mc Graw Hill companies.
8. Environmental Chemistry - Dr. B. K. Sharma, Goel publishers.
9. Environmental Chemistry – A. K. De, New age International Ltd.
10. Industrial Chemistry – B. K. Sharma, Goel publishers.
11. Engineering Chemistry – O. G. Palanna, Tata Mc Graw Hill Education Pvt. Ltd.

EN010 104 ENGINEERING MECHANICS

(Common to all branches)

Teaching Scheme Credits: 6

3 hour lecture and 1 hour tutorial per week

Objective:

25. *To develop analytical skills to formulate and solve engineering problems.*

Module I (23 hrs)

Introduction to Mechanics – Basic Dimensions and Units – Idealization of Mechanics – Rigid Body – Continuum – Point force – Particle – Vector and Scalar quantities.

Principles of Statics – Force Systems – Coplanar, Collinear, Concurrent and Parallel – Free body diagrams – Resolution of forces – Moment of a Force – Varignon's Theorem – Couple – Resolution of a force into force couple system – Conditions of static equilibrium of Rigid bodies – Solutions of problems using scalar approach

Force Systems in Space – Introduction to Vector approach – Elements of Vector algebra – Position vector – Moment of a Force about a Point and Axis – Resultant of Forces – Equilibrium of forces in space using vector approach

Module II (23 hrs)

Principle of Virtual work – Elementary treatment only – application of virtual work in beams, ladders

Centroid of Lines, Areas and Volumes – Pappus Guldinus Theorems

Moment of Inertia of laminas – Transfer theorems – radius of Gyration – problems

Centre of Gravity – Mass moment of Inertia of circular and rectangular plates – solid rectangular prisms – Cylinders – Cones

Module III (23 hrs)

Friction – Laws of friction – Contact friction problems – ladder friction – Wedge friction – Screw friction.

Introduction to Structural Mechanics – Types of Supports, loads, frames – Static Indeterminacy – Support reactions of beams – Analysis of perfect trusses by method of joints, method of sections.

Module IV (28hrs)

Kinematics – Rectilinear motion of a particle under Variable Acceleration

Relative Velocity - problems

Circular motion with Uniform and Variable Acceleration – Relations between Angular and Rectilinear motion – Normal and Tangential accelerations

Combined motion of Rotation and Translation – Instantaneous centre of zero velocity – Wheels rolling without slipping

Introduction to Mechanical Vibrations – Free vibrations – Simple Harmonic motion

Module IV (23 hrs)

Kinetics of particles – Newton's laws of Motion of Translation – D'Alembert's Principle – Motion of connected bodies – Work Energy Principle – Principle of Momentum and Impulse – Collision of Elastic bodies

Newton's laws of Rotational motion – Angular Impulse and Torque – Conservation of Angular Momentum – Centrifugal and Centripetal forces – Applications – Work done and Power by Torque and Couple.

References:

13. Engineering Mechanics – S. Timoshenko, D.H. Young & J. V. Rao – Tata Mc Graw Hill

14. Engineering Mechanics – Statics and Dynamics – Irving H Shames, G Krishna Mohana Rao – Pearson Edutcation

15. S. Rajasekararn & G.Sankarasubramanian, Engineering Mechanics, Vikas Publishing Co.

16. Engineering Mechanics – Prof.J.Benjamin, Pentex Publishers

17. Engineering Mechanics – G. S. Sawhney PHI Learning Private Ltd. New Delhi

18. Engineering Mechanics – K. L. Kumar, Tata Mc Graw Hill, New Delhi

EN010 105: **ENGINEERING GRAPHICS**

Teaching Scheme Credits: 6

I hour lecture and 3 hour drawing per week

Objectives

- *To provide students of all branches of engineering with fundamental knoeledge of engineering drawing*
- *To impart drawing skills to students*

MODULE 1 (24 hours)

Introduction to Engineering Graphics: Drawing instruments and their uses-familiarization with current BIS code of practice for general engineering drawing.

Scales-Plain scales-Diagonal Scales-Forward and Backward Vernier Scales.

Conic Sections:-Construction of conics when eccentricity and distance from directrix are given .Construction of ellipse (1) given major axis and foci (2) given major axis and minor axis (3)given a pair of conjugate diameters (4) by the four centre method. Construction of parabola given the axis and base. Construction of hyperbola-(1) given the asymptotes and a point on the curve. (2) Given ordinate, abscissa and transverse axis. Construction of rectangular hyperbola. Construction of tangents and normals at points on these curves.

Miscellaneous curves:-Cycloids, Inferior and superior Trochoids-Epicycloid-Hypocycloid-Involute of circle and plain figures-Archimedian Spiral and Logarithmic Spiral- Tangents and normals at points on these curves.

MODULE 2 (24 hours)

Orthographic projections of points and lines:-Projections of points in different quadrants-Projections 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 using line rotation and plane rotation methods – Traces of lines.

Orthographic projections of planes-Polygonal surfaces and circular lamina.

MODULE 3 (24 hours)

Orthographic projections of solids:-Projections of prisms , cones ,cylinders ,pyramids ,tetrahedron ,octahedron and spheres with axis parallel to one plane and parallel or perpendicular to the other plane-the above solids with their axes parallel to one plane and inclined to the other plane –axis inclined to both the reference planes-use change of position method OR auxiliary method.

Sections of solids:-Sections of prisms ,cones , cylinders ,pyramids ,tetrahedron and octahedron with axis parallel to one plane and parallel or perpendicular or inclined to the other plane with section planes perpendicular to one plane and parallel , perpendicular or inclined to the other plane –True shapes of sections.

MODULE 4 (24 hours)

Developments of surfaces of (1)simple solids like prisms ,pyramids , cylinder and cone (2) sectioned regular solids (3)above solids with circular or square holes with their axes intersecting at right angles.-Developments of funnels and pipe elbows.

Isometric Projections:-Isometric Scales-Isometric views and projections of plane figures,simple&truncated solids such as prisms, pyramids, cylinder, cone, sphere, hemisphere and their combinations with axis parallel to one the planes and parallel or perpendicular to the other plane.

MODULE 5 (24 hours)

Perspective projections:-Perspective projections of prisms,pyramids,cylinder and cone with axis parallel to one plane and parallel or perpendicular or inclined to the other plane by visual ray method OR vanishing point method

Intersection of surfaces:-Intersection of prism in prism &cylinder in cylinder-Axis at right angles only.

REFERENCES

1. Engineering Graphics-Unique Methods easy solutions-K.N Anilkumar

2. Engineering Graphics-P I Varghese.

3. Engineering Drawing-N D Bhatt

4. Engineering Graphics-P S Gill

5. Engineering Graphics-T S Jeyapoovan.

EN010 106: BASIC CIVIL ENGINEERING

(Common to all branches)

Teaching scheme: **Credits: 4**

1 hour lecture and 1 hour tutorial per week

Objective:

To familiarize all engineering students with the basic concepts of civil engineering so that they can perform better in this great profession "Engineering".

Module 1 (12 hours)

Introduction to civil engineering : various fields of civil engineering- Engineering materials: Cement – Bogues compounds, manufacture of Portland cement-wet and dry process, grades of cement, types of cement and its uses – steel– types of steel for reinforcement bars ,structural steel sections,built-up sections,light gauge sections. Aggregates: Fine aggregate:- pitsand, riversand, M- sand--Coarse aggregate: natural and artificial , requirements of good aggregates. Timber: varieties found in Kerala – seasoning and preservation. Bricks**:** classification, requirements, tests on bricks.

Module 2 (12 hours)

Cement mortar- preparation and its uses– concrete –ingredients, grades of concrete – water cement ratio, workability, curing, ready mix concrete. Roofs - roofing materials -A. C, aluminium, GI, fibre, tile, reinforced concrete (brief description only)- reinforcement details of a one way slab, two way slab and simply supported beams.

Module 3 (12 hours)

Building Components: Foundation: Bearing capacity and settlement - definitions only-footings- isolated footing , combined footing - rafts, piles and well foundation , machine foundation (Brief description only).

Superstructure: Walls - brick masonry – types of bonds , English bond for one brick -stone masonry- Random Rubble masonry.

Module 4 (12 hours)

Surveying**:** Classification –principles of surveying- chain triangulation- instruments used, field work – bearing of survey lines –WCB and reduced bearing -Leveling: field work - reduction of levels - height of instrument method.

Introduction to total station- basic principles of remote sensing, GPS and GIS.

Module 5 (12 hours)

Site plan preparation for buildings (Sketch only) – Kerala Municipal Building Rules (1999)-general provisions regarding site and building requirements – coverage and floor area ratio – basic concepts of “intelligent buildings” and “green buildings”- disposal of domestic waste water through septic tank and soak pit. Classification of roads- basics of traffic engineering – road markings , signs, signals and islands, road safety-accidents, causes and remedies– (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
4. K. Khanna ,C. E. G. Justo., Highway Engineering, Khanna Publishers
5. Nevile., Properties of Concrete, Mc Graw Hill
6. B C Punmia.,Basic Civil Engineering, Khanna Publishers
7. Kerala Municipal Building Rules – 1999

EN010 107 Basic mechanical engineering

(Common to all branches)

Teaching scheme **Credits- 4**

1hour lecture and1hour tutorial per week

Objective

To impart basic knowledge in mechanical engineering

Module 1(12 hours)

Thermodynamics: Basic concepts and definitions, Gas laws, specific heat –Universal gas constant- Isothermal, adiabatic and polytrophic processes, work done, heat transferred, internal energy and entropy - Cycles: Carnot, Otto and Diesel- Air standard efficiency.

Basic laws of heat transfer (Fourier's law of heat conduction, Newton's law of cooling Steffen Boltzmann's law)

Module 2 (12 hours)

I.C. Engines: Classification of I.C Engines, Different parts of I.C engines, Working of two stroke and four stroke engines-petrol and diesel engines-air intake system, exhaust system, fuel supply system, ignition system, lubrication system, cooling system and engine starting system-Performance of I.C. engines, advantage of MPFI and CRDI over conventional system.

Refrigeration: Unit of refrigeration, COP, Block diagram and general descriptions of air refrigeration system, vapour compression and vapour absorption systems- Required properties of a refrigerant, important refrigerants– Domestic refrigerator- Ice plant.

Air conditioning system: Concept of Air conditioning, psychometry, psychometric properties, psychometric

chart, psychometric processes, human comfort– winter and summer air conditioning systems (general description), air conditioning application.

Module 3 (12 hours)

Power transmission elements: Belt Drive - velocity ratio of belt drive, length of belt, slip in belt- simple problems– Power transmitted– Ratio of tensions– Centrifugal tension Initial tension– Rope drive, chain drive and gear drive-Types of gear trains (simple description only).

Module 4 (12 hours)

Power plants: General layout of hydraulic, diesel, thermal and nuclear power plants-nonconventional energy sources (general description only).

Hydraulic turbines and pumps : Classifications of hydraulic turbines –types of hydraulic turbines –runaway speed, specific speed, draft tube, cavitations, selection of hydraulic turbines .Classification of pumps– positive displacement and rotodynamic pumps (description only)- applications

Steam turbines: Classification of steam turbines, description of common types of steam turbines: Impulse and reaction, compounding methods.

Module 5 (12 hours)

Simple description of general purpose machines like lathe, shaping machines, drilling machines, grinding machines and milling machines, Basic concepts of CNC, DNC, CIM and CAD/CAM

Manufacturing Processes: Moulding and casting, forging, rolling, welding- arc welding-gas welding (fundamentals and simple descriptions only)

Text book

1 P.L. Bellany, *Thermal Engineering*, Khanna Publishes

2 Benjamin J., *Basic Mechanical Engineering*, Pentex

Reference Books

1 R.C.Patel, *Elements of heat engines*, Acharya Publishers -

2 G.R Nagapal, *Power plant engineering,* Khnna publishes

3 P.K.Nag, *Engineering Thermodynamics*, McGraw Hill

4 Dr.P.R Modi &Dr.M.S. Seth, *Hydraulics & Fluid Mechanics including Hydraulic Machines*, Standard Book House

EN010 108: Basic Electrical Engineering

(Common to all branches)

Teaching Scheme Credits: 4

I hour lecture and 1 hour tutorial per week

Objectives

- *To provide students of all branches of engineering with an overview of all the fields of electrical engineering*
- *To prepare students for learning advanced topics in electrical engineering*

Module I (10 hours)

Kirchhoff's Laws – Formation of network equations by mesh current method – Matrix representation – Solution of network equations by matrix method – Star delta conversion.

Magnetic circuits – mmf, field strength, flux density, reluctance, permeability – comparison of electric and magnetic circuits – force on current carrying conductor in magnetic filed.

Module II (12 hours)

Electromagnetic Induction – Faraday's laws – lenz's law – statically and dynamically induced emf – self and mutual inductance – coupling coefficient.

Alternating current fundamentals – generation of AC –frequency, period, average and r m s value, form factor, peak factor, phasor representation – j operator – power and power factor – solution of RLC series and parallel circuits.

Module III (13 hours)

DC machine – principle of operation of DC generator – constructional details – e m f equation – types of generators.

DC motor – principle of operation of DC motor – back emf – need for starter – losses and efficiency – types of motors – applications – simple problems.

Transformer – principle of operation – e m f equation Constructional details of single phase and three phase transformer – losses and efficiency – application of power transformer, distribution transformer, current transformer and potential transformer.

Module IV (13 hours)

Three phase system – generation of three phase voltage – star and delta system – relation between line and phase voltages and currents – phasor representation of three phase system - balanced delta connected system – three wire and four wire system – simple problems. Three phase power measurement – Single wattmeter, two wattmeter and three wattmeter methods.

Induction motors – principle of operation of three phase induction motors – applications of cage and slip ring induction motor – single phase induction motors – capacitor start / run, shaded pole – universal motors - Applications.

Synchronous generator (Alternator) – principles of operation and types.

Module V (12 hours)

Generation of electric power – types of generation – hydroelectric, thermal and nuclear (Block schematic and layout only) - Non conventional energy sources – solar, wind, tidal, wave and geothermal.

Transmission – need for high voltage transmission – Transmission voltage – Distribution – Underground versus overhead – Feeder – Distributor – Service mains – conductor materials – one line diagram of typical power system.

Requirements of good lighting system – working principle of incandescent lamp, Fluorescent lamp and mercury vapour lamp-energy efficient lamps (CFL,LED lights) – need for energy management and power quality – home energy management.

Text Books

1. D.P. Kothari & I.J. Nagrath – Basic Electrical Engineering – Tata McGraw Hill

2. D.C. Kulshreshta – Basic Electrical Engineering - Tata McGraw Hill

3. Hughes – Electrical and Electronic Technology – Pearson Education

Reference Books

1. R.V. Srinivasa Murthy – Basic Electrical Engineering – Sunguine Technical
2. J.B.Gupta – Fundamentals of Electrical Engineering & Electronics – S.K.Kataria
3. V.K. Mehta, Rohit Mehta – Basic Electrical Engineering – S.Chand.
4. Bureau of Engineering Efficiency – Guide book for national certification examination for energy managers and auditors.
5. Rajendra Prasad – Fundamentals of Electrical Engineering, Prentice Hall India.
6. Soni, Gupta, Bhatnagar & Chackrabarty – A text book on power system engineering – Dhanapt Rai
7. Electrical Engineering Fundamentals – Vincent Del Toro, Pearson Education.

EN010 109: Basic Electronics Engineering and Information Technology

(Common to all branches)

Teaching Scheme Credits: 5

2 hour lecture and 1 hour tutorial per week

Objectives

- *To provide students of all branches of engineering with an overview of all the fields of electronics engineering and information technology*

MODULE 1 (18 hours): Basic Circuit Components: *Diode:* Germanium, Silicon, Zener, LEDs (working principle only). Forward and reverse characteristics. [2hr.] *Rectifiers*: Half wave, fullwave , Bridge circuits, DC Power supply: Capacitor filter, Zener regulator. [3hrs.] *Transistors* :Different configurations - CE characteristics-β and $\propto$, concept of Amplifiers: Common emitter RC coupled amplifier, Frequency response, Bandwidth.(No analysis required) Comparison of BJT,FET,MOSFET, IGBT. [2hr.]. *Integrated circuits*: Advantages, classification of Linear and Digital ICs. Basics of Op-amps, inverting and non-inverting amplifiers.Family of IC's(Function diagram of 7400 & CD4011) [4hrs.] .Specifications of TTL and CMOS.[] –Comparison.

MODULE 2 (18 hours): Basic communication Engineering:*Communication:* Frequency bands: RF, VHF, UHF, x, ku, ka, c. Modulation – need for modulation, basic principles of amplitude, frequency and pulse modulation. [6hrs.]. Block schematic of AM transmitter , Super-hetrodyne receiver, FM receiver.-

function of each block.[3hrs.] .*Wireless communication*: *Satellite Communication*-Earth station, transponder and receiver.*Mobile Communication*: GSM-BSC, Cell structure, frequency re-use, hands-of, establishing a call.

MODULE 3 (18 hours):Basic instrumentation and Consumer electronics: *Electronic instrumentation*: Transducers: Basic principles of Strain guage, LVDT, Thermistor, Photodiode, Typical moving coil microphones and Loud speaker.Block diagram of Digital Multimeter .[8hrs*].CONSUMER ELECTRONICS*: Basic principles of TV –Interlaced Scanning-Block Diagram of PAL TV receiver(color).Basic principles of DTH, brief descriptions of MP3,multichannel audio 5.1,7.1.

MODULE 4 (18 hours):**Introduction**: Definition and Scope of IT-Digital Computer, Von Neumann Architecture-Basic Operational Concepts-CPU-single Bus and Multi Bus Organization, A typical Instruction set, Execution of Instructions. **Memory and I/O**-Main Memory, Virtual Memory-Cache memory-Secondary Memories-Printers, Plotters, Displays ,Key board, Mouse, OMR and OCR-Device Interface-I/O Processor-I/O Channel

MODULE 5 (18 hours) :Computer software-System Software and Application Software-Machine Language-Assembly Language-High Level Language-Language Translators-Operating System, Procedural Programming and Object Oriented Programming.**Computer Networks**-Concepts of Networking-Network Topologies-WAN-LAN-MAN, Protocol-Internet-working concept, Internet Architecture, IP addresses, Routing, Domain Name System(Basic concepts only)

References

1.Basic Electronics – Devices, Circuits and IT fundamentals.Santiram Kal,PHI(Module 1to 5)
2. Basic Electronics: Bernad Grob, Mc Graw Hill Publication(Module 1)
3. Electronic Devices: Floyd, Pearson Education (Module 1)
4. Electronic Devices and Circuits: J.B. Gupta,S.K.Kataria & Sons (Module 1 , 2,3)
5. Digital Principles: Malvino & Leach, Mc Graw Hill Publication(Module 1)
6. Electronic Instrumentation: H.S Kalsi, Mc Graw Hill Publication(Module 2)
7. Communication Systems: Sanjay Sharma, S.K.Kataria & Sons (Module 2)
8. Satellite Comunication : Robert M.Gagliardi,CBS Publishers & Distributors.(Module 2)
9.Basic Radio and TV; S.P. Sharma,Tata McGrawhill(Module 2 &3)
10.Wireless Communication; T.S. Rappaport, Pearson(Module 3)

11.Computer Organization, Hamacher, Vranesic and Zaky, Mc Graw Hill (Module 4)

12.Systems Programming, JJ Donovan ,Mc Graw Hill (Module 5)

13.Computer Networks,Andrew.S Tanenbaum,Pearson Education(Module 5)

EN010 110: Mechanical Workshop

(Common to all branches)

Teaching scheme **Credits: 1**

3 hours practical per week

Objectives

- *To provide students of all branches of engineering in house experience of basic mechanical instruments and activities*

Carpentry Planing – cutting – chiselling, marking – sawing – cross and tee joints – dovetail joints – engineering application, Seasoning, Preservation – Plywood and ply boards.

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

Smithy Forging of square and hexagonal prism. Study of forging principles, materials and operations.

Foundry Preparation of simple sand moulds – moulding sand characteristics, materials, gate, runner, riser, core, chaplets and casting defects.

Demonstration and study of machine tools – lathe, drilling, boring, slotting, shaping, milling and grinding machines, CNC machines and machining centers.

Demonstration and study of arc and gas welding techniques.

EN010 111: Electrical and Civil Workshops

(Common to all branches)

Teaching scheme **Credits: 1**

3 hours practical per 2 weeks for each

Objectives

- *To provide students of all branches of engineering in house experience of basic electrical and civil instruments and activities*

Electrical Workshop

1. Wiring and estimation of one lamp and one plug, Control of two lamps in series and in parallel.
2. Staircase wiring.
3. Godown wiring.
4. Insulation megger - earth megger , measurement of insulation resistance and earth resistance .Study of volt meter, ammeter , watt meter and energy meter.
5. Working principle and wiring of Fluorescent , CFL and Mercury vapour lamp .
6. Study and wiring of distribution board including power plug using isolator, MCB and ELCB – Estimation of a typical 1BHK house wiring system.
7. Familiarization , soldering, testing and observing the wave forms on a CRO of a HW and FW Uncontrolled Rectifier (using diodes) with capacitor filter.
8. Observing the wave forms on a CRO of Experiment 7 without capacitor filter and find the average and RMS value of the voltage waveform.
9. Visit your college substation and familiarize the supply system, Transformer, HT Panel and Distribution etc.

Civil Workshop

Masonry : English bond – Flemish bond – wall junction – one brick – one and a half brick – two brick and 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.

Surveying: Study of surveying instruments – chain – compass – plane table – levelling – minor instruments. Demonstration of Theodolite and Total Station.

Familiarization of latest building materials : Flooring materials – Roofing materials – Paneling boards.