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1) GENERAL INFORMATION

1.1 Vision:

To move forward in Technical Education by setting up a flexible, vigilant and vibrant system of education and training in order to

- a) ensure competitive and contextually relevant educational standards & quality.
- b) contribute on a larger scale technical manpower of high caliber to serve our Nation and Globe.
- c) sensitize qualified youth force to societal needs and demands through enrichment of skills and human values.

1.2 Mission:

- a) To establish and ensure robust, adaptive and sensitive Curricula and Syllabi.
- b) To promote caring and interactive Teaching Practices in a rejoicing Learning Ambience with richly supported by all Modern Educational Tools and Techniques.
- c) To enhance and revitalize RESEARCH CULTURE to establish synergy between Teaching and Research and make it an ENABLER for progress and reach out
- d) To explore and achieve the participation of Industrial expertise for connecting classroom content to real life situation.
- e) To encourage and promote RESOURCE GENERATION among faculty to achieve self- reliance for research
- f) To strive and manage Industry and Corporate world as players and enablers for high quality technical education.
- g) To pursue intensification of soft skills and personality development through interplay of achievers of all segments of our Society.

1.3 Autonomy and Autonomous Institutions: Autonomy to an academic institution is like what independence to a nation: it is a hard earned privilege. The privilege comes with set of responsibilities.

SDMCET was selected by the Government of Karnataka to be a member of the elite group of World Bank funded TEQIP institutions in 2005. SDMCET gained academic autonomous status in the year 2007 - 08. In order to “govern” the institution in this new status and to go beyond, SDMCET has been working wholeheartedly and has been successful in most of the areas since last two years. Various processes have been put in place and practices have been established. One of the prominent areas is the design, development, implementation of curriculum under autonomy. We have designed frameworks and established institutional processes to overview the transition to new systems. Various committees constituted for this purpose have discussed debated and deliberated areas of their concern and have come out with detailed policies and procedures. The institution has the responsibility also to implement the curriculum and to assess the students. This handbook provides a brief but

all the important information about the autonomy policies, norms and procedures of this institution to all our students and other stake holders.

1.4 Administrative Team:

Prof. Dr. M. N. Sudheendra Rao Principal / Director	Prof. V. K. Parvati Head (In-charge), Department of Management Studies
Prof. B. S. Sree Shailan Dean (Academic Program)	Dr. Vinayak Bankapur Sr. Librarian, Central Library
Prof. S. B. Karajgi Dean (Administration)	Prof. J. V. Vadavi In-charge, Central Computing Facility
Prof. Dr. A. V. Shivapur Dean (Infrastructure, Planning and Development)	Prof. S. K. Dhulked Prof. In-charge, Centre for Industry Institute Interface (C-III)
Prof. K. C. Shindhe Dean (Student Welfare)	Prof. Udayshankar D. Hakari Faculty Coordinator, Entrepreneurship Development Cell (EDC)
Prof. Dr. C. D. Lakkannavar Chairman, Under Graduate Admissions & First Year Academic Program (UGA-FAP)	Prof. G. M. Shivanagouda Training & Placement Cell
Prof. S. S. Inamdar Head, Chemical Engineering Department	Prof. Dr. Jagadeesh Pujari Prof. In-charge, Software Utilization & Development Cell (SUDC)
Prof. Dr. S. B. Vanakudre Head, Civil Engineering Department	Prof. Ravindra Dastikop Faculty Coordinator, Intellectual Property Right Cell (IPR-C)
Prof. S. M. Joshi Head, Computer Science & Engineering Department	Prof. (Mrs) Nita Kakhandaki Advisor, Co-curricular Activities
Prof. B. Dinesh Ballullaya Head, Electrical & Electronics Engineering Department	Prof. A. G. Raikar Advisor, Cultural Activities
Prof. Dr. Ravi M. Yadahalli Head, Electronics & Communication Engineering Department	Prof. S. V. Viraktamath Advisor, Sports
Prof. V. K. Parvati Head, Information Science & Engineering Department	Dr. A. G. Bujurke Director of Physical Education
Prof. V. K. Heblikar Head, Mechanical Engineering Department	Prof. D. S. Bhat Controller of Examinations (COE)
Prof. Dr. Kumar Maddani Head, Physics Department	Prof. Keshava Joshi Deputy Controller of Examinations
Prof. Dr. (Mrs) A. A. Kittur Head (In-charge), Chemistry Department	Prof. M. S. Patil Public Relation Officer (PRO)
Prof. Dr. D. P. Basti Head, Mathematics Department	Shri. P. V. Gangadhar Rao Deputy Registrar

1.5 Admission: Admission will be made in accordance with the instructions received from Ministry of Higher Education, Government of Karnataka and VTU from time to time. Seats are reserved for candidates belonging to Scheduled Castes and Scheduled Tribes, Physically challenged candidates, children of defense personnel and other categories as per the guidelines issued by the Government of Karnataka.

1.6 Details of the Degree offered: Degree offered is Bachelor of Engineering (B.E) in Chemical, Civil, Computer Science, Electrical & Electronics, Mechanical, Electronics & Communication and Information Science Engineering – Credit System.

SDMCET is permanently affiliated to Visveswaraya Technological University (VTU), Belgaum and the degree is awarded by VTU. The minimum credit requirement for the B.E degree is **200** and the time allowed is 8 semesters (minimum) to 16 semesters (maximum). All academic activities are to be approved by the Academic Council, Governing Council and are as per the guidelines issued from time to time by VTU.

The academic activity in an academic year is as follows:

a) Odd semester:	19 weeks
b) Inter semester recess:	02 weeks
c) Even semester:	19 weeks
d) Inter semester recess:	02 weeks
e) Summer Term Course (STC):	08 weeks
f) Inter semester recess:	<u>02 weeks</u>
Total:	52 weeks

1.7 Course registration:

- a) Subjects are taught as different courses at basic and advanced level as core, elective theory subject and as laboratory and workshop based courses.
- b) Each course is given a certain number of credits, varying from 1 to 4 per course. Eight to ten courses amounting to approximately 30 credits are offered in each semester.
- c) Every student after consulting his mentor is required to register for the approved courses at the commencement of each Semester on the days fixed for such registration and notified in the academic calendar.
- d) Every student is required to register for a minimum of **20** credits but to a Maximum of **30** credits.

1.8 Drop/Withdraw/Audit option:

- a) As a procedure, course registration should get over on a prescribed date, before the commencement of the semester. However, students are given the opportunity to register for additional courses if they so wish after the

commencement of the semester but within a stipulated date under **late registration mode**.

- b) Likewise a student has the option to **drop/withdraw** some of the courses registered before the scheduled dates mentioned in the academic calendar.
- c) Students can **Audit** a course meaning he / she can attend the classes but need not register or write the test and examinations of the course. However, formal permission of the concerned Instructor / department is necessary for auditing a course.

1.9 Attendance requirements:

- a) A minimum of **85%** attendance in each course is a **MUST** to appear for End Semester Examination (ESE).
- b) Students with shortage of attendance will not be allowed to write the final examination and this would amount to **fail** in that subject concerned.
- c) Such students have to **Reregister** and go through the entire course once again.

2) Evaluation & Assessment

2.1 Continuous Assessment (CA):

1) Purpose:

- To ensure good academic standards well maintained in SDMCET.
- To impart steady and regular study habits so that there will be less/no pressure of any kind near the semester end.
- To ascertain SDMCET students excel in their academic career and life.

2) Theory Courses:

Max. Marks: 50 per course

a) Tests Marks: 40

	Test – 1	Test – 2	Makeup/Improvement Test (optional)
Max. Marks	20	20	20
Timing	7th Week	13th Week	15th Week
Syllabus	First 40%	Second 40%	Second 50%
Duration	1 Hour	1 Hour	1 Hour

- Tests are conducted on three days schedule with proper seating arrangements announced by the Controller of Examinations.

IMPORTANT			
MINIMUM ATTENDANCE REQUIRED FOR			
Test – 1	Test – 2	Makeup/Improvement Test	By the end of semester
50%	60%	70%	85%

b) Teacher Impression Marks (TIM): 10

- Class room interaction – weightage 2 Marks
 - Announced and unannounced Quiz – weightage 4 Marks
 - Assignment(s) for I & II Year
- OR**
- Case study/Term paper for III & IV year } – weightage 4 Marks

c) Minimum of 20 marks in CA is a must for attending to ESE.

3) Practical Courses: Max. Marks: 100 per course

- Interaction, preparation, journal writing, viva etc., in each lab session amounting to a maximum of 50 marks.
- Final Lab exam at the end of the semester as per the schedule announced by the COE for a maximum of 50 marks.

2.2 End Semester Examination (ESE) will be conducted for theory courses only at the end of the semester after completion of course works. The duration of examination is 3 hours and maximum marks are 100. Attendance to the ESE exam is mandatory.

2.3 Question paper pattern:

The question paper pattern for CA and ESE are as follows:

a) PART–A: [Max. Marks: 5 in CA & 20 in ESE]

Questions could be of multiple choices, fill in the blanks, match the following, True / False and make corrections.

b) PART–B: [Max. Marks: 5 in CA & 20 in ESE]

Analytical and problem oriented questions demanding thorough knowledge and appreciation of the concepts learnt.

c) PART–C: [Max. Marks: 10 in CA & 60 in ESE]

Standard questions are to be framed on the entire syllabus that can be evaluated objectively. There could one or two built-in choice questions.

2.4 Valuation methodology: Each answer script of ESE is valued by two faculty members independently and the better score is considered. If the difference in the score is greater than 10%, one more valuation of the script will be carried out by a new examiner and this score is considered as final. Revaluation is not allowed in view of this fair and careful procedure adopted.

2.5 Grading scheme:

- a) Relative grading scheme is adopted in SDMCET as practiced in many leading autonomous institutions around the world.

- b) Raw scores obtained by a student will be converted to letter grades using statistical approach using **mean** and **standard deviation**.
- c) Arithmetic mean is fixed as D grade and the remaining grades are fixed in multiples of standard deviation added to the mean.
- d) Grade Finalization Committee of the institution studies the grades carefully and its decision is final.

2.6 Letter grades and grade points:

Letter grades	Grade points	Remarks
S	10	Outstanding
A	09	Excellent
B	08	Very Good
C	07	Good
D	05	Average
E	04	Poor
F	00	Fail

2.7 Earned Credits: A student passing a course in any of the grade ‘S’, ‘A’, ‘B’, ‘C’, ‘D’ & ‘E’ earns the credits prescribed for that course.

2.8 Semester Grade Point Average (SGPA) indicates performance level (caliber) of the student at the end of each semester. It is calculated as follows:

$$SGPA = \frac{\sum (Course\ Credit \times Grade\ point)}{\sum Course\ Credit}$$

[This takes into account all the registered courses and grades including F obtained by a student in that semester]

2.9 Cumulative Grade Point Average (CGPA) is an indicator of changes in the performance level of a student with their progress of study [1st to 2nd semester; 2nd to 3rd Semester and so on...]. It is calculated as follows:

$$CGPA = \frac{\sum (Course\ Credit \times Grade\ point)}{\sum Course\ Credit}$$

[Course(s) with F grade are not included in the calculation]

2.10 Mandatory Learning Courses (MLC): VTU stipulates the following as Mandatory Learning Course:

- 1) Functional English

- 2) Kannada Kali
- 3) Constitution of India & Professional Ethics (CIPE)
- 4) Environmental Studies (ES)

Even though, these courses carry no credits, passing them is **COMPULSARY**. An attendance criterion is applicable. Examinations are conducted and getting grade 'PP' (Meaning Pass) is a must to get the degree.

2.11 Promotion Criterion:

The prescribed standards for promotion shall be as follows:

- 1) Maximum number of 'F' grades that can be carried at any point of time is **FOUR** only.
- 2) Minimum CGPA shall be **5.00**.

2.12 Ranking/Distinction is decided by CGPA. Best student has the highest CGPA.

2.13 Summer Term Course (STC): This arrangement is primarily to assist **weak and / or failed** students to clear their backlogs. STC is offered during summer vacation. In this format, duration of the course is reduced to 8 weeks but the number of contact hours per week is doubled. Examination pattern remains the same. A minimum of **TEN** registered candidates is necessary to offer the course. A student can register for a maximum of 12 credits only.

2.14 Important information's:

- 1) There will be **no re-examination** for any course. However, student can register once again either in a main or summer term course.
- 2) If a student **fails** (obtaining grade F) in any course **THREE TIMES**, he / she becomes ineligible to continue and will be asked to leave the program. However, such a student may seek admission to the program at the college afresh going through the process of selection, all over again.
- 3) A minimum CGPA of 5.00 is **very important** to smoothly continue with the studies at the college. Warning will be given to students performing below this level. However, a student failing to secure a minimum CGPA of 5.00 on three consecutive occasions would be asked to discontinue the program and leave the college.
- 4) Absenting from classes for long is a serious deterrent. A student who remains absent from the classes for more than six weeks at a time in a semester without leave of absence being granted by the competent authorities would be asked to discontinue the program and leave the college.
- 5) Students shall conduct themselves within and outside the premises of the college, in a manner befitting to the students of an institution of national importance and character. Any deviation to this by students will be dealt seriously and the decision of the principal of the college is final.

- 6) Students are expected to maintain a good academic record of CGPA greater than **7.00** so as to be eligible for on-campus placement. A Training & Placement office at the college has been providing an excellent service since five years.

3) Transfer of students

3.1 The following procedures are adopted for fixing the grade and grade points of each course that are completed successfully by the student in the non-autonomous programs:

- a) Courses (in non-autonomous program) equivalent to autonomous courses shall be identified semester wise.
- b) Credits are assigned to the above identified theory and practical courses successfully completed by the student in the VTU (non-autonomous) examinations shall be same as in the autonomous courses.
- c) Grades shall be awarded for the above identified equivalent courses as per the following table:

Level	Outstanding	Excellent	Very Good	Good	Average	Poor	Fail
Grade	S	A	B	C	D	E	F
Grade points	10	09	08	07	05	04	00
% Marks obtained in VTU (non-autonomous) examination	>= 90	75 to 89	60 to 74	50 to 59	45 to 49	40 to 44	< 40

- d) CGPA is calculated in the same way as done for autonomous courses.
- e) Promotion criterion will now be same as in autonomous courses.

3.2 Branch Change and Lateral Entry: At the end of the first year, some students can change their branch provided **i)** they are top performers with highest CGPA and **ii)** a clear vacancy in the change of branch sought exists. Dean (Academic Program) will notify the details regarding this at the appropriate time. Diploma passed candidates is allowed to join the degree program at the third semester. Rules and Regulations for this are as per VTU.

4) Academic Calendar

4.1 Odd Semester:

	Week	Particulars	Date
1.	0	Registration	28 th Aug. to 3 rd Sept. 2009 (Friday to Thursday)
2.	1	Teaching Commences	31 st August, 2009 (Monday)
3.		Last date to apply for change of branch (3 rd semester)	3 rd September, 2009 (Thursday)
4.	2	Last date for late registration with late fee of Rs.500/- with the permission of Director / Dean (Academic)	7 th September, 2009 (Monday)
5.		Surprised Quiz (Objective type only for 10 Marks & 10 minutes at the end of a particular class)	To be held in any class in September 2009.
6.	5	Display of first monthly attendance report	1 st October, 2009 (Thursday)
7.	7	Test – 1	12 th to 14 th October, 2009 (Mon to Wed)
8.	8	Display of Test – 1 results	21 st October, 2009 (Wednesday)
9.		Dispatch of students progress report to parents	29 th October, 2009 (Thursday)
10.	9	Last date to drop the course	26 th October, 2009 (Monday)
11.		Announced Quiz	During the week 26 th to 31 st October, 2009 (Mon to Sat)
12.		Display of second monthly attendance report	31 st October, 2009 (Saturday)
13.	11	Assignment	Assignment sheet containing not more than 10 questions to be given to students individually on 9/11/09 with last date for submission as 12/11/09.
14.	13	Test – 2	25 th to 27 th November, 2009 (Wednesday to Friday)
15.		Teacher – Parents Meet	7 th , 14 th and 21 st November, 2009 (Saturdays only)
16.	14	Students Feedback	30 th November to 5 th December, 2009
17.		Display of third monthly attendance report	1 st December, 2009 (Tuesday)
18.		Display of Test – 2 results	4 th December, 2009 (Friday)
19.	15	Last date to withdraw the course	7 th December, 2009 (Monday)
20.		Dispatch of students progress report to parents	12 th December, 2009 (Saturday)
21.		Makeup/Improvement Test	10 th to 12 th December, 2009 (Fri to Saturday)
22.	16	Final laboratory CA Exams	17 th to 23 rd December, 2009 (Thursday to Wednesday)
23.		Display of consolidated CA Marks & Attendance	19 th December, 2009 (Saturday)
24.	17	Last date to apply for academic appeal	22 nd December, 2009 (Tuesday)
25.		Teaching closes	23 rd December, 2009 (Wednesday)

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26.		AAB meeting	24 th December, 2009 (Thursday)
27.	18	End Semester Exams begin	28 th December, 2009 (Monday)
28.	19	Last working day	9 th January, 2010 (Saturday)
29.	20	Inter Semester Recess	10 th to 23 rd January, 2010
30.	21	Declaration of Result	20 th January, 2010 (Wednesday)
31.		Last date to apply for appeal on results	22 nd January, 2010 (Friday)
32.		AAB meeting on results	25 th January, 2010 (Monday)
33.	22	Commencement of Even Semester	27 th January, 2010 (Wednesday)

4.2 Even Semester (Tentative):

	Week	Particulars	Date
1.	0	Registration	24 th to 26 th January, 2010 (Sunday to Tuesday)
2.	1	Teaching Commences	27 th January, 2010 (Wednesday)
3.	2	Last date for late registration with late fee of Rs.500/- with the permission of Director/Dean (Academic)	1 st February, 2010 (Monday)
4.		Surprised Quiz (Objective type only for 10 Marks & 10 minutes at the end of a particular class)	To be held in any class in February 2010.
5.	5	Display of first monthly attendance report	1 st March, 2010 (Monday)
6.	7	Test – 1	8 th to 10 th March, 2010 (Monday to Wednesday)
7.	8	Display of Test – 1 results	18 th March, 2010 (Thursday)
8.	9	Dispatch of students progress report to parents	25 th March, 2010 (Thursday)
9.		Last date to drop the course	27 th March, 2010 (Saturday)
10.	10	Announced Quiz	During the week 29 th March to 3 rd April, 2010 (Mon to Sat)
11.		Display of second monthly attendance report	1 st April, 2010 (Thursday)
12.	11	Assignment	Assignment sheet containing not more than 10 questions to be given to students individually on 5/4/10 with last date for submission as 8/4/10.
13.	13	Test – 2	22 nd to 24 th April, 2010 (Thursday to Saturday)
14.		Teacher – Parents Meet	10 th , 17 th and 24 th April, 2010 (Saturdays only)
15.	14	Students Feedback	26 th April to 3 rd May, 2010
16.	15	Display of third monthly attendance report	3 rd May, 2010 (Monday)
17.		Display of Test – 2 results	30 th April, 2010 (Friday)
18.		Last date to withdraw the course	3 rd May, 2010 (Monday)
19.		Dispatch of students progress report to parents	7 th May, 2010 (Friday)
20.	16	Makeup/Improvement Test	13 th to 15 th May, 2010 (Thursday to Saturday)
21.		Teaching closes	15 th May, 2010 (Saturday)
22.	17	Final laboratory CA Exams	16 th to 21 st May, 2010 (Sunday to Friday)

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23.		Display of consolidated CA Marks & Attendance	17 th May, 2010 (Monday)
24.	17	Last date to apply for academic appeal	19 th May, 2010 (Wednesday)
25.		AAB meeting	21 st May, 2010 (Friday)
26.	18	End Semester Exams begin	24 th May, 2010 (Monday)
27.	19	Last working day	5 th June, 2010 (Saturday)
28.	20	Inter Semester Recess	7 to 20 th June, 2010
29.	21	Declaration of Result	15 th June, 2010 (Tuesday)
30.		Last date to apply for appeal on results	17 th June, 2010 (Thursday)
31.		AAB meeting on results	19 th June, 2010 (Saturday)
32.	22	Commencement of Summer Term Courses	21 st June, 2010 (Monday)

4.3 Summer Term (Tentative):

	Week	Particulars	Date
1.	0	Registration	17 th to 19 th June, 2010 (Thursday to Saturday)
2.	1	Teaching Commences	21 st June, 2010 (Monday)
3.	2	Last date for late registration with late fee of Rs. 500/- per course with the permission of Director/Dean (Academic Program)	28 th June, 2010 (Monday)
4.		Surprised Quiz (Objective type only for 10 Marks & 10 minutes at the end of a particular class)	To be held in any class from 28 th June to 10 th July, '10.
5.	4	Test – 1	12 th to 14 th July, 2010 (Monday to Wednesday)
6.		Announced Quiz	During the week 15 th July to 17 th July, 2010.
7.	5	Display of Test – 1 results	19 th July, 2010 (Monday)
8.	5	Assignment	Assignment sheet containing not more than 10 questions to be given to students individually on 19/7/10 with last date for submission as 21/7/10.
9.		Test – 2	22 nd to 24 th July, 2010 (Thursday to Saturday)
10.	6	Display of Test – 2 results	27 th July, 2010 (Tuesday)
11.	7	Makeup/Improvement Test	2 nd to 4 th August, 2010 (Monday to Wednesday)
12.		Teaching closes	5 th August, 2010 (Thursday)
13.	8	End Semester Exams. begin	9 th August 2010 (Monday)
14.		Last working day	14 th August, 2010 (Saturday)
15.	9	Inter Semester Recess	15 th to 29 th August, 2010
16.	10	Declaration of Result	25 th July, 2010 (Wednesday)
17.		Last date to apply for appeal on results	27 th July, 2010 (Friday)
18.		AAB meeting on results	28 th July, 2010 (Saturday)
19.	11	Commencement of next academic year	30 th August, 2010 (Monday)

5) Academic Honesty & Integrity

I) **Introduction:** SDMCET is committed to upholding honesty, integrity and fairness in both academic and co-curricular activities. A student of SDMCET shall accept and abide by the academic stipulations of the institution. It is the student's responsibility to be aware of policies pertaining to academic conduct.

II) **Academic dishonesty:** Academic values and standards are the shared responsibility of students, faculty and supporting staff. Academic dishonesty is any action or practice that provides the potential for an unfair advantage to an individual or a group of students.

- Help to someone for an act of academic dishonesty is as serious as receiving the help itself.
- ***A student who cheats, gain an unfair advantage over honest students!!!!!!***
- Knowingly not reporting the dishonest act to the authorities is a crime and will hurt the institution.
- ***Some Examples:***
 - 1) Copying with or without the other person's knowledge during an exam.
 - 2) Giving or receiving answers by use of signals during an exam.
 - 3) Doing class assignments for someone else.
 - 4) Obtaining an unauthorized copy of a question paper in advance.
 - 5) Using unauthorized notes during an exam.
 - 6) Collaborating with other students on assignments when it is not allowed.
 - 7) Stealing class assignments from other students and submitting them as one's own.
 - 8) Destroying work of other students.
 - 9) Giving proxy attendance to someone else.
 - 10) Making proxy phone calls on behalf of parents.
 - 11) Producing forged letters as though written by the parents.
 - 12) Producing false certificates for an academic advantage.

III) **Sanctions for academic dishonesty:**

- 1) Awarding zero marks for the test under consideration and denying him/her the permission to take remaining tests.
- 2) Publicizing the details of the student on the notice board for the act committed with photograph.
- 3) Punitive grading like giving a lower or failing grade for the course.
- 4) Punishment like suspension or expulsion for periods up to one year.
- 5) Dismissal from the college.

6) Suggested plan of study

I Semester B. E (Common to all Branches)

Physics Group

Course Code	Course Title	L-T-P (Hrs/Week)	Course Credits
MA100	Engineering Mathematics – I	4-0-0	4
EE100	Basic Electrical Engineering	4-0-0	4
PH100	Engineering Physics	4-0-0	4
PH101	Engineering Physics Lab	0-0-3	1.5
ME101	Elements of Mechanical Engineering	4-0-0	4
ME102	Workshop Practice	0-0-3	1.5
CV100	Engineering Mechanics	4-0-0	4
HU101	Kannada	2-0-0	Audit
HU102	Constitution of India & Professional Ethics	2-0-0	
Total		30	23

Chemistry Group

Course Code	Course Title	L-T-P (Hrs/Week)	Course Credits
MA100	Engineering Mathematics – I	4-0-0	4
EC100	Basic Electronics	4-0-0	4
CY100	Engineering Chemistry	4-0-0	4
CY101	Engineering Chemistry Lab	0-0-3	1.5
CS100	Programming Fundamentals with C	4-0-0	4
CS101	Programming Fundamentals with C Lab	0-0-3	1.5
ME100	Engineering Drawing	2-0-4	4
HU100	Functional English	2-0-0	Audit
HU103	Environmental Science	2-0-0	
Total		32	23

II Semester B. E (Common to all Branches)

Physics Group

Course Code	Course Title	L-T-P (Hrs/Week)	Course Credits
MA150	Engineering Mathematics – II	4-0-0	4
EE150	Basic Electrical Engineering	4-0-0	4
PH150	Engineering Physics	4-0-0	4
PH151	Engineering Physics Lab	0-0-3	1.5
ME151	Elements of Mechanical Engineering	4-0-0	4
ME152	Workshop Practice	0-0-3	1.5
CV150	Engineering Mechanics	4-0-0	4
HU151	Kannada	2-0-0	Audit
HU152	Constitution of India & Professional Ethics	2-0-0	
Total		30	23

Chemistry Group

Course Code	Course	L-T-P (Hrs/Week)	Course Credits
MA150	Engineering Mathematics – II	4-0-0	4
EC150	Basic Electronics	4-0-0	4
CY150	Engineering Chemistry	4-0-0	4
CY151	Engineering Chemistry Lab	0-0-3	1.5
CS150	Programming Fundamentals with C	4-0-0	4
CS151	Programming Fundamentals with C Lab	0-0-3	1.5
ME150	Engineering Drawing	2-0-4	4
HU150	Functional English	2-0-0	Audit
HU153	Environmental Science	2-0-0	
Total		32	23

Total Credits offered for the First year: 46

7) Detailed Syllabus

MA100	Engineering Mathematics – I	(4 - 0 - 0) 4
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- 1) Differential Calculus:** Determination of n^{th} derivative of standard functions, Leibniz' theorem, Polar curves Pedal equation, Partial Derivatives, Jacobians, Errors and approximations. **12 Hrs.**
- 2) Integral Calculus:** Reduction formulae, Tracing of curves, Applications, Differentiation under integral sign. **12 Hrs.**
- 3) Differential Equations:** First order and first degree differential equations and their Applications. **7 Hrs.**
- 4) Infinite Series:** Convergence, divergence and oscillation of an infinite series of positive terms. Alternating series, Absolute and Conditional convergence and problems. **7 Hrs.**
- 5) Vector Calculus:** Vector differentiation, Gradient, divergence, Curl, Solenoidal and irrotational vector, vector Identities and problems. **7 Hrs.**
- 6) Analytical Geometry in Three Dimensions:** Direction cosines and direction ratios, Planes, Straight lines. **7 Hrs.**

Reference Books:

- 1) B.S. Grewal - Higher Engineering Mathematics, 39th edition, Khanna, 2007.
- 2) S. S. Sastry - Engineering Mathematics - I & II, 4th edition, PHI, 2008.
- 3) Erwin Kreyszig - Advanced Engineering Mathematics, 9th edition, John Wily & Sons, 2006
- 4) Glyn James - Advanced Modern Engineering Mathematics, 3rd edition, Pearson, 2004

EE100/EE150	Basic Electrical Engineering	(4 - 0 - 0) 4
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- 1) D.C Circuits:** KCL & KVL, loop equations, Node equations, mesh & nodal analysis (maximum 3 Loops), solutions using Cramer's rule [matrix method] excluding current & dependent sources), Super position theorem- Statement & Examples. **8 Hrs.**
- 2) Single phase AC Circuits:** Review of AC fundamentals– definitions of RMS, Average Values, form factor, phasor algebra, j-operator, Concept of active, reactive & apparent power. R, L, C, Series, parallel, Series-Parallel RLC Circuit analysis with phasor diagram, examples including power calculations, Power factor improvement. **9 Hrs.**
- 3) Three phase Circuits:** Necessity and advantages of three phase systems, Meaning of Phase sequence, balanced supply and load. Relationship between

line and phase values for balanced star and delta connections. Power in balanced three-phase circuits. Illustrative examples. **8 Hrs.**

- 4) **DC Machines:** Construction, working principle and EMF equation of DC Generator, back EMF and torque equations of DC motors, simple problems, characteristics and applications of DC Motors. **5 Hrs.**
- 5) **Single phase transformer:** principle, types & construction, expression for induced Emf, transformation ratio, losses and efficiency, examples. **4 Hrs.**
- 6) **Synchronous Generator:** Principle of operation, types & constructional features, EMF equation, illustrative examples. **4 Hrs.**
- 7) **Three Phase Induction Motors:** Concept of rotating magnetic field, principle of operation, constructional features, applications of squirrel cage and slip ring motors, star - delta starter, problems only on slip calculations. **4 Hrs.**
- 8) **Non – Conventional Energy Sources:** Types and Advantages of non – conventional Energy sources.
Solar Energy: PV. Cell, VI characteristics, PV power generation (block diagram) types of PV generation, standalone.
Wind Energy: advantages & disadvantages of wind mill, types, wind power plant, types of wind machines. **5 Hrs.**
- 9) **Domestic Wiring:** present trends in wiring, working of fluorescent lamp, two – way & three – way control of lamps. Fuses, electrical safety, necessity of Earthing and types. Induction type Energy meter, construction & working. **5 Hrs.**

Reference Books:

- 1) E. Hughes - Electrical Technology, 8th edition, Pearson, 2006.
- 2) Vincent Del Toro - Principle of Electrical Engineering, Prentice Hall, 1980.
- 3) B.R. Gupta - Generation of Electrical Energy, S. Chand Publications, 2008.
- 4) R.K Rajput - Power System Engineering, 1st edition, Laxmi publications, 2007.

PH100/PH150	Engineering Physics	(4 - 0 - 0) 4
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- 1) **Modern Physics:** Photoelectric effect, Compton Effect and de-Broglie hypothesis. Matter waves and their characteristic properties. Phase velocity, group velocity and particle velocity. Expression for de Broglie wavelength. **6 Hrs.**
- 2) **Quantum Mechanics:** Heisenberg's uncertainty principle and its applications. Wave function, Probability density and normalization of wave function. One-dimensional time independent Schrödinger wave equation, Applications. **6 Hrs.**
- 3) **Electrical properties of Metals:** Classical free electron theory, Expression for drift velocity, electrical conductivity and thermal conductivity in metals. Quantum free electron theory, Fermi-Dirac statistics, Density of states. **7 Hrs.**
- 4) **Band theory of solids:** Electron in a periodic field of a crystal, Brillouin Zones, Electrons in a one-dimensional periodic potential, Classification of matter. **6 Hrs.**

- 5) **Photonics: Laser:** Introduction, Requirements of lasing system, different types of pumping. Two, three and four energy level systems with illustration, Applications.
Optical Fibers: Propagation mechanism in optical fiber, Angle of acceptance, Numerical aperture and Fractional Index change. Types of Optical fibers and applications. **6 Hrs.**
- 6) **Crystal Structure:** Crystal systems. Miller indices, inter-planar spacing. Bragg's law, Crystal structures of CsCl, Graphite & Diamond. **6 Hrs.**
- 7) **Material Science: Semiconductor:** Types of semiconductors, Fermi level, concentration & mobility of charge carriers, Electrical conductivity of semiconductor.
Super conductivity: Critical temperature, Meissner effect, BCS theory (qualitative), High temperature superconductors, Josephson's effect, Applications. **7 Hrs.**
- 8) **Nanomaterials:** Properties of nanomaterials, synthesis of nanomaterials (Physical & Chemical methods), Characterization methods, Carbon Nano Tubes, Applications. **6 Hrs.**

Reference Books:

- 1) Charles Kittel - Introduction to Solid State Physics, 8th edition, John Wiley & Sons, Inc. 2003.
- 2) Arthur Beiser - Concepts of Modern Physics, 4th, McGraw Hill, 2006.
- 3) G. Basavaraju - A Text Book of Engineering Physics, 5th edition, Pooja publication, 2004.
- 4) Avadhanulu and Kshirsagar - A Text Book of Engineering Physics, 2nd edition, S. Chand Ltd, 2008.

PH101/PH151	Engineering Physics Lab	(0- 0 - 3) 1.5
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- 1) To study the frequency response of Series and Parallel LCR Circuits and Determination of the resonant frequency, band width and Q factor.
- 2) Determination of the energy loss of the specimen using B – H Curve.
- 3) Determination of the value of Young's modulus of the given bar by single cantilever.
- 4) Determination of the Fermi Energy of a given material.
- 5) Determination of Stefan's Constant.
- 6) To measure the Dielectric Constant by Charging and discharging method.
- 7) Determination of the wavelength of spectral lines in the Hg spectrum using plane diffraction grating.
- 8) Determination of the Energy gap of a given semi-conducting material.
- 9) Determination of the electrical resistivity (Four Probe Method).

- 10) Characteristics of optical Fiber like numerical aperture and loss parameter.
- 11) To study the diffraction pattern of a given Laser source and hence to determine its wavelength.
- 12) To study the I-V Characteristics of Zener Diode and Determination of knee voltage.

Reference Books:

- 1) S. Vasudeva - A Manual of Practical Engineering Physics, 2nd edition, S. Chand, 2002.
- 2) Hannah Sathyaseelan – Laboratory Manual in Applied Physics, 2nd edition, New Age International, 2001
- 3) Sundararajan - College Physics Practical Manual, 1st edition, United publisher, 1999.

ME101/ME151 Elements of Mechanical Engineering (4- 0 - 0) 4

- 1) **Basic Concepts of Thermodynamics:** Microscopic and Macroscopic approaches, Definitions of system, type of systems, Properties, state, process, Equilibrium, law of Thermodynamics, Temperature scales, Thermometers, problems. **5 Hrs.**
- 2) **Steam and Boilers:** Steam formation, Quality, properties, Enthalpy, Internal Energy, Classification of boilers, mountings and accessories. **5 Hrs.**
- 3) **I. C. Engines:** Classification, terminology, Working of S.I. and C.I. engines, Performance terminology, Applications, problems. **6 Hrs.**
- 4) **Refrigeration & Air conditioning:** Principle, Unit of Refrigeration, COP, Description and working V.C. Refrigerator p-h diagram, Refrigerants, Requirements, Air cooling and Air conditioning, Principle of operation of Window air conditioner, Applications. **4 Hrs.**
- 5) **Lathe and Drilling Machines:** Machine tool, turning operation, Terminology Types of Lathes, description and working, Specifications, Operations, Taper turning. Applications of the important operations, drilling machines, Brief description, Applications. **7 Hrs.**
- 6) **Milling m/c and Grinding m/c:** Principle of milling, Types, Classification, Description and working. Applications of the important operations, Common Abrasives and Bonding materials Applications of the operations. **7 Hrs.**
- 7) **Welding, Soldering and Brazing:** Description, defects, Applications. **4 Hrs.**
- 8) **Fasteners:** Hexagonal and Square headed bolts and nuts, keys, Flanged couplings. **2 Hrs.**
- 9) **Power Transmission:** Types of drives, Ratio of tensions, Velocity ratio, Power transmitted, Slip and creep, problems. Types of Gears and their applications. gear trains. **5 Hrs.**

- 10) Lubrication and Bearings:** Types and properties, lubricators. Introduction of Bearings, Classification. **5 Hrs.**

Reference Books:

- 1) P. K. Nag - Basic and Applied Thermodynamics, 2nd edition, TMH Publishing Co. Ltd, 2002.
- 2) K. R. GoplaKrishna - Elements of Mechanical Engineering, 26th Edition, Subhas stores and publishers, 2006.
- 3) K. P. Roy, S. K. Hazra Choudhary and A. K. Hazra Choudhary - Elements of Mechanical Engineering, 6th edition, Media Promoters and Publishers, 2003.
- 4) K. R. Gopal Krishna - Machine Drawing, 20th edition, Subhas stores and publishers, 2007.

ME102/ME152	Workshop Practice	(0- 0 - 3) 1.5
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- 1) **General Introduction to the workshop** **3 Hrs.**
- 2) **Fitting:** Study of fitting tools, Study of fitting operations and joints, Two jobs have to be completed. **3 Hrs.**
- 3) **Welding:** Study of electric arc welding tools and equipments **2 Hrs.**
- 4) **Two jobs have to be completed** **6 Hrs.**
- 5) **Sheet Metal and Soldering:** Study of sheet metal and soldering tools
Development of lateral surface of prism, pyramid, cylinder, cone – full and truncated. Two jobs have to be completed **8 Hrs.**
- 6) **Demonstration:** Carpentry, Study of carpentry hand tools and power tools
Assembling and disassembling: Small objects such as sub assembly of bicycle.
Electrical Connections: House wiring - controlling single lamp using single switch and two way switch, fuse connections. **10 Hrs.**

Reference Books:

- 1) S. K. H. Choudhry, A. K. H. Choudhry, Nirjhar Roy - Elements of Workshop, 11th edition, Media Technology – voM Promoters & Publishers, 2001.
- 2) R. Skhurmi, J. K. Guptha - Workshop Technology, 1st edition, S. Chand, 2002
- 3) Prof Ravi - Workshop Practice Manual, 1st edition, Best Publishers, 2007.
- 4) Raghuwanshi – Elements of Workshop Technology, 1st edition, Dhanpatrai, 1981.

CV100/CV150	Engineering Mechanics	(4- 0 - 0) 4
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- 1) **Introduction to Engineering Mechanics:** Concept of Force and force systems. Definition, classification, concept of rigid and deformable body. Principle of transmissibility, composition and resolution of coplanar force systems. Types of loads and supports: Free Body Diagram, Geometrical meaning of moment,

Varignon's Theorem, Conditions of equilibrium. Problems on coplanar, concurrent and non-concurrent force systems. Support reactions. **18 Hrs.**

2) Geometrical Properties of Planar Elements: Determination of Centroid, Moment of Inertia and Radius of Gyration for rectangular, circular, triangular, semi-circular, quadrant and their simple combinations. **8 Hrs.**

3) Friction: Types of friction, laws of dry friction, problems on block, wedge and ladder friction, belt friction. **7 Hrs.**

4) Forces in Space - Related problems on concurrent and non concurrent forces. **7 Hrs.**

5) Work, Power and Energy: Work, Power, Energy related problems, Law of conservation of energy. **6 Hrs.**

6) Kinetics: Linear momentum of a particle, conservation of linear momentum, D'Alemberts, principle, circular motion **6 Hrs.**

Reference Books:

1) Ferdinand P. Beer and E. Russel Johnston Jr. - Mechanics for Engineers: Statics, 7th edition, McGraw-Hill Book Company, 2005.

2) F.L. Singer - Engineering Mechanics, 3rd edition, Harper and Row publishers, 1975.

3) S. S. Bhavikatti & K.G. Rajashekarappa - Engineering Mechanics, 3rd edition, New Age International (P) Ltd., 2008.

4) Timoshenko and Young - Engineering Mechanics, 2nd edition, McGraw-Hill Book Company, 1975.

HU101/HU151

Kannada

Audit

1) **Introducing each other:** Personal Pronouns, Possessive forms, Interrogative words.

2) **About Ramayana:** Possessive forms of nouns, dubitive question, Relative nouns.

3) **Enquiring about a room:** Predicative forms, locative case.

4) **Enquiring about the college:** Qualitative and quantitative adjectives

5) **Vegetable Market:** Dative case, basic numerals..

6) **In a cloth shop:** Color adjectives, defective verbs

7) **Plan to go for a picnic:** Imperative, permissive and hortative.

8) **Enquiring about one's family:** Verb iru, and corresponding.

9) **Plan to go for a movie:** Comparative, non-past tense, instrumental and ablative case.

10) **Conversation between Doctor and Patient:** Potential forms, accusative case

11) **Enquiring about friends family:** Past tense -d- and -t- & negation

- 12) **Conversation between friends:** Past tense -k- -D- and --id, negation, verbal noun.
- 13) **Routine activities of a Student:** About children's Education: Continuous, Perfect tenses and negations
- 14) **Halebid - Belur:** Relative participle, negation and Participle nouns.
- 15) **About Children's education:** Continuous perfect tenses and negations
- 16) **Discussing about Examination and future plan:** Conditional and negative conditions.
- 17) Karnataka (Lesson for reading)
- 18) bEku bEDagaLu (lesson for reading)
Kannada script

ಕನ್ನಡ ಮನಸು

- ೧) ಶ್ರಾವಣ (ಕವನ)- ದ. ರಾ. ಬೇಂದ್ರೆ
- ೨) ಡಾ. ವಿಶ್ವೇಶ್ವರಯ್ಯ- ವ್ಯಕ್ತಿ ಮತ್ತು ಐತಿಹ್ಯ (ವ್ಯಕ್ತಿಚಿತ್ರ)- ಎ.ಎನ್.ಮೂರ್ತಿರಾವ್
- ೩) ದೋಣಿ ಹರಿಗೋಲುಗಳಲ್ಲಿ (ಪ್ರವಾಸ ಕಥನ)- ಶಿವರಾಮ ಕಾರಂತ
- ೪) ಅಣ್ಣಪ್ಪನ ರೇಷ್ಮೆ ಕಾಯಿಲೆ (ಪ್ರಬಂಧ)- ಕುವೆಂಪು
- ೫) ಆನೆಹಳ್ಳದಲ್ಲಿ ಹುಡುಗಿಯರು (ವಿಜ್ಞಾನ ಲೇಖನ) -ಬಿ. ಜಿ. ಎಲ್. ಸ್ವಾಮಿ
- ೬) ಬೆಡ್ ನಂಬರ್ ಏಳು (ಕತೆ) -ತ್ರಿವೇಣಿ
- ೭) ರೊಟ್ಟಿ ಮತ್ತು ಕೋವಿ (ಕವನ)- ಸು. ರಂ. ಎಕ್ಕುಂಡಿ
- ೮) ಗುಬ್ಬಚ್ಚಿಯ ಗೂಡು (ಅಂಕಣ ಬರಹ)-ಪಿ. ಲಂಕೇಶ್
- ೯) ಚಿಂತ್ರ ಮೇಸ್ತ್ರಿ ಮತ್ತು ಅರಿಸ್ಪಾಟಲ್ (ಪರಿಸರ ಲೇಖನ)-ಕೆ.ಪಿ.ಪೂರ್ಣಚಂದ್ರ ತೇಜಸ್ವಿ
- ೧೦) ಗಾಂಧಿ (ಕತೆ) -ಬೆಸಗರಹಳ್ಳಿ ರಾಮಣ್ಣ
- ೧೧) ಬೆಲ್ವಿಯ ಹಾಡು (ಕವನ) -ಸಿದ್ದಲಿಂಗಯ್ಯ
- ೧೨) ಎಲ್ಲ ಹುಡುಗಿಯರ ಕನಸು (ಕವನ)- ಸವಿತಾ ನಾಗಭೂಷಣ
- ೧೩) ಕರ್ನಾಟಕ ಸಂಸ್ಕೃತಿಯ ಒಂದು ಚಿತ್ರ (ಪರಿಚಯ ಲೇಖನ) -ರಹಮತ್ ತರೀಕೆರೆ
- ೧೪) ವೃತ್ತಿ ಶಿಕ್ಷಣದಲ್ಲಿ ಕನ್ನಡ ಮಾಧ್ಯಮ(ತಂತ್ರಜ್ಞಾನ ಬರಹ)-ಎಸ್. ಸುಂದರ್
- ೧೫) ಕೊಣವೇಗೌಡ (ಕಾವ್ಯ)- ಜಾನಪದ

HU102/HU152	Constitution of India and Professional Ethics	Audit
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- 1) Preamble to the constitution of India Fundamental rights under Part - III details of Exercise of Rights, Limitations & Important cases. **4 Hrs.**
- 2) Relevance of Directive principles of State Policy under Part - IV. Fundamental duties & their significance. **3 Hrs.**
- 3) Union Executive President, Prime Minister, Parliament & the Supreme Court of India. **3 Hrs.**

- 4) State executive Governors, Chief Minister, State Legislator and High Courts. **3 Hrs.**
- 5) Constitutional Provisions for Scheduled Castes & Tribes, Women & Children & Backward classes. Emergency Provisions. **4 Hrs.**
- 6) Electoral process, Amendment procedure, 42nd, 44th, 74th, 76th, 86th and 91st Constitutional amendments. **3 Hrs.**
- 7) Scope & aims of engineering Ethics. Responsibility of Engineers. Impediments to responsibility. **3 Hrs.**
- 8) Honesty, Integrity and reliability, risks, safety & liability in engineering. **3 Hrs.**

Reference Books:

- 1) Durga Das Basu - Introduction to the Constitution of India (Students Edn.), 19th/20th edition, Prentice - Hall EEE, 2001.
- 2) Charles E. Haries, Michael. S. Pritchard and Michael J. Robins - Engineering Ethics, Thompson Asia, 2003.
- 3) M. V. Pylee - An Introduction to Constitution of India, Vikas Publishing, 2002.
- 4) M. Govindarajan, S.Natarajan, V.S.Senthilkumar - Engineering Ethics, Prentice - Hall of India Pvt. Ltd., 2004.

EC100/EC150 Basic Electronics (4 – 0 – 0) 4

- 1) **Semiconductor Diodes And Applications:** p-n junction diode, Characteristics, DC load line, Half-wave and Full-wave diode rectifiers, Capacitor filter, Zener diodes and voltage regulators-with and without load. **9 Hrs.**
- 2) **Transistors:** BJT, Voltages and Currents, Amplification, CB, CE and CC Configurations, DC Load and Bias Point, Biasing methods. **9 Hrs.**
- 3) **Amplifiers & Oscillators:** Decibels and Half power points, Single Stage and two stage CE amplifier, Series voltage negative feedback and additional effects of Negative feed back (Qualitative discussions only), Class A and Class B Power Amplifiers (Qualitative analysis only). The Barkhausen Criterion for Oscillations, Oscillator: RC Phase shift, Colpitts and Hartley and Crystal. **8 Hrs.**
- 4) **Introduction to Operational Amplifiers:** Ideal OPAMP, Saturable property of an OPAMP, Inverting and Non inverting OPAMP circuits, need for OPAMP, Characteristics and applications, CRO. **8 Hrs.**
- 5) **Communication Systems:** Block diagram, Modulation, Need for modulation, AM, FM, Comparison of AM and FM, Radio Receivers. **8 Hrs.**
- 6) **Basics of Digital Circuits:** Brief introduction to number system, Binary, Octal Hexadecimal number system, Addition and Subtraction, Fractional number, BCD, Boolean algebra, Logic gates, Half adder, Full adder, Half subtractor and Full subtractor, Parallel Binary Adder. **8 Hrs.**

Reference Books:

- 1) David A. Bell - Electronic Devices and Circuits, 4th edition, PHI, 2006.
- 2) A. Anand Kumar - Fundamentals of Digital Circuits, PHI, 2001.
- 3) Jacob Millman and Christos C. Halkias - Electronic Devices and Circuits, TMH, 1991.
- 4) George Kennedy and Bernard Davis - Electronic Communication Systems, 4th edition, TMH.

CY100/CY150

Engineering Chemistry

(4 – 0 – 0) 4

- 1) **Electrochemistry:** Introduction, Electrode potential & its origin, Nernst equation; Electrochemical conventions; Numerical problems on $E, E^0, E^0_{cell}, E_{cell}, [M^{n+}]$; Types of electrodes—metal metal ion, metal metal salt, amalgam, redox and ion selective; Construction, working & applications of Calomel electrode, Ion-selective electrodes; Glass electrode—Concentration cells— electrode and electrolyte and their applications; Numerical problems on $E_{cell}, [M^{n+}]$ and valency of ion(n). **7 Hrs.**
- 2) **Battery Technology:** Introduction, Classification; Construction, working & applications of Lead-acid battery, Ni-MH battery and Li-MnO₂ battery; Fuel cells— Introduction, difference between conventional cell and a fuel cell, limitations, advantages; Construction & working of methanol - oxygen fuel cell. **6 Hrs.**
- 3) **Water Technology:** Introduction, Hardness -Types, Units; Boiler feed water; boiler corrosion; Treatment of boiler feed water; External & Internal methods; Desalination of water--Multistage flash evaporation, Reverse osmosis, Electro dialysis—simple and ion selective. **6 Hrs.**
- 4) **Chemical Energy Sources:** Fuels--Introduction, Classification, Calorific value, Determination of calorific value using Bomb calorimeter, Numerical problems. Cracking; Reforming of petrol—significance & reactions; Knocking & its mechanism; knocking agents; unleaded petrol; Octane number; Cetane number and Power alcohol. **6 Hrs.**
- 5) **Corrosion and its Control:** Introduction, Chemical & Electrochemical theories of corrosion; Factors affecting corrosion rate, Types of corrosion, Corrosion control, protective coatings - metal coatings, inorganic coating, cathodic protection & anodic protection. **6 Hrs.**
- 6) **Metal Finishing:** Introduction, Technological importance, Polarisation, Decomposition potential and Over voltage. Electroplating: Theory of electroplating, Characteristics of good deposit; Factors influencing the nature of deposit, Metal surface preparation, electro polishing; Electroplating of nickel, chromium & their applications. Electroless plating: Principle, composition of bath, advantages, limitations; Comparison of electroplating and electro less plating; Electroless plating of copper & its applications. **7 Hrs.**
- 7) **High Polymers:** Introduction, Types of polymerization Free radical taking ethylene as a monomer; Structure-property relationships; Glass Transition temperature, Synthesis, properties & applications of polymethylmethacrylate

polyurethanes; neoprene rubber and epoxy resins; Conducting polymers- Introduction, mechanism of p & n doping of polyacetylene, and applications.

7 Hrs.

- 8) Nano-Technology:** Introduction, Nanoscale; Nanomaterials, Properties & applications of Thin films, Carbon Nanotubes, Nonowires, Fullerenes, & Dendrimers; Construction of Nanomaterials. **5 Hrs.**

Reference Books:

- 1) Puri B.R., Sharma L.R. and M.S. Pathania - Principles of Physical Chemistry, 1st edition, Vikas publications, 2002.
- 2) J.C. Kuriacose, J. Rajaram - Chemistry in Engineering and Technology, Volume I & II, Tata McGraw-Hill, 1998.
- 3) Jain P.C. & Monika Jain - Engineering Chemistry, 15th edition, Dhanpat Rai & Sons, 2008.
- 4) Er. Rakesh Rathi S - Nanotechnology, 1st edition, Chand & Company Ltd., 2009.

CY101/CY151

Engineering Chemistry Lab

(0 – 0 – 3) 1.5

- 1) Estimation of total hardness of the given sample of water by EDTA method.
- 2) Estimation of calcium oxide in the given sample of cement by rapid EDTA method.
- 3) Estimation of percentage of copper in brass by iodometric method.
- 4) Estimation of percentage of iron in haematite solution by external indicator method.
- 5) Estimation of chloride in the given sample of water by Mohr's method.
- 6) Estimation of hydrochloric acid & acetic acid from their mixture conductometrically.
- 7) Estimation of FAS potentiometrically.
- 8) Estimation of copper colorimetrically.
- 9) Determination of pK_a of weak acid using pH-meter.
- 10) Determination of viscosity coefficient of a given liquid using Ostwald's viscometer.

Reference Books:

- 1) Vogel A. I. - Text Book of Quantitative Chemical Analysis, 6th edition, Pearson Education, 2008.
- 2) O. P. Varmani & A. K. Narula - Applied Chemistry, 1st edition, New Age International Publishers, 1995.
- 3) J. B. Yadav - Advanced Practical Physical Chemistry, 15th edition, Goel Publishing House, 1997.

- 4) P. C. Kamboj – Systematic Practical Chemistry, 2nd edition, Vishal Publishing Company, 2008.

CS100/CS150	Programming Fundamentals with C	(4 – 0 – 0) 4
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- 1) **Introduction:** Logical Organization of Computer, Stored program concept. **1Hr.**
- 2) **Programming Process:** Life Cycle of a Software Project, Importance of adhering to Standards, Using Algorithms to Solve Problems, Different Patterns in Algorithms, Flow Charts. **5 Hrs.**
- 3) **Introduction to C Language:** Structure of a C program with example, Character Set, C Tokens, Data types, Arithmetic operators, Expressions – Evaluation of an expression, Assignment statements – increment and decrement operators, compound assignment operators, Nested assignments, Simple Input and output, Type conversions, Simple Macros. **6 Hrs.**
- 4) **Selective Structure:** Relational Operators, Logical operators, Bitwise Operators Conditional Statement, Nested conditional statement, Multi-way conditional statement, Constant Multi-way conditional Statement, (switch statement), break statement, go to statement, The ? operator. **4 Hrs.**
- 5) **Repetitive structure:** While, do – while, for, nested loops, loop interruption – break and continue, null statement, comma operator. **4 Hrs.**
- 6) **Functions:** To understand the need to use functions, the advantages of functions, Function definition, function call, function prototypes, storage classes, Parameter passing techniques, arrays as function arguments. **6 Hrs.**
- 7) **Arrays:** One Dimensional arrays- declaration and initialization, Two Dimensional arrays - declaration and initialization. Arrays as function arguments **6 Hrs.**
- 8) **Pointers and Strings:** Introduction to pointers, how to declare pointers, how to access values through pointers, Pointer arithmetic, the relationship between arrays and pointers. Array of pointers, Command line arguments Declaration and initialization of strings, the memory representation of strings, pointers and strings, various string functions: strlen (), strcat(), strcpy(), strcmp(), Parameter passing techniques. **12 Hrs.**
- 9) **Structures and Unions:** Basics of structures, Structures and arrays, Basics of Unions. **4 Hrs.**

Reference Books:

- 1) E Balagrusamy - Programming in ANSI C, 3rd edition, TMH
- 2) Brian W. Kernighan & Dennis M. Ritchie - The programming languages C, 2nd edition, PHI, 2004
- 3) Dromey R. G - How to solve it by computer, PHI, 2001.
- 4) Brain W. Kernighan and Rob Pike - The Practice of Programming, PEI, 2004.

Suggested Plat forms:

- 1) Visual Studios 6, Windows.
- 2) Vi editor, Linux (Any one)
- 3) Eclipse, Fedora 4

All programs should be:

- 1) Written keeping coding standards in the mind
- 2) More generic
- 3) Written with Exception handling
- 4) Tested for different test cases

Guide lines for the lab practices:

- 1) Simple programs using I/O Statements, which helps the students understand, precedence of operators, usage of special operators, and size of the data types, different ways of declaring structured data type.
- 2) Programs that targets the under standing of selective structures, IF, IF-ELSE, ELSE-IF ladder, SWITCH-CASE, GOTO, BREAK.
- 3) Programs that targets the under standing of iterative structure like WHILE, DO-WHILE, FOR, their usage in array declaration NESTED versions of each, Loop Interruption using BREAK and CONTINUE.
- 4) Programs on searching and sorting techniques
- 5) Programs on strings handling
- 6) Programs that help the to appreciate modular approach, developing functions, passing parameters by argument and by values, passing arrays as arguments,
- 7) Programs that help the students to appreciate how the program complexity reduces and becomes more readable through better data representation using structures, like representing employee record and so on.
- 8) Programs using pointers

Note: Lab exercises to be designed to develop

- 1) Code writing ability
- 2) Code reviewing Skills
- 3) Code debugging Skills

1) Introduction

- a) Instruments and their uses, Geometrical Constructions.
- b) Elementary Dimensioning: Lines, circles and arcs using Aligned system
- c) Concept of Scaled drawings: Standard scales, Making drawings to scale.
- d) Curves – Helix and Involute of a circle
- e) Drawing Conventions

- 2) **Solid Geometry:** Introduction to orthographic projection, First angle, true length, true shape, Projections (using instruments as well as free hand sketching).

- 3) **Orthographic Projections and Free hand Sketching:** Orthographic Projections (3-views using instruments as well as free hand sketching).
- 4) **Sections of Simple Machine parts** (using instruments as well as free hand sketching).
- 5) **Development of Surfaces** (using instruments).
- 6) **Pictorial Drawing**
 - a) Isometric Drawing.
 - b) Perspective projection.
- 7) **Simple Assembly Drawings and Exploded views.**
- 8) **Building plan of a residential building** (Maximum three rooms).
- 9) **Electrical circuits**
 - a) Electrical Symbols and circuits.
 - b) Electronic symbols and circuits.
- 10) **Computer aided drawing on** Fundamentals of 2-D constructions, Orthographic Projections, Sectional Orthographic projections, Drawing Isometric view, Drawing perspective projection.

Reference Books:

- 1) N. D. Bhat & V. M. Panchal - Engineering Drawing, 37th edition, Charotar Publishing House, 1996.
- 2) Yarwood A - Engineering Drawing, 1st edition, Cassel, 1983.
- 3) Engineering Drawing Practice for Schools and Colleges, 1st edition SP:46-003, Bureau of Indian Standards.
- 4) M. Chakraborti - Civil Engineering Drawing, 1st edition, Published by Author, 1993.

HU100/HU150	Functional English	AUDIT
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Introduction	Importance of Languages
Grammar	Parts of Speech, Usage of Preposition and Article, Punctuation
Tenses & Degrees of Comparison	
Collective Nouns Abstract nouns Transformation of Sentences	Usage in sentences, formation of abstract nouns from verbs, adjectives and common nouns Active Passive, Affirmative- Negative, Exclamatory- Assertive, Interrogative Assertive, Kinds of sentences
Common errors in Usage	
Concord Direct-Indirect Speech	Subject – verb agreement, common errors

Vocabulary Usage Modification of words	Homonyms, Correct Spelling, One word equivalents
Précis Writing	
Essay/Report Writing	
Letter Writing	Personal, Official, Applications
Figurative Expressions, Idioms & Phrases	Meaning & Usage in sentences
Comprehension	Of an unseen passage
Elaboration	Expansion of ideas, proverbs
Presentation	Preparation of materials and presentation - steps

Reference Books:

- 1) S. L. N. Sharma & K. Shankaranarayana - Basic Grammar, 3rd edition, Navakarnataka publications, 2002.
- 2) Leo Jones & Richard Alexander - New International Business English, updated edition, Cambridge University press, 2003.
- 3) Wren & Martin – High School English Grammar & Composition, revised by NDV Prasada Rao, S. Chand & Co., 1999.
- 4) John Seely - Oxford Guide to speaking and writing, 2000.

HU103/HU153

Environmental Science

AUDIT

- 1) **Environment:** Definition, Eco system - Balanced ecosystem, Human activities - Food, Shelter, Economic and Social Security. **3 Hrs.**
- 2) **Effects of human activities on environment:** Agriculture, Housing, Industry, Mining, and Transportation activities, Environmental Impact Assessment. Sustainable Development. **3 Hrs.**
- 3) **Natural Resources:** Water resources - Availability and Quality aspects. Water borne diseases, Water induced diseases, Fluoride problem in drinking water. Mineral Resources, Forest Wealth, Material Cycles - Carbon, Nitrogen and Sulphur Cycles. **4 Hrs.**
- 4) **Environmental Pollution and their effects:** Water pollution. Land pollution. Noise pollution. Public Health aspects. **3 Hrs.**
- 5) **Energy:** Different types of energy, Electro-magnetic radiation. Conventional and Non - Conventional sources - Hydro Electric, Fossil fuel based, Nuclear, Solar, Biomass and Bio-gas. Hydrogen as an alternative future source of Energy. **4 Hrs.**

I Semester B. E TIME TABLE

Days	8:00 to 8:50 AM	8:50 to 9:40 AM	9:40 to 10:30 AM	10:30 to 10:50 AM	10:50 to 11:40 AM	11:40 to 12:30 PM	12:30 to 1:20 PM	1:20 to 2:20 PM	2:20 to 3:10 PM	3.10 to 4:00 PM	4.00 to 4:50 PM
MON				Tea Break				Lunch Break			
TUE											
WED											
THU											
FRI											
SAT											

II Semester B. E TIME TABLE

Days	8:00 to 8:50 AM	8:50 to 9:40 AM	9:40 to 10:30 AM	10:30 to 10:50 AM	10:50 to 11:40 AM	11:40 to 12:30 PM	12:30 to 1:20 PM	1:20 to 2:20 PM	2:20 to 3:10 PM	3.10 to 4:00 PM	4.00 to 4:50 PM
MON				Tea Break				Lunch Break			
TUE											
WED											
THU											
FRI											
SAT											

Notes: