DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

CIRCULAR NO. ACAD / NP / B.E.[T.Y.] /Syllabi/187/2013

It is hereby informed to all concerned that, the syllabus prepared by the Boards of Studies, Ad-hoc Board, Committees and recommended by the Faculty of Engineering and Technology, the Hon'ble Vice-Chancellor has accepted the following **"Revised Syllabi for all Braches of T.Y. [B.E.]"** on behalf of the **Academic Council Under Section-14(7) of the Maharashtra Universities Act, 1994** as appended herewith :-

Sr. No.	Revised Syllabi
[1]	**Third Year B.E. [CIVIL ENGINEERING],**
[2]	**Third Year B.E. [MECHANICAL ENGINEERING],**
[3]	**Third Year B.E. [ELECTRICAL ENGINEERING/ EEP/EE/EEE],**
[4]	**Third Year B.E. [COMPUTER SCIENCE & ENGINEERING],**
[5]	**Third Year B.E. [INFORMATION TECHNOLOGY],**
[6]	**Third Year B.E. [ECT/EC/E & C/ IE],**
[7]	**Third Year B.E. [INSTRUMENTATION],**
[8]	**Third Year B.E. [BIOTECHNOLOGY],**
[9]	**Third Year B.E. [CHEMICAL ENGINEERING].**

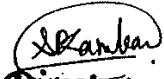This is effective from the Academic Year 2013-2014 and onwards.

All concerned are requested to note the contents of this circular and bring the notice to the students, teachers and staff for their information and necessary action.

University Campus,
Aurangabad-431 004.
REF.NO. ACAD/ NP/ T.Y.B.E/
SYLLABI / 2013/14140-69

V.C.14[7] A-07.

Date:- 15-06-2013.

Director,
Board of College and
University Development.

..2..

:: **2** ::

Copy forwarded with compliments to :-

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

2] The Director, University Network & Information Centre, UNIC, with **a request to upload the above all syllabi on University Website [www.bamu.net].**

   Copy to :-

1] The Controller of Examinations,

2] The Superintendent, [Engineering Unit],

3] The Programmer [Computer Unit-1] Examinations,

4] The Programmer [Computer Unit-2] Examinations,

5] The Superintendent, [Eligibility Unit] ,

6] The Director, [E-Suvidha Kendra], in-front of Registrar's Quarter,
    Dr. Babasaheb Ambedkar Marathwada University,

7] The Record Keeper,
    Dr. Babasaheb Ambedkar Marathwada University.

_=**=_

S*/1506131/-

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD.

Revised Syllabus of

T.E.

COMPUTER SCIENCE AND ENGINEERING

[Effective from the Academic Year 2013-14 & onwards]

THIRD YEAR DEGREE COURSE IN ENGINEERING (REVISED)

(Applicable from the Academic Year 2013- 2014)

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

ADMISSION

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

DURATION AND COURSES OF STUDY

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

    Instructions   .... 15 weeks

    Preparation holiday .... 2 weeks or 15 days

    (Includes practical exams)

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

RULES AND REGULATION OF ATTENDANCE

1. Candidates admitted to a particular course of study are required to pursue a "Regular course of study" as prescribed by the University before they are permitted to appear for the University Examination.

2. "A regular course of study" means putting in attendance not less than 75% for individual subject.

3. a) In special cases and for sufficient causes shown, the Principal of the institute may, on the specific recommendation the Head of the Department, condone the deficiency in attendance to the extent of 15 % on medical ground subject to submission of medical certificate.

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

1

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

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

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

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

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

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

SCHEME OF INSTRUCTIONS AND EXAMINATION

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

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

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

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

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

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

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

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

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

O.874

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

R.1861

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

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

R.1862

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

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

c) Candidates who secure 60% or more but less than 66% marks in the aggregate and pass the

examination will be declared to have passed the examination in first Division.

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

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

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

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

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

S.E. - 20%, T.E. – 40% B. E. – 40%

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

R.1863

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

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

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

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

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

e) The Marks obtained by a candidate for such term work as separately assessed will be carried over unless fresh term work is presented by him. A candidate whose marks are thus carried over shall

be eligible for a division provided he/she does not avail himself of exemption in any head of passing excepting term work.

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

R.1864

RULE FOR COMBINED PASSING

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

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

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

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

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

If the candidate remains absent for the class-test, his performance should be treated as 'Zero' Marks. Minimum marks required for passing in term work and practical shall be 40%. If a candidate secures less than 40% in any of the term work or fails to submit term work shall be detained in the same class.

5

RULE FOR A T K T

For securing ATKT at Third Year Engineering Course candidate should clear (pass) as per the provision of R.1864[A] in at least 13 heads of passing out of 17 heads of passing.

R.1865

GENERAL RULES OF EXAMINATION

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

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

3. A Candidate who does not present himself/herself for the examination for any reason whatsoever, excepting shortage of attendance, shall not be entitled to claim refund of the whole or part of the examination fee, for subsequent Examination(s).

4. As engineering is a full time course, no candidate shall be allowed to put in attendance for a course or appear at examinations for different degrees and different faculties at one and the same time.

5. Students who have appeared once at any examination of the course need not put in fresh attendance, if they wish to reappear at the corresponding examination, notwithstanding the fact that the College may have introduced new subject. They will, however, have to appear at the examinations according to the scheme of examination and syllabi in force

R.1866

EQUIVALENCE OF THE SUBJECTS

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

University.

Proposed Coding System of Subject/Paper

Six digit code for a subject (UG course)

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

Structure of syllabus of subject Code

No: Title: Teaching

Scheme   Examination Scheme

Theory: hours/week   Class Test: Marks

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

Objectives: 1
                    2
                    3

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

Text Books: 1

                      2

Reference Books: 1

                        2

                        3

7

4

Pattern of Question Paper:

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

For 80 marks Paper:

1. Minimum ten questions

    2. Five questions in each section

3. Question no 1 from section A and Question no 6 from section B be made compulsory and should have at least eight bits of two marks out of which five to be solved

4. Two questions from remaining questions from each section A and B be asked to solve having weightage of 15 marks

For 40 marks Paper:

1. Minimum eight questions

    2. Four questions in each section

3. Question no 1 from section A and Question no 5 from section B be made compulsory and should have at least five bits of two marks out of which three to be solved.

4. Two questions from remaining questions from each section be asked to solve having weightage of 7 marks.

0.95 G R A C E MARKS FOR PASSING IN EACH HEAD OF PASSING (THEROY / PRACTICAL / ORAL / SESSIONAL) (EXTERNAL / INTERNAL)

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

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

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

percent of the aggregate marks in that examination.

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

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

0.96 GRACE MARKS FOR GETTING HIGHER CLASS

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

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

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

0.97 GRACE MARKS FOR GETTING DISTINCTION IN THE SUBJECT ONLY.

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

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

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

0.98 CONDONATION

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

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

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

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

0.106 (A) UNFAIR MEANS COMMITTED BY THE STUDENT

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

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

3. Definition- Unless the context otherwise requires

(a) Student means and includes a person who is enrolled as such by the University/college/Institution for receiving instruction qualifying for any degree, diploma or certificate awarded by the University. It includes ex-student and student registered as candidate (examinee) for any of the Degree, Diploma or Certificate examinations.

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

   i.   Possessing unfair means material and or copying there from.
   ii. Transcribing any unauthorized material or any other use thereof.
   iii. Intimidating or using obscene language or threatening or use of violence against invigilator or person on duty for the conduct of examination or man-handling him/her or leaving the examination hall without permission of the supervisor or causing disturbances in any manner in the examination proceedings.
   iv. Unauthorized communicating with other examinees or any one else inside or out side the examination hall.
   v.   Mutual/Mass copying
   vi. Smuggling out, either blank or written or smuggling in of answer books as copying material.
   vii. Smuggling in blank or written answer book, forging and forging signature of the Jr. Supervisor therein.
   viii. Interfering with or counterfeiting of University/College Institution seal or answer books or office stationary used in the examination.

10

ix. Impersonation at the University/college/Institution examination.

x. Revealing identity in any form in the answer written or in any other part of the answer book by the student at the University or College or Institution examination.

xi. Or any other similar act/s omission/s which may be considered as unfair means by the competent authority.

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

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

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

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

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

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

11

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

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

5. During examination, examinees and other students shall be under disciplinary control of the Chief Conductors.

6. Chief Conductor/s of the examination centre shall in the case of unfair means, follow the procedure as under:-

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

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

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

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

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

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

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

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

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

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

PUNISHMENT

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

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

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

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

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

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

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

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

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

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

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

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

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

Sr. No.	Nature of Malpractices	Quantum of Punishment
1.	Possession of copying material	(Note:- This quantum of punishment Shall apply also ot the following categories of malpractices at Sr. No. 2, to Sr. No.12 in addition to the Punishment prescribed thereat)
2.	Actual copying from the copying material	Exclusion of the student from university or College or Institution examination for one additional examination.
3.	Possession of another students Answer Book	Exclusion of the student from University or College or Intuition examination for one additional examination (Both the students)
4.	Possession of another students Answer book+ actual evidence of Copying	Exclusion of the student from University or College or Institution examination for two additional examination (Both the Students)

5.	Mutual / Mass copying.	Exclusion of the student from University or College or Institution examination for two additional examinations.
6 (a)	Smuggling out or smuggling in of Answer book as copying material.	Exclusion of the student from University or College or Institution examination for two additional examinations.
(b)	Smuggling in of written answer book based on the question paper set at the examination	Exclusion of the student from University or College or Institution examination for three additional examinations
(c)	(c) Smuggling in of written answer book and forging signature of Jt, Supervisor thereon	Exclusion of the student from University or College or Institution. Examination for four additional examinations.

7.	Attempt to forge the signature of the Jr. Supervisor on the answer book or Supplement.	Exclusion of the student from the University or College or Institution examination for four additional examinations.
8	Interfering with or counterfeiting of University / College/ Institution seal or Answer books or office stationary used in the examination	Exclusion of the student from University or College or Institution examination for four additional examinations.
9.	Answer book main or supplement written outside the examination hall or any other insertion in answer book.	Exclusion of the student from University or College or Institution examination for four additional examinations.
10.	Insertion of currency notes/to bribe or attempting to bribe any of the persons/s connected with the conduct of Examination	Exclusion of the student from University or College or Institution Examination for four additional examinations. (Note:- This money shall be created to the Vice-Chancellor's Fund)
11.	Using obscene language/violence/ threat at the examination centre by a student at the University/ College / Institution Examination to Jr./ Sr. Supervisor/ Chief Conductor or Examiners.	Exclusion of the student from University or College or Institution examination for four additional Examinations.

15

12.(a)	Impersonation at the University/ College / Institution examination	Exclusion of the Student from University or College or Institution examination for five additional examinations, (Both the students if impersonator is University or College or Institute student)
(b)	Impersonation by a University/ College/ Institute student at S.S.C./ H.S.C./ any other Examinations.	Exclusion of the Student from University or College or Institution examination for five additional examinations
13.	Revealing identity in any form in the answer written or in any other part of the Answer book by the student at the University or College or Institution Examination	Annulment of the performance of the student at the University or College or Institution Examination in full.
14.	Student found having written on palms or on the Body, or on the clothes while in the	Annulment of the performance of the student at University or College or

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

Faculty of Engineering and Technology
Board of Studies in Computer Science and Engineering
Curriculum structure of T.E(Computer Science and Engineering)

Sub Code	Semester-I Subject	Contact Hrs/Week				Examination Scheme					Duration o The Theor; Examinatio
		L	T	P	Total	CT	TH	TW	PR	Total	
CSE301	Operating System	4	--	--	4	20	80	--	--	100	3 Hrs
CSE302	Software Engineering	4	--	--	4	20	80	--	--	100	3 Hrs
CSE303	Database Management System	4	--	--	4	20	80	--	--	100	3 Hrs
CSE304	Programming in Java	4	--	--	4	20	80	--	--	100	3 Hrs
CSE305	Digital Image Processing	4	--	--	4	20	80	--	--	100	3 Hrs
CSE321	LAB-I Database Management System	--	--	2	2	--	--	--	50	50	
CSE322	LAB-II Programming in Java	--	--	2	2	--	--	--	50	50	
CSE323	LAB-III Digital Image Processing	--	--	2	2	--	--	50	--	50	
CSE324	LAB-IV Software Development Lab- I (Windows.Net Framework & C# programming)	2	--	2	4	--	--	--	50	50	
BSH331	Communication Skills-II	--	--	2	2	--	--	--	50	50	
	Total	22	--	10	32	100	400	50	200	750	

Sub Code	Semester-II Subject	Contact Hrs/Week				Examination Scheme					Duration of The Theory Examinatio
		L	T	P	Total	CT	TH	TW	PR	Total	
CSE351	Advanced JAVA	4	--	--	4	20	80	--	--	100	3 Hrs
CSE352	Design & Analysis of Algorithms	4	--	--	4	20	80	--	--	100	3 Hrs
CSE353	Software Testing & Quality Assurance	4	--	--	4	20	80	--	--	100	3 Hrs
CSE354	Computer Networks- II	4	--	--	4	20	80	--	--	100	3 Hrs
CSE355	Theory of Computation	4	--	--	4	20	80	--	--	100	3 Hrs
CSE371	LAB-V Advanced JAVA	--	--	2	2	--	--	--	50	50	
CSE372	LAB-VI Design & Analysis of Algorithms	--	--	2	2	--	--	--	50	50	
CSE373	LAB-VII Software Testing & Quality Assurance	--	--	2	2	--	--	50	--	50	
CSE374	LAB-VIII Computer Networks- II	--	--	2	2	--	--	50	--	50	
CSE375	LAB-IX SDL-II (Mobile Application Development Lab)	2	--	2	4	--	--	--	50	50	
	Total	22	--	10	32	100	400	100	150	750	
	Total of Semester I & II	44	--	20	64	200	800	150	350	1500	

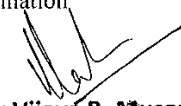L:Lecture hours per week   T:Tutorial hours per week   P:Practical hours per week   CT: Class Test

TH:University Theory Examination   TW: Term Work   PR: Practical/Oral Examination

Dr Vijaya B. Musande
Chairman Board of Studies
Computer Science & Engineering

Dr. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD
FACULTY OF ENGINEERING AND TECHNOLOGY
Third Year Engineering (CSE/IT)
Semester – I

Course Code : CSE301   **Title :- Operating Systems (OS)**

Teaching Scheme   **Examination Scheme**
Theory: 4 Hours/Week   Class Test: 20 Marks
                                             Theory Examination (Marks) :80 Marks
                                             Theory Examination (Duration) :03 Hours

Prerequisite

1. Understanding of Data Structures and Digital Electronics.
2. Knowledge of Basic Computer, Hardware Components, Microprocessor and peripheral Components.
3. Programming skills in C , C++ and JAVA. Hands on practice of UNIX OS.

Objectives:

1. Student should learn fundamentals which will help them to understand design of modern operating system.
2. To study different components of OS.
3. Students should have overview of different Types and Structure of OS.
4. Students should learn important system resources and their management policies.

CONTENTS

SECTION-A

UNIT 1-: Introduction   **(6 hrs)**
  - **Operating System Objectives and Functions:** The OS as a User/Computer Interface, OS as a resource manager.
  - **Evolution of Operating system :**Batch System, multiprogramming ,Time sharing, multitasking, distributed , Handheld Computer System, Embedded OS, Real Time, Smart Card OS
  - **Operating System Structure :** Monolithic Systems, Layered Systems, MicroKernels, Client Server Model Virtual Machines, Exokernels
  - **System Calls and Shell**

UNIT 2: Process Management   **(8 hrs)**
  - Process concept, Process states-(two state, five state), Process Description, PCB,
  - CPU scheduling- scheduling criteria, scheduling Algorithms.
  - **Thread** : Process and Threads, Thread functionality, User level and Kernel Level Threads
  - **Process Synchronization** Principle of concurrency , Race condition, Critical Sections/Regions ,Mutual Exclusion, Sleep and wakeup
  - Producer consumer problem ,Semaphore ,Monitors, Message Passing
  - Dining Philosopher Problem ,Readers and writers problem

UNIT 3 : File Systems   (6 hrs)
- **Overview:** File, File Management System, File System Architecture, File Management Functions.
- **File Organization and access**
- **File System Layout**
- **File Directories, File Sharing.**
- **Secondary Storage Management :** File Allocation ,Disk space management, File System Consistency and Performance
- **Comparison of Windows and UNIX File System**

SECTION-B

UNIT 4: Memory Management   (8 hrs)
- **Memory Management Requirements:** Relocation, Protection, Sharing, Logical Organization, Physical Organization.
- **Memory Partitioning:** Fixed, Dynamic Partitioning, Buddy Systems ,Relocation
- **Fragmentation, Swapping.**
- **Managing free Memory:** Memory management with bitmap, linked list.
- **Paging** : Basic Method ,Hardware support , Structure of page Table.
- **Segmentation:** Basic Method ,Hardware.
- **Virtual Memory:** Demand Paging, Page replacement Algorithms- optimal, FIFO, LRU, Allocation of Frames, Thrashing and Working Set Model.

UNIT 5-: Device Management   (6 hrs)
- **Principles of I/O Hardware :**I/O devices, Device Controllers,
- **Principle of I/O software**
- **I/O Software Layers**
- **Disk:** Disk hardware –Magnetic Disk, RAID, CDs, DVDs, Disk Formatting, Disk Scheduling Algorithms, Clocks.

UNIT 6-: Deadlock and case study   (6 hrs)

Deadlock
- System model, Characterization,
- Deadlock Prevention ,
- Deadlock avoidance –Bankers Algorithm for single and multiple resources,
- Deadlock detection and recovery.

Case study of Window 7
- History of Windows
- System Structure
- Windows Registry
- Process and thread management,Concurrency control,
- Memory Management and I/O Management,
- Security

Text Books:

1. Abraham Silberschatz, Peter Galvin, "Operating System Concepts", 6th edition, Addison Wesley,
2. Andrew S. Tanenbaum, "Modern Operating Systems", Prentice Hall 3rd Edition
3. Andrew S. Tanenbaum, "Operating System Design & Implementation", Second edition, Pearson Education
4. William Stallings, "Operating systems", Prentice Hall, 4th Edition.

Reference Books:

1. Deital H.M., "Operating Systems", Addison Wesley,Addison Wesley,
2. William Stallings, "Operating systems internals and Design Principles", Pearson Education. 6th Edition.
3. Milan Milenkovic,"Operating System: Concepts & design" - TMH publication
4. Dhamdhere ,"Operating System -A Concept based approach" Third edition, Mc Graw Hill Publication.

PATTERN OF QUESTION PAPER:

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

For 80 marks Paper:

1. Minimum ten questions

2. Five questions in each section

3. Question no 1 from section A and Question no 6 from section B having weightage of 10 marks each be made compulsory and should have at least eight bits of two marks out of which five to be solved.

4. Two questions from remaining questions from each section A and B be asked to solve each having weightage of 15 marks.

Dr. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD
FACULTY OF ENGINEERING AND TECHNOLOGY
Third Year Engineering (CSE/IT)
Semester – I

Course Code :CSE302   **Title :- Software Engineering(SE)**

Teaching Scheme   **Examination Scheme**
Theory: 4 Hours/Week   Class Test: 20 Marks
                                            Theory Examination (Marks) :80 Marks
                                            Theory Examination (Duration) :03 Hours

Prerequisite

1. Experience of developing Mini Projects
2. Concepts of Object Oriented Programming (Covered at SE level).

Objectives:

1. To learn & understand how to implement different phases of Software Engineering like requirement analysis, design, coding, and testing for software development
2. To learn and develop the software projects using the Object-Oriented Software Engineering
3. To learn the Web Engineering for initiating WebApps using the concepts of Software Engineering

CONTENTS

SECTION-A

UNIT 1-: Product & the Process   (06 Hrs)
- Software-characteristics
- Components & Applications
- Software Myths
- Process Framework
- Capability Maturity Model
- Software Process Models - Waterfall Model, Linear Sequential Model, Prototyping Model, Spiral Model, RAD Model, Incremental Model.

UNIT 2-: Analysis   (08 Hrs)

- Requirement Engineering Tasks
- Initiating the Requirements Engineering Process
- Eliciting Requirements-Quality Function Deployment, Building Analysis Model
- Negotiating and Validating Requirements
- Software Project Estimation
- Decomposition Techniques
- Cost estimation
- Algorithmic models- COCOMO, Putnam, & Function Point Analysis
- Guidelines for Estimating Cost
- Distribution of Manpower over Time

UNIT 3-: Design & Coding   (06 Hrs)

Unit 3.1-: Design   (04 hrs)

- Design Concepts-Abstraction, Architecture, Pattern, Modularity, Information Hiding, Functional Dependence, Refinement, Refactoring, & Design Classes
- Architectural Mapping Using Data Flow- Transform Mapping, Refining the Architectural design,
- User Interface Design Golden Rules

Unit 3.2-: Coding   (02 hrs)

- TOP-DOWN and BOTTOM-UP Structure Programming
- Information Hiding
- Programming Style and Internal Documentation
- Verification
- Metrics
- Monitoring and Control

SECTION-B

UNIT 4-: Object Oriented Software Engineering   (08 hrs)

- Foundations of the Object Model, OOP, OOD, OOA
- Object- Oriented Analysis- Classsical Approaches, Behavior Analysis, Domain Analysis, Usecase Analysis, CRC Cards & Structured Analysis
- Object Oriented Design-UML Notations including Class, State Transistion, Object, Sequence, & Module Diagram
- A Case Study

UNIT 5: Web Engineering for Web Apps   (06 hrs)

- Attributes of Web-Based Systems and Applications
- WebApp Engineering Layers
- WebApp Engineering Process
- Requirements gathering for WebApps
- Planning for Web Engineering Projects
- Web Engineering Team

UNIT 6-: Software Testing and Software Management   (06 hrs)

Unit 6.1-: Testing   (03 hrs)

- Software Testing Strategy for – Conventional & Object-Oriented Software Architecture
- Test Cases and Class Hierarchy
- Scenario Based Testing
- Testing Concepts for WebApps

Unit 6.2-: Software Management   (03hrs)

- Project Management
- Risk management
- Change Management
- Version Management
- Project Scheduling
- Agile Planning

Text Books:

1. Pressman R., "Software Engineering, A Practitioners Approach", 6th Edition, Tata McGraPublication, 2004, ISBN 007-124083 – 7
2. Pankaj Jalote , "Software Engineering ", Narosa Publiishing House.
3. Hans Van Vliet, "Software Engineering Principles and Practice", Wiley-India Publication, Third Edition
4. Grady Booch, "Object-Oriented Analysis and Design with Applications", Pearson Education, Second Edition

References:

1. Peters J. Pedrycz W., "Software Engineering : An Engineering Approach", John Wiley & Sons, 20007 ISBN 9971-5 1-309-9
2. Rajesh Prasad, Yogesh Sharma, Nihar Ranjan, Bhavna Tiple, "Software Engineering" Pearson Education
3. Ian Sommerville, "Software engineering", Pearson education, 6th edition.

PATTERN OF QUESTION PAPER:

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

For 80 marks Paper:

1. Minimum ten questions

2. Five questions in each section

3. Question no 1 from section A and Question no 6 from section B having weightage of 10 marks each be made compulsory and should have at least eight bits of two marks out of which five to be solved.

4. Two questions from remaining questions from each section A and B be asked to solve each having weightage of 15 marks.

Dr. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD
FACULTY OF ENGINEERING AND TECHNOLOGY
Third Year Engineering (CSE/IT)
Semester – I

Course Code :CSE303   Title :- Database Management System(DBMS)

Teaching Scheme   **Examination Scheme**
Theory: 4 Hours/Week   Class Test: 20 Marks
                                        Theory Examination (Marks) :80 Marks
                                        Theory Examination (Duration) :03 Hours

Prerequisite
1. Programming in C Language
2. Object Oriented Programming
3. Discrete Mathematics

Objectives:
1. To give an introduction to Database Management Systems (DBMS)
2. To give emphasis on how to organize, maintain and retrieve efficiently and effectively, information from a DBMS

CONTENTS

SECTION A
UNIT 1: Introduction to Database Management Systems   **(6 hrs)**
- Introduction,
- An Example of Database,
- Characteristics of Database Approach,
- Actors on the Scene
- Workers Behind the Scene
- Advantages of using DBMS Approach
- A Brief History of Database Applications,
- Data Models, Schemas and Instances,
- Three Schema Architecture and Data Independence,
- Centralized and Client/Server Architectures for DBMSs

UNIT 2: Entity Relationship Model   **(8 hrs)**
- Entity Types, Entity sets, Attributes, Keys,
- Relationship Types, Relationship Sets, Roles, Structural Constraints,
- Strong and Weak entity types,
- E-R diagram:
    o Naming Conventions and Design Issues,
- Relationship Types of Degree higher than two,
- The Enhanced ER Model:
    o Subclasses, Superclasses and Inheritance
    o Specialization and Generalization,
    o Union Types using Categories
    o Data Abstraction

UNIT 3: <u>The Relational Data Model and Relational Database Design</u>   <u>(6 hrs)</u>
- Relational Model Concepts,
- Relational Model Constraints and Relational Database Schemas
- Update Operations, Transactions and Dealing with Constraint Violations,
- Relational Database Design Using ER-to-Relational Mapping

<u>SECTION B</u>

UNIT 4: <u>Relational Algebra and Normalization</u>   <u>(6 hrs)</u>
- Relational Algebra
  - o Unary Relational Operations,
  - o Relational Algebra Operations from set theory,
  - o Binary Relational Operations,
  - o Additional Relational Operations,
  - o Examples of Queries in Relational Algebra,
- Normalization
  - o Functional Dependencies
  - o Normal Forms based on Primary Keys,
  - o General Definitions of Second and Third Normal Forms
  - o Boyce-Codd Normal Form
  - o Properties for Relational Decompositions:
    - ⬜Relation Decomposition and Insufficiency of Normal Forms,
    - ⬜Dependency Preservation Property of a Decomposition,
    - ⬜Non-additive (Lossless) Join Property of a Decomposition,
  - o Multi-valued Dependencies and 4NF,
  - o Join Dependencies and 5NF.

UNIT 5: <u>Structured Query Language</u>   <u>(06 Hrs)</u>
- Overview of SQL Query Language
- SQL Data Definition
- Basic Structure of SQL Queries
- Additional Basic Operations
- Set Operations
- NULL Values
- Aggregate Functions
- Nested sub-Queries
- Modification of the Database
- Join Expressions
- Views,
- Integrity Constraints
- Authorization
- Recursive Queries.

UNIT 6: <u>Transaction Management</u>   <u>(8 hrs)</u>
- Transactions
  - o Introduction to Transaction Processing

        o ACID Properties of Transactions,
        o Characterizing Schedules Based on Recoverability,
        o Characterizing Schedules Based on Serializability,
- Concurrency Control
        o Concurrency Control Based on Lock Based Protocol,
        o Deadlock Handling
        o Multiple Granularity
        o Timestamp Based Protocol,
        o Validation Based Protocol,
- Database Recovery
        o Recovery Concepts,
        o Recovery Techniques.

Text Books:

1. Ramez Elmasri and Shamkant Navathe, "Fundamentals of Database Systems" (5th Ed.), Pearson Education.
2. Abraham Silberschatz and Henry Korth, S. Sudarshan, "Database System Concepts", 6th Edition, McGraw-Hill International Ed.
3. G K Gupta, "Database Management System", 1st Edition, Tata McGraw-Hill

Reference Books:

1. Thomos Conolly, Carolyn Begg, "Database Systems, A Practical Approach to Design, Implementation, and Management", 4th Edition, Pearson Education.
2. Alexis Leon, Mathews Leon, "Database Management Systems", Leon Press, Chennai & Vikas Publishing House pvt. Ltd. New Delhi.
3. Bipin Desai, "An Introduction to Database Systems". West Publishing Company

PATTERN OF QUESTION PAPER:

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

For 80 marks Paper:

1. Minimum ten questions

2. Five questions in each section

3. Question no 1 from section A and Question no 6 from section B having weightage of 10 marks each be made compulsory and should have at least eight bits of two marks out of which five to be solved.

4. Two questions from remaining questions from each section A and B be

asked to solve each having weightage of 15 mark

Dr. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD
FACULTY OF ENGINEERING AND TECHNOLOGY
Third Year Engineering (CSE/IT)
Semester – I

Course Code :CSE304   **Title :- Programming in JAVA(PIJ)**

Teaching Scheme   **Examination Scheme**
Theory: 4 Hours/Week   Class Test: 20 Marks
                                           Theory Examination (Marks) :80 Marks
                                           Theory Examination (Duration) :03 Hours

Prerequisites
1. Basics of Programming Languages
2. Concepts of Object Oriented Programming languages.

Objectives:
The student will be able to:

1. Apply object oriented features to real time entities
2. Design and implement multithreaded programs
3. Manage errors and exceptions
4. Design and implement applet and graphics programming
5. Make use of Data streams in programs

CONTENTS

SECTION-A

UNIT 1-: Introduction   **(8 hrs)**

- Why Java? Java Virtual Machine, Byte Code, JIT Compiler.
- Accessing class members, Constructor, Methods Overloading, Static Member Inheritance, types of inheritance, Overriding Methods, Final variable and Methods, Final Classes
- Abstract method and Classes , Visibility Control Public access
- Array, Strings and Vectors Arrays, Vectors, Wrapper Classes
- Command line arguments in Java
- Study of java.lang, java.util packages

UNIT 2-: Interfaces and Packages   **(6 hrs)**

- Multiple Inheritance
- **Interfaces:** Defining interfaces, Extending interfaces, Implementing interfaces, Accessing Interface variable
- **Packages:** Putting Classes Together ,System Package, Using system Package, Naming Convention, CLASSPATH Setting for Packages, Creating Package, Accessing a package, Using a package, adding a class to a package

UNIT 3 -: Managing Errors and Exceptions, Multi Threading   **(6 hrs)**

- **Managing Errors and Exceptions:**Types of errors, Exception as objects, Exception hierarchy, User defined Exception, Use of try, catch, throw, throws In exception handling, Multiple catch statement, Using Exception for Debugging .
- **Multi Threading**: Creating Thread, Extending a thread class, Stopping and Blocking a thread, Life cycle of thread, Using thread methods, Thread exceptions, Thread priority, Synchronization, Implementing a 'Runnable' Interface

SECTION-B

UNIT 4 : Applet Programming, Event Handling and Swings   (10 hrs)

- **Applet Programming** : Local and remote applets, How applet differ from application, Preparing to write applets, Building applet code, Applet life cycle, Creating an Executable Applet, Designing a Web page, Applet tag, Adding Applet to HTML file, Running the Applet, Passing parameter to applet .
- **Event Handling:** Event Classes, Event Listeners, Adapter Classes
- Intoduction to Abstract Window Toolkit (AWT)
- **Swing:** Labels, Buttons, Canvases, Check Boxes, Choices, Text Fields And Text Areas, Lists, Panels, Windows and Frames, JApplet class, Menus And Menu Bars

UNIT 5: JDBC architecture   (4 hrs)

- JDBC drivers
- Establishing connectivity and working with connection interface
- Working with statements, Creating and executing static and dynamic SQL statements
- Working with Result Set

UNIT 6: I/O package and Network Programming   (6 hrs)

- **I/O Package:**   Input streams, Output streams, Readers & Writers. Object serialization, Deserialization, Sample programs on IO files, Filter and pipe streams
- **Network Programming:** Networking Basics, Client-Server Architecture ,Socket Overview, Networking Classes and Interfaces, Network Protocols , Developing Networking Applications in Java .

Text/Reference books:

1. Patrick Naughton-HerbertSchildt , The Complete Reference-Java 2 (Third Edition) TMH
2. E. Balagurusamy , Programming with Java   , BPB Publication
3. Deitel & Deitel: "How To Program JAVA", Pearson Education
4. Java 2 Black book by Steven Holzner
5. Kathy Sieraa & Bert Bates, Head First Java(2nd Edition),O'reilly
6. Darrel Ince &Adam Freeman ,programming the Internet with JAVA,Addison-Wesley
7. Dr. G. T. Thampy, Object Oriented Programming in Java, Dreamtech Press

- **Web Site :**
  http://www.sun.java.com (For downloading JDK for Practical)

PATTERN OF QUESTION PAPER:

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

For 80 marks Paper:

1. Minimum ten questions

2. Five questions in each section

3. Question no 1 from section A and Question no 6 from section B having weightage of 10 marks each be made compulsory and should have at least eight bits of two marks out of which five to be solved.

4. Two questions from remaining questions from each section A and B be asked to solve each having weightage of 15 mark

Dr. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD
FACULTY OF ENGINEERING AND TECHNOLOGY
Third Year Engineering (CSE)
Semester – I

Course Code :CSE305   **Title :- Digital Image Processing(DIP)**

Teaching Scheme   **Examination Scheme**
Theory: 4 Hours/Week   Class Test: 20 Marks
                                           Theory Examination (Marks) :80 Marks
                                           Theory Examination (Duration) :03 Hours

Prerequisite

The students should have knowledge of

1. Elements of Visual Perception.
2. Basic linear algebra and Fourier transforms
3. Linear signals and systems
4. The sampling theorem, quantization.
5. Probability and set theory.

Objectives:

1. Students should be able to understand digital image processing beyond the fundamental or introductory level.
2. Students should be able to choose appropriate image processing algorithms to achieve a desired result.
3. Students should be able to properly implement DIP algorithms using modern computing tools such as MATLAB, and to interpret and present the results.
4. To study fundamentals of color Image Processing.

CONTENTS

SECTION-A

UNIT 1-:Digital Image Fundamentals   **(8 hrs)**

- **Introduction:** Image, Pixel, Digital Image
- **Fundamental steps and Components of Digital Image Processing**
- **Brightness adaption and discrimination**
- **Image sensing and Acquisition**
- **Image Sampling and Quantization:** Basic concepts in Sampling and Quantization, Representing Digital images,Spatial and intensity resolution.
- **Relationship between Pixels:** Neighbors of a Pixel, Adjacency, Connectivity, Regions, and Boundaries, Distance Measures,
- **Basic Intensity transformations:** Image Negatives, Log Transformation, Power law Transformations.Piecewise-Linear Transformation Functions
- **Histogram Processing:** Definition, Histogram Equalization
- **Image Transforms:** Discrete Fourier transform(DFT), DCT, Walsh Hadamard Transform,

UNIT 2-: Image Enhancement   (6 hrs)

Spatial Domain Methods:

- **Fundamentals of Spatial Filtering-** The Mechanics of Spatial Filtering, Generating Spatial Filter Masks .
- **Noise Model**
- **Smoothing Spatial Filters :** Linear filters – Mean filters   Non-linear (Order Statistic filters) : Median, Mode, Max, Min filters,
- **Sharpening Spatial Filters:-** Foundation,Using the Second Derivative for Image Sharpening-The Laplacian.   Unsharp Masking Highboost Filtering,Using First Order Derivative for (Nonlinear) Image sharpening- The Gradient

Frequency Domain Methods:

- **Image Enhancement by Frequency Domain Methods:** Basic steps for Filtering in Frequency Domain.
- **Frequency Domain low pass (Smoothing) and high pass (Sharpening) Filters**

UNIT 3 -: Image Compression   (6 hrs)

- **Fundamentals:**
- Coding Redundancy, Spatial and temporal (Interpixel) Redundancy, Irrelevant Information(Psychovisual Redundancy)
- Measuring image Information: Image Entropy,   Fidelity Criteria, Image compression Model
- **Some Basic Compression Methods:** Lossless Compression methods-Huffman coding, LZW coding, Run-   Length Coding, Lossy Compression methods:- Block Transform Coding,
- **Image File formats:** BMP, GIF, TIFF
- **Image Compression Standards:** Binary image compression Standards, Continuous Tone Still Image Compression Standard,

SECTION-B

UNIT 4-: Image Segmentation   (8 hrs)

- **Fundamentals :** Point , Line and Edge Detection, Detection of Isolated Points, Line Detection, Edge Models, Basic Edge detection, Canny edge detector
- **Thresholding :** Foundation, Basic Global Thresholding, Optimal global thresholding Multiple Thresholds, Variable , Multivariable Thresholding,
- **Region-Based Segmentation Methods:** Region Growing, Region Splitting and Merging,
- **Segmentation Using Morphological Watersheds**

UNIT 5: Morphological Image Processing   and Color Image Processing   (6 hrs)

Morphological Image Processing

- Preliminaries ,Erosion and Dilation ,Opening and Closing
- The Hit-or-Miss Transformation
- Some Basic Morphological Algorithms: Boundary Extraction, Hole(Region) Filling, thinning

Color Image Processing:

- Color Fundamentals and Color Models
- Basics of Full-Color Image Processing
- Color Transformations

UNIT 6 -: Image Representation and Description   (6 hrs)

- Representation.
- Boundary Descriptors.
- Regional Descriptors

Text Books:

1. Rafael C Gonzalez, Richard E Woods, "Digital Image Processing", Pearson Education
2. S.Jayaraman, S Esakkirajan,T Veerakumar "Digital Image Processing", McGrawHill Publication.
3. Rafael C Gonzalez, Richard E Woods, Eddins, "Digital Image Processing using MATLAB",Pearson Education

Reference Books:

1. Anil K Jain, "Fundamentals of Digital Image Processing", PHI
2. B Chanda & Dutta Majumdar, "Digital Image Processing and Analysis", PHI

PATTERN OF QUESTION PAPER:

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

For 80 marks Paper:

1. Minimum ten questions

2. Five questions in each section

3. Question no 1 from section A and Question no 6 from section B having weightage of 10 marks each be made compulsory and should have at least eight bits of two marks out of which five to be solved.

4. Two questions from remaining questions from each section A and B be asked to solve each having weightage of 15 marks

Dr. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD
FACULTY OF ENGINEERING AND TECHNOLOGY
Third Year Engineering (CSE/IT)
Semester – I

Course Code :CSE321   **Title :- LAB-I Database Management System(DBMS)**

Teaching Scheme
Practical: 2 Hours/Week

Examination Scheme
Practical /Oral Examination:50 Marks
Practical /Oral Examination (Duration) :- 03 Hours

Design, develop and implement the following Assignments in SQL using Oracle/DB2 environment. Suggestive List of Practical Assignments:

Assignment No. : 1

Implementation of DDL commands of SQL with suitable examples
- Create Table
- Alter Table
- Drop Table

Assignment No. : 2

Implementation of DML commands of SQL with suitable examples
- Insert
- Update
- Delete

Assignment No. : 3

Implementation of different types of functions with suitable examples
- Number Functions
- Aggregate Functions
- Character Functions
- Conversion Functions
- Date Functions

Assignment No. : 4

Implementation of different types of operators in SQL
- Arithmetic Operators
- Logical Operators
- Comparison Operators
- Special Operators
- Set Operations

Assignment No. : 5
Implementation of different types of Joins

- Inner Join
- Outer Join
- Right Join
- Left Join
- Self Join
- Natural Join
- Equi Join

Assignment No. : 6

Study & Implementation of
- Group by & Having Clause
- Order by Clause
- Indexing

Assignment No. : 7

Study & Implementation of
- Sub queries
- Views

Assignment No. : 8

- Study & Implementation of different types of constraints

Assignment No. : 9

- Study and Implementation of Database Backup & Recovery Commands

- Study and Implementation of Rollback , Commit , Save point

Assignment No. : 10

- Creating Database/ Table Space
- Managing Users : - Create User, Delete User
- Managing Passwords
- Managing roles :- Grant , Revoke

Assignment No.:11

- Study & Implementation of PLSQL

Assignment No.:12

- Study & Implementation of SQL Triggers

Mini Project to carry out following activities

• Application Requirement definition for real world database. Ex.:- Hospital Management, Library Management etc.
• Define ER model as conceptual data model that views real world as entities and relationships.
• Map ER-Model into relational model.
• Apply Normalization on relational model to avoid different types of anomalies and to reduce redundancy.
• Create normalized table structures to cover entities.
• Creation of sample data records
• Sample queries using SQL.
• Documentation of Project

Practical Examination:

Practical Examination should be conducted by internal examiner for three hours under thesupervision of external examiner. External examiner should evaluate student by checking practical performance and conducting viva.

Dr. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD
FACULTY OF ENGINEERING AND TECHNOLOGY
Third Year Engineering (CSE/IT)
Semester – I

Course Code :CSE322   **Title :- LAB-II Programming In Java**

Teaching Scheme   **Examination Scheme**
Practical: 2 Hours/Week   Practical /Oral Examination :50 Marks
                                       Practical /Oral Examination (Duration) :- 03 Hours

Design, develop and implement the following programs using Java language in LINUX/Windows environment.

List of Practicals

1. Write simple programs based on basic syntactical constructs of Java like:
   a. Operators and expressions.
   b. Looping statements.
   c. Decision makings statements.
2. Write a Java Program to define a class, describe its constructor, overload the constructors and instantiate its object.
3. Write a Java Program to implement Wrapper classes and their methods.
4. Write a Java Program to implement inheritance by applying various access controls to its data members and methods. Demonstrate use of method overriding.
5. Write a program to demonstrate- use of implementing interfaces.- use of extending interfaces.
6. Write a program to implement the concept of multi threading.
7. Write a program to implement the concept of Exception Handling- using predefined exception.- by creating user defined exceptions.
8. Write a program to demonstrate database connectivity and add, delete, update and retrieve records from database using JDBC.
9. Write a program using Applet- to display a message in the Applet.- for configuring Applets by passing parameters.
10. Design a GUI interface using swing and implement event handling
11. Write program to demonstrate use of I/O streams.
12. Write a program to read and write from socket.

Practical Examination:

The Practical Examination shall consist of writing and performing an experiment and oral based on the syllabus. External Examiner shall provide list of experiments for practical examination. Practical Examination shall be conducted under the supervision of external examine.External examiner shall evaluate each performance. Successful execution of experiment is must in practical examination. Duration of practical examination is two hours.

Dr. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD
FACULTY OF ENGINEERING AND TECHNOLOGY
Third Year Engineering (CSE)
Semester – I

Course Code :CSE323   **Title :- LAB-III Digital Image Processing**

Teaching Scheme   **Examination Scheme**
Practical: 2 Hours/Week   Term Work : 50 Marks

Suggestive list of experiments:

Develop and implement the following programs using C/C++/MATLAB/ JAVA/ .NET on LINUX/Windows environment.

1. Write a Program in C to read image and display its histogram.
2. Program to enhance an image using image arithmetic and logical operations
3. Program for contrast enhancement in an image using histogram equalization
4. Program to filter an image using averaging low pass filter in spatial domain
5. Program to sharpen an image using 2-D Laplacian high pass filter in spatial domain
6. Program for detecting edges in an image using Roberts cross-gradient operator and Sobel operator
7. Program to smooth an image using low pass filter in frequency domain
8. Program to sharpen an image using high pass filter in frequency domain
9. Program for morphological image operations- erosion, dilation, opening and closing.
10. Program for removal of false edges in an image using morphological processing (thinning algorithm)
11. Program for illustrating color image processing.
12. Programs for region description and boundary representation.

TERM WORK

The term work shall consist of at least 8 experiments/ assignments based on the syllabus above and a group of 2-3 students must develop mini projects or small application.
Assessment of term work should be done as follows
   - Continuous lab assessment
   - Actual practical performance in Laboratory.
   - Oral Examination conducted (internally) at the time of submission.

Dr. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD
FACULTY OF ENGINEERING AND TECHNOLOGY
Third Year Engineering (CSE/IT)
Semester – I

Course Code :CSE324   **Title :- LAB-IV** Software Development Lab –I
(Windows .Net Framework & C# programming)

Teaching Scheme   **Examination Scheme**
Theory :- 2 Hours/Week   Practical /Oral Examination :03 Hours
Practical: 2 Hours/Week   Practical /Oral Examination :50 Marks

Prerequisite

1. Programming in C Language (Covered at FE level).

2. HTML, JavaScript (Covered at SE level).

3. PHP/Mysql (Covered at SE level).

Objectives:
Students should be able

1. To effectively use visual studio .NET.

2. To understand how to develop GUI application under .NET.

3. To get aware of the C# programming language.

CONTENTS

UNIT 1-: Introduction to the .NET Framework and C#   **(3 Hrs)**

- .NET Architecture,.NET Class Library
- Introduction To Visual Studio IDE
- Introduction to C#, Data Types ,Variables and expressions
- Control statements , functions
- Namespaces, Assembly
- Components of Assembly, Private and Shared Assembly

UNIT 2 : Object-Oriented Programming in C#   **(3 Hrs)**

- Classes, Objects, Inheritance, Polymorphism
- Abstract Classes, Interfaces ,Operator Overloading
- Delegates, Exception Handling

UNIT 3 : Windows Programming   **(4 Hrs)**

- TextBox, Label, Buttons, Mouse\Keyboard Event Handling,

- Check Boxes, RadioButtons, Panel, Tool Tips
- List Box, Combo Box, Calendar Control
- List View, Tree View, Tab Control,
- Menu, Mutiple document interface

UNIT 4 : Database Handling   (3 Hrs)

- ADO.NET, Static and Dynamic Data Binding
- ADO.NET architecture, data control, data source control
- Introduction to Language Integrated Query (LINQ) ,
- Querying a Database with LINQ
- Deployment of windows application

UNIT 5 : Web Application with ASP.NET   (3 Hrs)

- Introduction to Web Applocation,ASP.NET page lifecycle.
- Server Side Controls and Client Side Controls
- Basic Controls ,Link button ,Image Button,Image Map
- Validation Controls , AdRotator

UNIT 6 : Web Application with ASP.NET   (4 Hrs)

- Navigation Controls, Session Tracking
- Database Handling, Event Handling,
- Creating and deploying web services
- Deployment of Web Application

Text/Reference Books:

1. "C# 2010 Programming", Black Book, Dreamtech Press
2. Karli Watson, Christian Nagel, Jacob Hammer Pedersen, Jon D. Reid, Morgan Skinner - "Beginning Visual C# 2010", WILEY publication
3. Harvey and paul Deiteil Pearson   Visual C# 2010 How to program. Prentice-Hall Inc, 2011, Fourth Edition
4. Head First C#,O'reilly Microsoft Visual C# 2010 Step by Step, Microsoft Press

List of Experiments:

Part A: Console Application
1   Write a console application using control statements
2   Write a console application using classes
3   Write a console application using inheritance and abstract class
4   Write a console application using interface and exception handling
Part B:Windows Application
5   Design a form to take employee/Student information by using basic controls and display the information on the new form.(Use labels,Textbox, List,Radio button, etc)
6   Create a MDI form containing 2 menus – Current Releases & Forthcoming. Current Releases should contain 2 sub-menus – Hindi & English. Each menu opens a form containing some list of

specific films in combo-box. When you select the name of the film, its information such as star-cast, movie type(comedy/suspense/action/drama etc), production etc should be displayed in labels. It should also show its ratings in the status bar. When you click on "Forthcoming films", it should open a form containing some names of films in list-box. The list of films and information about each film should be specified in array-list.

7   For an Employee table containing EmpNo, EmpName &EmpSal, design a form that allows user insert, update and delete employee details .Use data reader to display information of each employee one by one.

Part C:Web Application

8   Create a web site of your name that takes your details as input such as name,addr, hobbies, class ,college etc . Use the validator control to validate the information also show your information.

9   . Assuming that there are 2 tables -- Cust(AccNo, HolderName, Password, CurrBal) & Transactions(TransId, AccNo, Date, Amt, TransType, ClientName) where TransType can be Debit or Credit. User should input AccNo and password. For successful login, it should show welcome message with the user's name, current balance and transactions of the current month in table. [Use datagrid to display data from table]

10   Create a web service and use it in web site.

11   Mini Project

Extra Practicals (suggestive list)

1   Create a reservation form for Mumbai-Pune journey, containing 3 text-fields to enter names, age and a text field to show final bill. It should also contain a radio buttons showing the type of journey(AC or NonAC). Charges of AC/NonAC mode of journey is fixed. But only for children(age <5) and senior citizens(age>60), the rates are half. 4% service charges are applied on final amount. Also include facilities snacks, drinking water etc.As per the passengers entered by user, display the final bill.

2   Create a MDI form containing 2 menus -- Current Releases & Forthcoming. Current Releases should contain 2 sub-menus -- Hindi & English. Each menu opens a form containing some list of specific films in combo-box. When you select the name of the film, its information such as star-cast, movie type(comedy/suspense/action/drama etc), production etc should be displayed in labels. It should also show its ratings in the status bar. When you click on "Forthcoming films", it should open a form containing some names of films in list-box. The list of films should be specified in array-list.

3   Same Practical 6- retrieve data from database

4   Design Sign Up form and validate User Name (Minimum 8 character Maximum 15 and only characters and under score), Password (Minimum 8 Characters) and Retype Password (Both should be same), Phone No(Only digits), Email-id etc.

5   Develop a web page for a real estate firm that accepts information of flats to be sold such as City, No. of Rooms, Expected Price and stores it in a database. Another web page that shows a combo box containing the list of cities. When you select a city, show the flats available in that city. [Use data binding and data source]. Show advertisements of any 3 popular products/companies.

6   Create a web service that displays – (i) NSE Index (ii) BSE Index (iii) Gold Rate, (iv) Petrol Rate (for 4 metro cities) of a particular city which is passed by user.

Mini Project (Compulsory):

Guidelines for Mini Project:
1. Allow **minimum 2 to maximum 3** students per mini project group
2. Take the topic from students in **first 15 days** from the start of the semester.
3. Follow Software Development Life Cycle Phases for mini project development.

Mini Project shall follow the steps below:
1. Requirement Analysis
2. Design
3. Coding
4. Testing
5. Deployment

The report of this Mini project is to be submitted in typed form with Spiral Binding. The report should have all the necessary diagrams, charts, printouts and source code. The work has to be done in groups.

The suggestive format of the report is as follows:

(Only one report should be submitted per group)

Title of the Mini Project:
Names & Roll Nos of the students:
Name of the guide:
Chapter 1: Introduction
Chapter 2: Requirement specifications
Chapter 3: Design and implementation
        (This chapter will include the entire design process with necessary DFDs, other diagrams, design methodologies and other design and implementation details.)
Chapter 4: Performance Analysis
        (This chapter will include Testing and evaluation process. It should also mention about the method of testing used. It will include test case analysis with results. It
should also indicate how better the designed system performs with tabular results.)
Chapter 5: Conclusions (This should include conclusion & future scope)

Practical Examination:

Practical Examination should be conducted by internal examiner for three hours under the supervision of external examiner. External examiner should evaluate student by checking practical performance and conducting viva.

Dr. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD
FACULTY OF ENGINEERING AND TECHNOLOGY
Third Year Engineering (All Branches)
Semester – I

Course code : BSH331   Title :- Communication skills-II

Teaching Scheme   **Examination Scheme**
Practical:- 4 Hours/Week   Online Exam :- 50 Marks
                                                  Duration of Paper :01 Hours

CONTENTS

UNIT-1

- Fast calculation techniques, Number system,ratio ,proportion,variations averages,
- Simple interest ,compound interest,profit,loss
- Work and time speed and distance
- Set theory and vann diagram,permutation and combination
- Probability, alphanumeric series, logical deduction, reasoning, coding and decoding and blood relation
- Data interpretation

UNIT-2

- The key components of non verbal communication i.e.eye contacts,body language,vocal tone and volume.
- Team work and team bulding, The basics of team intelligence, Divesity awareness, Gender issues
- Group discussion, unstructured group discussions and actual group discussions
- Presentation skills ,self confidence and decision making

UNIT-3

- Adapting to corporate life
- Phone etiquettes, Email etiquettes, clothing etiquettes, Dining table etiquettes
- Getting ready for an interviews, corporate dressing, writing reports and proposals, minutes writing,

Reference Books:

1. Gopal Swamy Ramesh,Mahadevan Ramesh ,"The Ace of soft skills"Pearson publication
2. Bansal Harison,"Spoken English"
3. Orientblackswan, "English for Engineers and Technologist"
4. Jerry Wiessman , "Presenting to Win" Pretince Hall publications
5. Willium sanborn Pfeiffer,T.V.S,Padamaja, "Technical Communication"
6. M.Tyra, "Magical book on Quikermaths" BSC publishing co.pvt.ltd.

Dr. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD
FACULTY OF ENGINEERING AND TECHNOLOGY
Third Year Engineering (CSE/IT)
Semester – II

Course Code :CSE351   **Title :- Advanced JAVA**

Teaching Scheme   **Examination Scheme**
Theory: 4 Hours/Week   Class Test: 20 Marks
                                                 Theory Examination (Marks) :80 Marks
                                                 Theory Examination (Duration) :03 Hours

Prerequisite

1. Object oriented Programming in C++.
2. Programming in core JAVA.
3. Basics of Web Technology.

Objectives:

1. Construct a Web Application using Servlets
2. Construct a Web application using Java Server Pages
3. To understand working of Web service
4. Construct an asynchronous enterprise application using Message-Driven Beans
5. Fetch data effectively from database using traditional SQL and Hibernate Query Language

CONTENTS

SECTION-A

UNIT 1-: Client Server Technology   **(6 hrs)**

- Introduction Single Tier Architecture, Two Tier Architecture, Multi-Tier Architecture
- HTTP protocol: Request and Response, Web Containers, Web Server.
- Overview of J2EE, J2EE Architecture, J2EE Technology.
- Introduction to Ajax, XML HTTP Request & Response.
- Introduction to RMI, RMI Architecture.

UNIT 2-: Servlets Programming.   **(08 Hrs)**

- Introduction.
- Definition, Servlet Implementation,
- Servlet configuration,
- Servlet Life cycle,
- Servlet Session,
- Context and Collaboration,
- Web Archive Files,
- Deployment Descriptor, Deployment Configuration.

UNIT 3-: Java Server Page.   **(06 Hrs)**

- JSP: Overview, lifecycle, Architecture.

- JSP Elements: Directives, Scripting, Action tags, Implicit Objects, Comments. Custom Tags
- Scope: page, request, session, JSP Exception handling.

SECTION-B

UNIT 4-: WEB Services, JAVAMAIL   (06 Hrs)

- **WEB Services:** Introduction, Web Service Technologies, and J2EE for web service, developing web services.
- **JAVAMAIL:** Mail Protocols, Components of the Javamail, Sending mail, reading mail, saving and loading mail.

UNIT 5-: HIBERNATE & STRUTS   (08 Hrs)
- **HIBERNATE:** Introduction, Hibernate Architecture, component of Hibernate, Hibernate querry Language, Hibernate O/R mapping.
- **STRUTS:** MVC Architecture, Struts framework, working of Struts, Struts controller, action class, Struts validator Framework.

UNIT -: 6 JSF and EJB   (06 Hrs)
- **Java server Faces:** Introduction, JSF architecture, components of JSF, JSF lifecycle, JSF configuration.
- **EJB:** Enterprise bean architecture, Benefits of enterprise bean, types of beans, Accessing beans, packaging beans.

Text/ Reference Books:

1. Subrahmanyam Allamaraju, Samir Tyagi, Karl Avedal, John Griffin, "Professional Java Server Programming", Wrox Publication.
2. Java Server Programming (Java EE 5) Black Book by Wiley Publication.
3. Sharanam Shah, Vaishali Shah, "Java EE 6 for Beginners", Shroff Publishers & Distributors Pvt. Ltd.
4. James Holmes, "The Complete Reference Struts", TataMcGraw Hill.

PATTERN OF QUESTION PAPER:

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

For 80 marks Paper:

1. Minimum ten questions

2. Five questions in each section

3. Question no 1 from section A and Question no 6 from section B having weightage of 10 marks each be made compulsory and should have at least eight bits of two marks out of which five to be solved.

4. Two questions from remaining questions from each section A and B be asked to solve each having weightage of 15 marks

Dr. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD
FACULTY OF ENGINEERING AND TECHNOLOGY
Third Year Engineering (CSE/IT)
Semester – II

Course Code :CSE352   **Title :- Design and Analysis of Algorithm (DAA)**

Teaching Scheme   **Examination Scheme**
Theory :- 4 Hours/week   Class Test: 20 Marks
                                             Theory Examination (Marks) : 80 Marks
                                             Theory Examination (Duration) :03 Hours

Prerequisite

1. Programming in C Language (Covered at FE level).
2. Discrete Mathematical Structure (Covered at SE level).
3. Data Structures (Covered at SE level).

Objectives:

1. The objective of this course is to build a solid foundation of the most important fundamental subject.
2. The objective of this course is to study paradigms and approaches used to analyze and design algorithms and to appreciate the impact of algorithm design in practice.
3. It also ensures that students understand how the worst-case time complexity of an algorithm is computed.
4. How asymptotic notation is used to provide a rough classification of algorithms.
5. How there are still some problems for which it is unknown whether there exist efficient algorithms, and how to design efficient algorithms

CONTENTS

SECTION-A

UNIT 1-: Fundamental concept of algorithm design & analysis.   **(8 hrs)**

- Algorithm: characteristics, specifications
- Writing Pseudo-Code
- Frequency count and its importance in analysis of an   algorithm,
- Asymptotic Notations: Time complexity & Space complexity of an algorithm, Big 'O', '□' & 'Ω' notations, Best, Worst and Average case analysis of an algorithm.
- Analysis of searching algorithms: sequential, binary search,
- Analysis of sorting methods: bubble, insertion, selection, heap sort. Analysis of each sorting technique for best, worst and average case, Concept of Internal & External sorting.

UNIT 2-: Divide and conquer algorithmic design method   **(6 hrs)**

- Divide and conquer: basic algorithm and characteristics.

- Binary Search: method and analysis of binary search for best, worst and average case for searches.
- Quick Sort, Merge Sort : method and analysis of algorithms
- Finding the largest and smallest number in a list using DnC.
- Matrix Multiplication using DnC.

UNIT 3-: Greedy Method   (6 hrs)

- The Greedy Method: basic algorithm and characteristics.
- Fractional Knapsack Problem solving using greedy method.
- Optimal merge patterns and optimal storage on tapes.
- Job sequencing with deadlines.
- Huffman Coding : greedy method
- Minimum cost spanning trees: Prim's and Kruskal's Algorithm
- Single source shortest path

SECTION-B

UNIT 4 - 4.1-: Dynamic Programming Method   (6 hrs)

- Dynamic Programming Method: basic algorithm and characteristics.
- 0/1 Knapsack Problem solving using DP method.
- Multistage graphs
- Optimal binary search trees
- Travelling salesperson problem

Unit 4.2-: Tree traversal and graph traversal techniques   (4 hrs)

- Tree traversal techniques
- Graph traversal techniques :DFS,BFS
- Connected components
- Bi-connected components & spanning trees

UNIT 5-: Backtracking Method   (4 hrs)

- Backtracking Method: basic algorithm and characteristics.
- Solving n-queens problem
- Sum of subsets problem
- Graph colouring
- Hamiltonian cycle (TSP)

UNIT 6-: Branch and Bound technique   (6 hrs)

- Branch and bound: basic algorithm and characteristics.
- Solving n-queens using branch & bound
- FIFO Branch and Bound & Least Cost Branch & Bound
- Least Cost Search
- 15-puzzle
- Solving Travelling salesperson problem using branch & bound

Text Books:

1. Ellis Horowitz, Sarataj Sahni, S.Rajasekaran, "Fundamentals of Computer Algorithms", Universities Press.
2. Udit Agarwal," Algorithms, Design and Analysis", Dhanpat Rai & Co.
3. Hari Mohan Pandey, "Design Analysis and Algorithms", An imprint of Laxmi Publications Pvt. Ltd.
4. Michael Goodrich, Roberto Tamassia. "Algorithm Design", Wiley Student Edition

Reference books:
1. Alfred V. Aho, John E. Hopcroft, Jeffrey D. Ullman , "The Design and Analysis of Computer Algorithms", Addison Wesley
2. Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein," Introduction to algorithms", MIT Press

PATTERN OF QUESTION PAPER:

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

For 80 marks Paper:

1. Minimum ten questions

2. Five questions in each section

3. Question no 1 from section A and Question no 6 from section B having weightage of 10 marks each be made compulsory and should have at least eight bits of two marks out of which five to be solved.

4. Two questions from remaining questions from each section A and B be asked to solve each having weightage of 15 marks

Dr. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD
FACULTY OF ENGINEERING AND TECHNOLOGY
Third Year Engineering (CSE/IT)
Semester – II

Course Code : CSE353 **Title :- Software Testing and Quality Assurance (STQA)**

Teaching Scheme **Examination Scheme**

Theory :- 4 Hours/week Class Test: 20 Marks

Theory Examination (Marks) : 80 Marks

Theory Examination (Duration) :03 Hours

Prerequisite

Software Engineering (Covered at TE Part I).

Objectives:
1. To identify correctness, completeness and quality of developed Software.
2. To identify the importance of software testing in Software Development Life-Cycle
3. To gain knowledge about various types of software testing.
4. To train students to create good test cases and improve the quality of software
5. To study software testing process and various automated software testing tools.
6. To develop an application and test it using any automated testing tool.

CONTENTS

SECTION-A

UNIT 1-: Introduction to Basic of software testing & Terminology   (8 hrs)
- Software Development & Software Testing Life Cycle- role and activities
- Necessity and Objectives of testing
- Quality Concepts, Quality Control, McCall's factor model
- Different Software Development Model
- Object– oriented testing, Web testing, GUI testing.
- Elements of Software quality assurance
- Quality Assurance Activities, Statistical Quality Assurance
- Software Reliability, SQA plan
- Testing Standards:-IEEE, CMM, ANSI

UNIT 2-: Levels of Testing   (6 hrs)
- Verification and Validation Model
- Techniques of Verification:-Peer Review, Walkthrough, Inspection, FTR
- Unit testing, Integration testing, Function Testing
- System testing, Installation Testing, Usability Testing, Regression testing,
- Performance testing:-Load Testing, Stress Testing, Security testing, Volume testing
- Acceptance testing:-Alpha testing, Beta testing, Gamma testing.

UNIT 3-: Testing Methods   (6 hrs)

- Black Box methods:-Equivalence partitioning, Boundary-value analysis, Error guessing, graph-based testing methods, Decision Table Testing.
- White Box methods:-Statement coverage, Decision coverage, Condition coverage, Path testing, Data flow testing.

SECTION-B

UNIT 4-: Testing Tools   (6 hrs)

- Features of test tool
- Guidelines for selecting a tool
- Tools and skills of tester
- Static testing tools
- Dynamic testing tools
- Advantages and disadvantages of using tools
- Introduction to open source testing tool.

UNIT 5-: Test Planning & Documentation   (8 hrs)

- Development plan and quality plan objectives
- Testing Strategy:-type of project, type of software.
- Test Management, Strategic Management , Operational Test Management, Managing the Test Team
- Test Plans, Test Case, Test Data,
- Risk Analysis.

UNIT 6-: Defect Management and Test Reporting   (6 hrs)

- Defect Classification
- Defect Management Process
- Defect Management Tools
- Defect life cycle, Defect Reporting
- Test reporting,Qualitative and quantitative analysis
- Fagan Inspection.

Text Books:
1. M.G.Limaye, "Software testing principles, Techniques and Tools",TMH
2. Ron Pattorn, "Software testing ", Tech Publications
3. Roger Pressman, "Software Engineering- a practitioners approach", McGraw Hill

Reference Books :
1. Dr. K.V.K.K. Prasad, "Software testing tools", Dreamtech Publications
2. Rex Black, "Software testing ", Wrox Publications
3. Boris Bezier, "Software testing techniques", Dreamtech Publications
4. William E. Perry, "Effective Methods for Software Testing" Wiley Pub.

PATTERN OF QUESTION PAPER:

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

For 80 marks Paper:

1. Minimum ten questions

2. Five questions in each section

3. Question no 1 from section A and Question no 6 from section B having weightage of 10 marks each be made compulsory and should have at least eight bits of two marks out of which five to be solved.

4. Two questions from remaining questions from each section A and B be asked to solve each having weightage of 15 marks

Dr. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD
FACULTY OF ENGINEERING AND TECHNOLOGY
Third Year Engineering (CSE/IT)
Semester – II

Course Code :CSE354   **Title :- Computer Network -II**

Teaching Scheme   **Examination Scheme**
Theory: 4 Hours/Week   Class Test: 20 Marks
                                       Theory Examination (Marks) :80 Marks
                                       Theory Examination (Duration) :03 Hours

Prerequisite:

Data Communication & Networking

Objectives:

1. To understand the Network Architecture.
2. To learn and understand various Networking Protocols & Layers.
3. To design and implement various algorithms for Protocols used in Computer Networks

CONTENTS

SECTION-A

UNIT –1: Network Layer   **(8 hours)**

- Network Layer Design Issues
- Routing Algorithms
- Internetworking,
- Routing protocols-RIP, OSPF, BGP, IGRP.

UNIT-2: Congestion Control and Quality of Service   **(8 hours)**

- Data Traffic
- Congestion, congestion control, Congestion control algorithms
- Quality of service, congestion control Techniques to improve QOS
- Integrated Services.
- Differentiated services
- Quality of Service in switched networks.

UNIT- 3: ATM Networks   **(4 hours)**
- Design goals ,problems architecture ,switching
- ATM layers Congestion control and quality of Service(QOS)
- ATM LANs, LAN architecture, LAN emulation Client server Model,
- Mixed Architecture with client server

SECTION-B

UNIT 4: Transport Layer   (8 hours)

- Process to Process Delivery
- Elements of Transport Protocols,
- User Datagram Protocols (UDP)
- Transmission Control Protocol (TCP),
- Socket Programming (TCP & UDP)
- TCP Services TCP Flow control, TCP Congestion Control,
- Stream Control Transmission Protocol (SCTP).

UNIT 5- : Application Layer   (8 hours)

- Name Space, Domain Name Space, Distribution of name space
- DNS in the Internet
- Resolution DNS messages
- Types of records, Registrars.
- Dynamic Domain name System (DDNS)
- Encapsulation, Remote Logging,
- Electronic mail
- File Transfer.

UNIT-6 : Network Management   (4 hours)

- Network Management System
- Simple network Management Protocols (SNMP)
- Real Time Transport Protocol
- Session Initiation Protocol, H.323.

Text books:

1. Forouzan B, "Data communication and Computer Networks", 4th Edition, Tata McGraw Hill

2. Andrew S. Tanenbaum,"Computer Networks", 4th Edition, Pearson Education

Reference Books:

1. William Stallings, " Data and Computer Communication", 8th Edition, Pearson Education, 2007.

2. Alberto Leon, Garcia and Indra Widjaja "Communication Networks – Fundamental Concepts and Key architectures" , 2nd Edition, Tata McGraw-Hill, 2004.

PATTERN OF QUESTION PAPER:

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

For 80 marks Paper:

1. Minimum ten questions

2. Five questions in each section

3. Question no 1 from section A and Question no 6 from section B having weightage of 10 marks each be made compulsory and should have at least eight bits of two marks out of which five to be solved.

4. Two questions from remaining questions from each section A and B be asked to solve each having weightage of 15 marks

Dr. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD
FACULTY OF ENGINEERING AND TECHNOLOGY
Third Year Engineering (CSE/IT)
Semester – II

Course Code :CSE355   **Title :- Theory of Computation (TOC)**

Teaching Scheme   **Examination Scheme**
Theory: 4 Hours/Week   Class Test: 20 Marks
                                       Theory Examination (Marks) :   80 Marks
                                       Theory Examination (Hours) :   03 Hours

Prerequisite

Discrete Mathematics (Covered at SE level).

Objectives:

1. To study abstract models of computations.
2. To create a background for design of compilers.
3. To be able to apply these models in practice for solving problems in diverse areas such as string searching, pattern matching and language design.

CONTENTS

SECTION-A

UNIT 1: Finite Automata   (8 hrs)

- Introduction to Finite Automata, Structural representation, Automata and complexity.
- Chomsky Classification of languages.
- The Central Concepts of Automata Theory, Deterministic Finite Automata, Nondeterministic Finite automata.
- FA with epsilon transitions.
- Applications of FA, FA with output: Moore and Mealy machine.

UNIT 2: Regular Expressions and Languages   (8 hrs)

- Regular Expressions.
- Finite automata and Regular Expression.
- Algebraic laws for RE, Ardens theorem.
- Pumping lemma of Regular languages, Applications of pumping lemma.
- Closure and Design properties of regular languages.
- Equivalence and minimization of Automata.
- Applications of Regular Expressions.

UNIT 3 : Context Free Grammars and Languages   (4 hrs)

- Context Free Grammars.

- Parse trees.
- Applications of CFG.
- Ambiguity in grammars and languages.

SECTION-B

UNIT 4: Pushdown Automata and LBA   (8 hrs)

- Pushdown Automata – Definition, Languages of PDA.
- Equivalence of PDA's and CFG's(Grammar to PDA and PDA's to Grammars).
- Deterministic Pushdown Automata.
- The model of linear bounded Automata, LBA and Languages.

UNIT 5: Properties of Context Free languages   (4 hrs)

- Properties of Context Free Languages: Normal Forms for CFGs .
- Pumping lemma for CFLs.
- Decision Problems involving context free languages.

UNIT 6: Turing Machine   (8 hrs)

- The Turing machine – Notation for TM, Instantaneous description for TM.
- Transition diagram for TM, The language of a TM.
- TM and halting, Programming techniques for TM.
- Extensions to the basic TM: Multitape TM, Nondeterministic TM, TM and computers, Universal TM.

Text Books:

1. John E. Hopcroft , Rajeev Motwani , Jeffrey D. Ullman, "Introduction to Automata Theory Languages, and Computation" 3rd ed. , Pearson Education, ISBN: 81-317-1429-2
2. K.L.P. Mishra, N. Chandrasekaran, "Theory of Computer Science: Automata, Languages and Computation" 3rd ed. , PHI , ISBN : 978-81-203-2968-3

Reference Books:
1. John C Martin, "Introduction to Languages and the Theory of Computation", 3rd ed., Tata McGraw Hill, ISBN: 0-07-066048-4
2. Basavaraj S. Anami, Karibasappa K. G. , " Formal Languages and Automata Theory" Wiley Publication, ISBN : 978-81-265-2010-7

PATTERN OF QUESTION PAPER:

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

For 80 marks Paper:

1. Minimum ten questions

2. Five questions in each section

3. Question no 1 from section A and Question no 6 from section B having weightage of 10 marks each be made compulsory and should have at least eight bits of two marks out of which five to be solved.

4. Two questions from remaining questions from each section A and B be asked to solve each having weightage of 15 marks

Dr. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD
FACULTY OF ENGINEERING AND TECHNOLOGY
Third Year Engineering (CSE/IT)
Semester – II

Course Code :CSE371   **Title :- LAB-V Advanced JAVA**

Teaching Scheme   **Examination Scheme**
Practical: 02 Hours/Week   Practical /Oral Examination :50 Marks
                                             Practical Exam Duration: 03 Hours

Suggestive List of Experiments:

1. Application development using RMI (develop any one)
    a. File transfer utility
    b. Simple mathematical calculator
    c. Message transfer utility
    d. Sorting Methods
    e. Database operations

2. Design a Servlet program to print request header information.

3. Design any one application using Servlet and any database (mySql / Oracle / DB2)
    a. Admission Form
    b. Question / answer section
    c. Simple mark sheet
    d. Customer Feedback System

4. Design any one application using HTML/Java Script, Ajax, Servlet and any database (mySql/ Oracle / DB2)
    a. Online test
    b. Online feedback system
    c. Online customer support system
    d. Online university exam form submission

5. Design any one application using HTML/ Java Script, Ajax, Servlet, JSP and any database (mySql / Oracle / DB2)
    a. online auction system
    b. online discussion forum
    c. online student admission application
    d. Online attendance system

6. Design application program using custom tags

7. Design a mailing system

8. Design and implement web-service

9. Develop a hibernate application to store the feedback of website visitors in database

10. Develop a simple Struts Application

11. Develop a simple Struts Application to Demonstrate E-mail Validator.

Practical Examination:

The term work shall consist of at least 6 experiments/ assignments based on the syllabus above and a group of 2-3 students must develop real time web application.

The Practical Examination shall consist of writing and performing an experiment / assignment and oral based on the syllabus as per the journal record. Duration of examination is three hours.

Practical Examination should be conducted by internal examiner for three hours under the supervision of external examiner. External examiner should evaluate student by checking practical performance and conducting viva.

Dr. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD
FACULTY OF ENGINEERING AND TECHNOLOGY
Third Year Engineering (CSE/IT)
Semester – II

Course Code :CSE372   **Title :- LAB-VI Design and Analysis Algorithm (DAA)**

Teaching Scheme
Practical: 02 Hours/Week

Examination Scheme
Practical /Oral Examination :50 Marks
Practical Exam Duration: 03 Hours

Design, develop and implement the following programs using C or C++ language in LINUX/Windows environment.

List of Experiments:

1. Program to implement Heapsort.
2. Program to implement Binary search using Divide and Conquer.
3. Program for finding the minimum and maximum using Divide and Conquer.
4. Program to implement merge sort using Divide and Conquer.
5. Program to implement Knapsack problem using Greedy method.
6. Program to implement Prims Algorithm using greedy method.
7. Program to implement Kruskal's Algorithm using Greedy method.
8. Program to implement Multistage Graphs using Dynamic Programming.
9. Program to implement All pairs Shortest Path using Dynamic Programming.
10. Program to implement Graph traversal: - Breadth First Traversal.
11. Program to implement Graph traversal: - Depth First Traversal.
12. Program to implement 8- Queens' problem using Backtracking.

Practical Examination:

Practical Examination should be conducted by internal examiner for three hours under the supervision of external examiner. External examiner should evaluate student by checking practical performance and conducting viva.

Dr. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD
FACULTY OF ENGINEERING AND TECHNOLOGY
Third Year Engineering (CSE/IT)
Semester – II

Course Code :CSE373   **Title :- LAB VII : Software Testing & Quality Assurance**

Teaching Scheme   **Examination Scheme**
Practical: 2 Hours/Week   Term Work : 50 Marks

Tools to be used: The practicals are to be conducted by using the following tools or any other tools of similar nature: Winrunner / Load runner/ Silk test/ QTP / Test Director/ SQA/IBM Rational Functional Tester /Selenium(Open Source)/ Bugzilla(defect tracking tool))

List of Experiments

1. Study of manual and automated Testing
2. Introduction to open source testing tool
3. Recording test in analog and context sensitive mode
4. Synchronizing test
5. Checking GUI Objects
6. Checking Bitmap Objects
7. Creating data driven test
8. Maintaining test script
9. Project (Creating test report in Bugzilla)
10. Developing test cases for a particular task

Term Work:

Term work shall consists of record of the experiments carried out during the course, which should include neat labeled figures and appropriate explanation for the corresponding experiment indicating what is learnt from the experiment. The term work shall consist of at least 10 experiments.

Assessment of term work should be done as follows:
* Continuous lab assessment: 40 %
* Actually performing practical in the laboratory: 40 %
* Oral Examination conducted (internally) at the time of submission: 20%

Dr. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD
FACULTY OF ENGINEERING AND TECHNOLOGY
Third Year Engineering (CSE/IT)
Semester – II

Course Code :CSE374   **Title :- LAB-V III Computer Network-II**

Teaching Scheme   **Examination Scheme**
Practical: 2 Hours/Week   Term Work : 50 Marks

List of Suggested Experiments

1. Configuration of network-Assigning IP Addresses, Subnet mask, Default Gateway, Testing Basic Connectivity.
2. Implementation of any two unicast routing algorithms.
3. Implementation of any two multicast routing algorithms.
4. Implementation of any two congestion control algorithms.
5. Implementing Client-Server program using Iterative UDP server.
6. Implementing Client-Server program using Iterative TCP server.
7. Simulation or implementation of DHCP.
8. Simulation or implementation of DNS.
9. Simulation or implementation FTP.
10. Implementation of Chatting Application using Socket Programming.
11. Design an Enterprise Network by using Cisco Packet Tracer Simulator.(Available on Internet for Free Download)
12. Analysis of Enterprise Network using Network Monitoring tool such as Wireshark/ Nagios.

Note: Practical Experiments can be performed using any of the following Languages: C / C++ / Java and any standard simulation tool.

TERM WORK

Term work shall consists of record of the experiments carried out during the course, which should include neat labeled figures and appropriate explanation for the corresponding experiment indicating what is learnt from the experiment. The term work shall consist of at least 10 experiments.

Assessment of term work should be done as follows:
* Continuous lab assessment: 40 %
* Actually performing practical in the laboratory: 40 %
* Oral Examination conducted (internally) at the time of submission: 20%

Dr. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD
FACULTY OF ENGINEERING AND TECHNOLOGY
Third Year Engineering (CSE/IT)
Semester – II

Course Code:- CSE375   Title :- LAB IX Software Development Lab - II
(Mobile Application Development for Android)
(College can offer either Android or iPhone)

Teaching Scheme   **Examination Scheme**
Lectures: 2 Hrs/Week   Practical Oral Examination : 50 Marks
Practical: 2Hrs/week   Practical Exam Duration: 03 Hours

Prerequisite

1. Experience in Object Oriented programming language
2. Knowledge in XML format

Objectives:

1. Build your own Android apps
2. Explain the differences between Android™ and other mobile development environments.
3. Understand how Android™ applications work, their life cycle, manifest, Intents, and using external resources
4. Design and develop useful Android™ applications with compelling user interfaces by using, extending, and creating your own layouts and Views and using Menus.
5. Take advantage of Android's APIs for data storage, retrieval, user preferences, files, databases, and content providers
6. Tap into location-based services, geocoder, compass sensors, and create rich map-based applications
7. Utilize the power of background services, threads, and notifications.
8. Use Android's communication APIs for SMS, telephony, network management, and internet resources (HTTP).
9. Secure, tune, package, and deploy Android™ applications

CONTENTS

UNIT -1: 1.1: Introduction to Android   **(4 hrs)**

- A little Background about mobile technologies
- Android – An Open Platform for Mobile development
- Native Android Application
- Android SDK Features
- Open Handset Alliance
- What does Android run On? Free Additional Benefits Only At WEBCOM
- Why Develop for Mobile?
- Why develop for Android?

- Android Development Framework
- Android Application Architecture
- Android Libraries

1.2: Developing for Android: Your First Android application

- Developing for Android
- First Android application
- Using Eclipse
- Running and Debugging
- Developing for mobile devices
- Android development Tools

1.3: Android Applications and Activities

- Creating Application and Activities
- Application Manifest Introduction
- Android Application Life Cycle
- Application Priority and process states
- Externalizing resources
- Android Application Class
- Android Activities

UNIT -2:2.1:UI Design for Android   (4hrs)

- Fundamental Android UI Design
- Introducing Views
- Introducing Layouts
- Creating new Views
- Draw able Resources
- Resolution and density independence
- Creating and Using menus

2.2: Intents, Broadcast Receivers, Adapters and Internet

- Introducing Intents
- Intents and Intent filters
- What are Pending Intents
- Adapters
- Using Internet Resources
- Introducing Dialogs
- Creating an Earthquake Viewer

2.3: Files, Saving States and Preferences

- Saving Application Data

- Creating and saving preferences
- Retrieving shared preferences
- Creating a settings Activity for an earthquake viewer
- Introducing the preference Activity and preference Framework
- Creating a standard preference activity
- Saving Activity State
- Saving and Loading Files
- Including static files as Resources
- File management tools

UNIT 3:3.1: Database and Content Providers   (4 hrs)

- Introducing Android Databases
- Introducing SQLite
- Cursors and content values
- Working with SQLite Database
- Creating new content Provider
- Using Content providers
- Creating and Using Earthquake content provider
- Native Android Content provider

3.2: Maps, Geocoding , Location Based Services

- Using Location based Services
- Configuring Emulator to test Location based Services
- Updating Locations in Emulator Location Providers
- Selecting a location provider
- Finding your location
- Using proximity Alerts
- Using a geo coder
- Creating Map based Activity
- Mapping Earthquakes Example

3.3: Working in background

- Introducing Services
- Using background Threads
- Let's make a toast
- Introducing Notifications
- Using Alarms

UNIT -4 4.1: Invading the Phone Top   (4 hrs)

- Home Screen widgets
- App widgets

- Earthquake widget example
- Live Folders
- Adding Search to your Application and a quick search box
- Creating Live wallpaper

4.2: Audio, Video, Using Camera

- Playing Audio and Video
- Recording Audio and Video
- Using Camera and taking pictures
- Adding new media to media store
- Raw Audio Manipulation

4.3: Telephony and SMS

- Telephony
- Reading Phone device details
- Reading Sims Details
- Incoming and outgoing call monitoring
- Tracking Service Change
- Introducing SMS and MMS
- Sending SMS and MMS
- Sending SMS messages manually
- Emergency responder

UNIT 5:   5.1: Bluetooth , Network and Wi-Fi   (2 hrs)

- Using Bluetooth
- Managing Network Connectivity
- Managing Wi-Fi

5.2: Sensors

- Using Sensors and Sensor Manager Interpreting sensor values
- Using Compass, Accelerometer and orientation services
- Controlling Device Vibration

UNIT 6: 6.1: Advanced Android Development   (2 hrs)

- Paranoid Android
- Using wake Locks
- Introducing Android Text to speech
- Using AIDL to support IPC for services
- Using Internet Services
- Building Rich User Interface

Text / Reference Books:

1. Hello, Android: Introducing Google's Mobile Development Platform Ed Burnette, Pragmatic Bookshelf (2009)
2. Professional Android Application Development, 2nd Edition Reto Meier,Wrox (2008)
3. Android Application Development All in One for Dummies, Edition I, Barry Burd
4. Teach yourself Android Application Development in 24 hours, Edition I.
5. Mobile Apps Development,Edition I

List of Experiments:

Design, develop and implement the following programs using Java, Android SDK and Eclipse.

1. Introduction to Android, what is Android?

   - Internal development Environment's for Android Development
   - Basic Building Blocks of Android.
   - Android application

2. Developing GUI in Android
   - First Android application (Hello world)
   - Using XML for UI layout
   - Basic widgets
   - Introductions to LinearLayout, RelativeLayout, and TableLayout

3. Android Development Tools
   - Java mode for writing codes
     o DDMS and log results
     o DDMS and simulating calls
     o DDMS and file upload/download
     o DDMS and screenshots
     o Making and using SD card images
   - Debug mode

4. Developing Form Widget Elements and resource
   - TextView, Button, spinner, progress bar, dialogue box
   - composite elements such as expandable listview, gridview

5. Advance GUI Development
   - Using custom layouts in list entries
   - Populating list entries
   - Recycling views
   - Using the holder pattern

6. Developing multiple features on widgets
7. Developing Menus and popup messages using different properties
8. Use the threads in Android application
9. Developing simple Application on Acitvity LifeCycle.
10. Developing parent activity and accessing child activities developing shared preference application.
11. Developing how to use SQLITE databse in applications.

12. Developing media player application and how to use music player in application.

Practical Examination:

Practical Examination should be conducted by internal examiner for three hours under the supervision of external examiner. External examiner should evaluate student by checking practical performance and conducting viva.

Dr. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD
FACULTY OF ENGINEERING AND TECHNOLOGY
Third Year Engineering (CSE/IT)
Semester – II

Course Code:- CSE375   **Title :-** LAB IX Software Development Lab - II
                              (Mobile Application Development in iPhone)
               (College can offer either Android or iPhone)

Teaching Scheme   **Examination Scheme**
Lectures: 2 Hrs/Week   Practical Oral Examination : 50 Marks
Practical: 2Hrs/week   Practical Exam Duration: 03 Hours

Prerequisite

1. C, C++ Programming
2. PL SQL

Objectives:

1. Be able to download and install the iPhone Software Development Kit
2. Be familiar with the XCode developing environment as it relates to the iPhone
3. Understand iPhone applications design philosophy
4. Understand the Cocoa touch framework
5. Understand iPhone memory management
6. Be able to program simple iPhone applications

UNIT 1-: Fundamental
        (2 hrs)

- OOPS
- Software Engineering
- SQL Queries
- Basics of Designing

UNIT 2-: Learning The Language (Objective C)   **(4 hrs)**

- Data Types
- NSInteger
- NSNumber
- Operators
- Loop
- Intro to .H and .M Files
- Inheritance
- Method Overloading

- Mutable and Immutable Strings
- Mutable and Immutable Arrays
- File Management

UNIT 3-: IPHONE OS   (2 hrs)

- Introduction to Iphone Architecture
- Essential COCOA Touch Classes
- Interface Builder
- Nib File
- COCOA and MVC Framework

UNIT 4 -: Application Development in IPHONE   (6 hrs)

- Controls and Gestures
- Controllers and Memory Management
- Using Application Delegate
- Connecting Outlets
- Managing Application Memory
- Advance Controllers Programming
- Views (Alert View, Table Views, Picker, Date and Time, Image)
- Navigation Based Application Development
- Tab Bar and Tool Bar
- Audio and Video
- Releasing Memory
- Reading PDF File in Iphone Simulator
- Animation and 2-D Graphics
- Email Sending
- XML Parsing
- JSON Parsing
- Web Services Integration

UNIT 5-: DATABASE   (2 hrs)

- SqLite
- Creating Outlets and Actions
- Parsing Data with Sqlite

UNIT 6-: Applicability To Industrial Projects   (4 hrs)

- Project Scope
- Database Dictionary
- Flow Chart
- High Level Requirements
- Location Mapping
- Deployment

- Integration to Web services
- Application Integration
- Launching other Applications

Text/ Reference Books:

1. Joe Conway, Aaron Hillegass."iPhone Programming THE BIG NERD RANCH GUIDE ", The Big Nerd Ranch Inc.
2. Gary Bennett, Mitch Fisher, Brad Less "Objective-C for Absolute Beginners",. Apress Publication.
3. Neil Smyth "iPhone iOS 5 Development Essentials",.
4. Dan Pilone,Tracey Pilone "Head First iPhone & iPad Development" 2nd Edition , Publisher O'Reilly Media.
5. Rod Strougo, Ray Wenderlich, "Learning Cocos2D: A Hands-On Guide to Building iOS Games with Cocos2D, Box2D, and Chipmunk" Publisher: Addision-Wesley Professional.

List of Experiments:

Design, develop and implement the following programs using iPhone SDK toolkit on MAC OS X.

1. Study of different tools for developing iPhone Application.
2. Introduction to Objective C and Xcode.
3. Introduction to installing Xcode and iOS 5 SDK.
4. Program to display "hello world".
5. Program to create basic controls such as UIButtons, UIToolbar, UITextField.
6. Program to create a custom View and using UIScrollView.
7. Program to implement ViewController.
8. Program to implement UITableView and UITableViewController.
9. Program to implement UINavigationController, UIImagePickerController.
10. Program to create iPhone application using SQlite.
11. Creating custom multimedia application for iPhone.

Practical Examination:

Practical Examination should be conducted by internal examiner for three hours under the supervision of external examiner. External examiner should evaluate student by checking practical performance and conducting viva.