S-30th May, 2015 AC after Circulars from Circular No.1 & onwards - 6 -

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

CIRCULAR NO.ACAD/SU/Sci./B.Sc. & M.Sc. Syll./5/2015

It is hereby notified for information to all the concerned that, on the recommendation of the Faculty of Science the Academic Council at its meeting held on 30-05-2015 has accepted the **revised semester-wise syllabi as mentioned against their names in the Faculty of Science as under** :-

Sr. No.	Name of the Subject	Semester
[1]	B.Sc. Computer Science Degree Course	III & IV
[2]	B.Sc. Information Technology Degree Course	III & IV
[3]	B.C.A. Science Degree Course	III & IV
[4]	B.Sc. Animation Degree Course	III & IV
[5]	B.Sc. Bioinformatics Degree Course	III & IV
[6]	B.Sc. Computer Science [Optional]	III & IV
[7]	B.Sc. Information Technology [Optional]	III & IV
[8]	B.Sc. Computer Applications [Optional]	III & IV
[9]	B.Sc. Computer Maintenance [Optional]	III & IV
[10]	B.Sc. Environmental Science [Optional]	V & VI
[11]	B.Sc. Bio-Chemistry [Optional]	V & VI
[12]	B.Sc. Forensic Science Degree Course	V & VI
[13]	B.Sc. Industrial Chemistry [Optional]	V & VI
[14]	B.Sc. Electronics [Optional]	V & VI
[15]	B.Sc. Zoology [Optional]	V & VI
[16]	B.Sc. Microbiology [Optional]	V & VI
[17]	B.Sc. Instrumentation Practice [Optional]	V & VI
[18]	B.Sc. Statistics [Optional]	V & VI
[19]	B.A. Statistics [Optional]	V & VI
[20]	B.A. / B.Sc. Mathematics [Optional]	V & VI
[21]	B.Sc. Home Science Degree Course	V & VI
[22]	B.Sc. Textile Interior Decoration Degree Course	V & VI
[23]	B.Sc. Fishery Science [Optional]	V & VI
[24]	B.Sc. Dairy Science & Technology [Optional]	V & VI
[25]	B.Sc. Botany [Optional]	V & VI
[26]	B.Sc. Physics [Optional]	V & VI
[27]	M.Sc. Computer Science	III & IV
[28]	M.Sc. I.T.	III & IV

This is effective from the Academic Year 2015-16 & onwards as appended herewith.

All concerned are requested to note the contents of the 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/SU/SCI./
2015/3761-4160
Date:- 16-06-2015.

★
★
★
★
★
******

Director,
Board of College and University Development.

..2..

Copy forwarded with compliments to:-

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

Copy to :-

1] The Controller of Examinations,
2] The Director, [E-Suvidha Kendra], in-front of Registrar's Quarter,
Dr. Babasaheb Ambedkar Marathwada University,
3] The Superintendent, [B.Sc. Unit],
4] The Superintendent, [M.Sc. Unit],
5] The Programmer [Computer Unit-1] Examinations,
6] The Programmer [Computer Unit-2] Examinations,
7] The Record Keeper.

-=**=-

S*/-160615/-

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

Syllabus of B. A. /B. Sc. Third year (Mathematics) (optional) With Effect from June – 2015

DR . BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,
AURANGABAD
BOARD OF STUDIES IN MATHEMATICS
REVISED SYLLABUS FOR THIRD YEAR B.Sc. (MATHEMATICS)
(With Effect From June -2015)

Semester V

Compulsory Papers:

Paper – MAT 501: Real Analysis – I
Paper – MAT 502: Abstract Algebra – I

Optional Papers (Any One):

Paper – MAT 503: Mathematical Statistics – I
Paper – MAT 504: Ordinary Differential Equations – I
Paper – MAT 505: Programming in C – I

Semester VI

Compulsory Papers:

Paper – MAT 601: Real Analysis – II
Paper – MAT 602: Abstract Algebra – II

Optional Papers (Any One):

Paper – MAT 603: Mathematical Statistics – II
Paper – MAT 604: Ordinary Differential Equations – II
Paper – MAT 605: Programming in C – II

REVISED SYLLABUS FOR THIRD YEAR B.A. (MATHEMATICS)

(With Effect From June -2015)

Semester V

Main Papers:

Paper – MAT 501: Real Analysis – I
Paper – MAT 502: Abstract Algebra – I

Subsidiary Papers:

Paper – MAT 503: Mathematical Statistics – I
Paper – MAT 504: Ordinary Differential Equations – I

Semester VI

Main Papers:

Paper – MAT 601: Real Analysis – II
Paper – MAT 602: Abstract Algebra – II

Subsidiary Papers:

Paper – MAT 603: Mathematical Statistics – II
Paper – MAT 604: Ordinary Differential Equations – II

B.Sc. (Third Year)(Mathematics)(Fifth Semester)

Paper – MAT 501: Real Analysis – I

Periods : 60
Marks : 50

1) Prerequisite:
Sets and elements, Operations on sets.

2) Functions:
Functions, Real-valued functions, Equivalence, Countability, Real numbers, Least upper bounds. [1]

3) Sequences of Real Numbers:
Definition of sequence and subsequence, Limit of a sequence, Convergent sequences, Divergent sequences, Bounded sequences, Monotone sequences, Operations on convergent sequences, Operations on divergent sequences, Limit superior and limit inferior, Cauchy sequences. [1]

4) Series of Real Numbers:
Convergence and divergence, Series with non-negative terms, Alternating series, Conditional convergence and convergence, Test for absolute convergence. [1]

5) Jacobians:
Definitions, Case of function of functions, Jacobian of implicit functions, Necessary and sufficient condition for a Jacobian to vanish. [2]

Recommended books:

1] R. R. Goldberg : ***Methods of Real Analysis*** : Oxford and IBH Publishing Co. Pvt. Ltd. NewDelhi.

Scope:

Chapter 1 : 1.3(A, B, C, D, E, F, G, H, I), 1.4(A, B, C, D, E), 1.5(A, B, C, D, E, F, G, H, I), 1.6(A, B, C, D, E), 1.7(A, B, C, D, E).

Chapter 2 : 2.1(A, B, C, D), 2.2(A, B), 2.3(A, B, C, D), 2.4(A, B, C), 2.5(A, B), 2.6(A, B, C, D, E), 2.7(A, B, C, D, E, F, G, H, I, J), 2.8(A, B, C, D), 2.9(A, B, C, D, E, F, G, I, J, K, L, M), 2.10(A, B, C, D, E), 2.12(A, B).

Chapter 3 : 3.1(A, B, C, D), 3.2(A, B, C, D, E), 3.3(A, B), 2.4(A, B, C), 3.6 (A, B, C, D, E, F, G, H, I,)

2] J. N. Sharma and A. R. Vashistha : ***Real Analysis*** : Krishna Prakashan Media (P), Ltd. Meerut.

Scope:

Chapter 13 : Articles 1, 2, 3, 4, 5, 6, 7

References:

1) D. Somasundaram and B. Choudhary : ***A first Course in Mathematical Analysis*** : Narosa Publishing House, New Delhi.
2) Hari Kishan ***: Real Analysis*** : Pragati Prakashan, Meerut.
3) S. K. Mittal and S. K. Pundir : ***Real Analysis*** : Pragati Prakashan, Meerut.

Note : Questions on prerequisite should not be asked.

B.Sc. (Third Year)(Mathematics)(Fifth Semester)

Paper – MAT 502: Abstract Algebra – I

Periods : 60
Marks : 50

1) Prerequisite:
Sets, Functions, Integers.

2) Group Theory:
Definition of a group, Some examples of groups, Some preliminary lemmas Subgroups, A counting Principle, Normal subgroups and quotient groups Homomrphism, Automorphism. [1]

3) Ring Theory:
Definition and examples of rings Some special classes of ring, Ideals and quotient rings More ideals and quotient rings, Polynomial ring. [1]

Recommended books:
1] I. N. Herstein : ***Topics in Algebra*** : Willey Eastern Pvt. Ltd., NewDelhi.

Scope:
Chapter 2 : 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7(Cauchy's Theorem for Abelian Groups and Cauchy's Theorem for Abelian Groups are without proof), 2.8.
Chapter 3 : 3.1, 3.2, 3.3, 3.5, 3.9(Omit Theorem 3.9.1)

References:
1) A. R. Vasishtha : ***Modern Algebra*** : Krishna Prakashan Media Pvt. Ltd. Meerut.
2) M. L. Khanna : ***Modern Algebra*** : Jai Prakash Nath and Co. Meerut.
3) Vijay K. Khanna and S. K. Bhambri : ***A course in Abstract Algebra*** : Vikas Publishing House Pvt.Ltd. New Delhi.
4) Surjeet Singh and Qazi Zameeruddin : ***Modern Algebra*** : Vikas Publishing House Pvt. Ltd. New Delhi.
5) Bhupendra Singh : ***Advanced Abstract Algebra*** : Pragati Prakashan Meerut.
6) Shanti Narayan and Sat Pal : ***A Text book of Modern Abstract Algebra*** : S. Chand and Co. Ltd. New Delhi.
7) I. N. Herstein : Abstract Algebra (Third Edition): Prentice-Hall, Upper Saddle River, New Jersey 07458.
8) Joseph A. Gallian : Contemporary Abstract Algebra (Seventh Edition) : Brooks/Cole 10 Davis Drive Belmont, CA 94002 – 3098 USA.
9) Goyal J. K. and K. P. Gupta : ***Advanced course in Abstract Algebra*** : Pragati Prakashan, Meerut.
10) J. N. Kapoor and K. R. Kalra : ***Modern Algebra*** **(Volume I and II)**: R. Chand and Co. New Delhi.
11) S. Nanda : ***Topics in Algebra***: Allied publishers Pvt. Ltd., New Delhi.

Note : Questions on prerequisite should not be asked.

Optional Papers (any ONE)

B.Sc. (Third Year)(Mathematics)(Fifth Semester)

Paper – MAT 503: Mathematical Statistics – I

Periods : 60
Marks : 50

1) Frequency Distribution and Measures of Central Tendency:
Frequency distribution, Continuous frequency distribution, Graphical representation of a frequency distribution, Histograms, Frequency Polygon, Measures of Central Tendency, Arithmetic mean, Properties of arithmetic mean, merits and demerits of Arithmetic mean, Weighted mean, Median, Merits and demerits of Median, Mode Merits and demerits of mode, Geometric mean, Merits and demerits of Geometric mean, Harmonic mean, partitions [1]

2) Measures of Dispersion Skewness and Kurtosis:
Dispersion, Characteristic for an ideal measure of dispersion, Measures of dispersion, Range, Quartile deviation, Mean deviation, Standard deviation and root mean square deviation, Relation between and s, Different formulae for calculating variance, Variance of the combined series, Coefficient of dispersion, Coefficient of variations, Moments, Relation between moments about mean in terms of moments about any point and vice versa, Effect of change of Origin and scale on moments, Pearson's and coefficients, Skewness and kurtosis. [1]

3) Theory of Probability:
Introduction, Definition of various terms, Mathematical or Classical Probability, Statistical Probability, Axiomatic approach to probability, Random experiments, Sample space, Events, Some illustrations, Algebra of events, Probability – Mathematical Notion, Probability function, Theorems on Probability of events, Law of addition of Probability, Multiplication law of probability and conditional probability, Independent events, Pairwise independent events, Conditions for mutual independence of n events. [1]

4) Random Variables and Distribution Functions:
Random Variable, Distribution function, Properties of distribution function, Discrete random variables, Probability mass function, Discrete distribution function, Continuous random variable, Probability density function, Various measures of Central tendency, Continuous distribution function. [1]

Recommended Book:
1] S. C. Gupta and V. K. Kapoor : ***Fundamentals of Mathematical Statistics*** (Nineth Edition) : Sultan Chand and Sons, New Delhi.

Scope:
Ch – 2: 2.1, 2.1.1, 2.2, 2.2.1, 2.2.2, 2.3, 2.4, 2.5, 2.5.1, 2.5.1, 2.5.2, 2.5.3, 2.6, 2.6.1, 2.7, 2.7.1, 2.8, 2.8.1, 2.9, 2.9.1, 2.11.
Ch – 3: 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.7.1, 3.7.2, 3.7.3, 2.8, 2.8.1, 3.9, 3.9.1, 3.9.2, 3.10, 3.13, 3,14.
Ch – 4: 4.1, 4.3, 4.3.1, 4.3.2, 4.5, 4.5.1, 4.5.1, 4.5.2, 4.5.3, 4.5.4, 4.6, 4.6.1(omit Thm 4.1), 4.6.2, 4.7, 4.7.2, 4.7.3, 4.7.4, 4.7.5
Ch – 5: 5.1, 5.2, 5.2.1, 5.3, 5.3.1, 5.3.2, 5.4, 5.4.1, 5.4.2, 5.4.3

B.Sc. (Third Year)(Mathematics)(Fifth Semester)

Paper – MAT 504: Ordinary Differential Equations – I

Periods : 60
Marks : 50

Prerequisite: Complex numbers

1) Preliminaries:
Introduction, Functions, Polynomials, Complex series and the exponential function, Determinants. [1]

2) Linear Equations of First Order:
Introduction, Differential Equations, Problems associated with differential equations, Linear equations of the first order, The equation $y' + ay = 0$, The equation $y' + ay = b(x)$, The general linear equation of the first order. [1]

3) Linear Equations with Constant Coefficients:
Introduction, The second order homogeneous equation, Initial value problems for second order equations, Linear dependence and independence, A formula for Wronskian, The non-homogeneous equation of order two. [1]

Recommended Book:

1] Earl A. Coddington : ***An Introduction to Ordinary Differential Equations*** : Prentice Hall of India Learning Private Limited, New Delhi-110001, (2009)

Scope:
Chapter 0. - Article 1, 3, 4, 5, 6
Chapter 1. - Article 1, 2, 3, 4, 5, 6, 7
Chapter 2. - Article 1, 2, 3, 4, 5, 6

Reference Books:

1) E.A.Coddington and Levinson Norman : ***Theory of Ordinary Differential Equations*** : McGraw Hill New York, (1955)
2) A.H.Siddiqi and P. Manchanda : ***A First Course in Differential Equations with Applications*** : Macmillan India Ltd., (2006)
3) D.G.Zill and M.R.Cullen : ***Advanced Engineering Mathematics*** (Second Edition) : Jones and Bartlett Publishers, (2000)

B.Sc. (Third Year)(Mathematics)(Fifth Semester)

Paper – MAT 505: Programming in C – I

Periods : 45
Marks : 40

1) Overview of C :
Introduction, Importance of c, Sample C Programs, Basic structure of C programs, programming style, Executing a C program. [1]

2) Constants, Variables and Data Types :
Introduction, Character set, C tokens, Keywords and identifies, Constants, variables, Data types, Declaration of Variables, Storage class Assigning values to variables, Defining symbolic constants, case studies. [1]

3) Operators and Expressions:
Introduction, Arithmetic of operators , Relational operators, Logical operators, Assignment operators, Increment and decrement operators, Conditional operators, Bitwise operators, Special operators, Arithmetic expression, Evaluation of expressions, Precedence of arithmetic operators, Some computational problems, Type conversions in expression, Operators precedence and Associativity, mathematical functions. [1]

4) Managing Input and Output Operators:
Introduction, Reading a character, Writing a character, Formatted input, Formatted output. [1]

Recommended Book :

1] E. Balagurusamy : ***Programming in ANSI C*** (Fourth Edition) :Tata McGraw Hill

Scope:
Ch.1 :1.1,1.2, 1.3,1.4,1.5,1.6, 1.8 to 1.10
Ch.2 : 2.1,2.2,2.3,2.4,2.5,2.6,2.7,2.8,2.9,2.10, 2.11
Ch.3 : 3.1 to 3.16
Ch.4 : 4.1 to 4.5

References:
1) Y.P. Kanetkar : ***Let us C*** : BPB Publication
2) Gottfried : ***Programming in C*** : Schaum's Series
3) Moolish Kooper : *Spirit of "C"*
4) D. Ravichandran : ***Programming in C*** : New-Age International Publisher
5) J.B.Dixit :***Mastering C Programs***
6) Pradip D Y and Manas Ghosh : ***Fundamentals of Computing and Programming in C***
7) V.Rajaraman : ***Computer Programming in C*** : PHI Pvt Ltd, New Delhi(2005)

B.Sc. (Third Year)(Mathematics)(Fifth Semester)

Practical Paper – MAT-PR- 505(Based on MAT 505)

Periods : 15
Marks : 10

List of Experiments/Programs:

1. Program to find Maximum between two numbers using conditional operator.
2. Program to convert Temperature in Farad into Celsius. (C=0.5(F-32))
3. Program to find addition of two numbers.
4. Program to find square root of a number using *sqrt()* function.
5. Program to find m^n using *pow()* function.
6. Program to find simple interest (Si=(p+n+r)/100).
7. Program to find Area of Circle ($A=\pi r^2$)
8. Program to find Circumference of Rectangle (C= 2(length+breadth))
9. Program to find root of Quadratic Equation $\frac{-b\pm\sqrt{b^2-4ac}}{2a}$
10. Program to find Area of Rectangle (A = w x h)
11. Program to find circumference of circle
12. Program to find Area of Triangle. (A= ½ x b x h)
13. Program to find Area of Square (A = a2)
14. Program to find Area of Sphere (A = 4 π r2√)□
15. Program to Find Area of Cone (A= π r (r + 2+r2)

Note: University Practical Examination will be conducted annually.

B.Sc. (Third Year)(Mathematics)(Sixth Semester)
Paper – MAT 601: Real Analysis – II

Periods : 60
Marks : 50

1) Limits in Metric Spaces:
Metric spaces, Limits in metric spaces. [1]

2) Continuous Functions on Metric Spaces:
Functions continuous on metric spaces, open sets, Closed sets. [1]

3) Connectedness, Completeness and Compactness:
More about open sets, connected sets, bounded sets and totally bounded sets, Complete metric spaces, Compact metric spaces, Continuous functions on compact metric spaces, Uniform continuity. [1]

4) Calculus:
Sets of measure zero, Definition of Riemann Integral, Existence of Riemann Integral, Fundamental Theorem of Calculus. [1]

5) Fourier Series:
Introduction. [2]

Recommended books:

1] R. R. Goldberg : ***Methods of Real Analysis*** : Oxford and IBH Publishing Co. Pvt. Ltd. NewDelhi.

Scope:

Chapter 4 : 4.2(A, B, C), 4.3(A, C, D).

Chapter 5 : 5.3(A, B, C, D, E, F, G, H), 5.4(A, B, C, D, E, F, G), 5.5(A, B, C, D, E, F, G, H, I, J, L, M).

Chapter 6 : 6.1(A, B), 6.2(A, B), 6.3(A, B, C, D, E), 6.4(A, B, C, D, E, F), 6.5 (A, B, C, D, E), 6.6(A, B, C, D), 6.8(A, B, C, D, E)

Chapter 7 : 7.1(A, B, C, D), 7.2(A, B, C, D, E, F, G), 7.3(Theorem and Lemma are without Proof), 7.4(A, B, C, D, E, F), 7.8(A, B, C, D, E, F, G)

2] D. Somasundaram and B. Choudhary : ***A first Course in Mathematical Analysis*** : Narosa Publishing House, New Delhi.

Scope:

Chapter 10 : Articles 10.1

References:

1) J. N. Sharma and A. R. Vashistha : ***Real Analysis*** : Krishna Prakashan Media (P), Ltd. Meerut.
2) Hari Kishan ***: Real Analysis*** : Pragati Prakashan, Meerut.
3) S. K. Mittal and S. K. Pundir : ***Real Analysis*** : Pragati Prakashan, Meerut.

B.Sc. (Third Year)(Mathematics)(Sixth Semester)

Paper – MAT 602: Abstract Algebra – II

Periods : 60
Marks : 50

1) Vector Spaces and Modules:

Elementary basic concepts, Linear independence and bases, Dual Spaces, Inner product spaces, Modules. [1]

Recommended books:

1] I. N. Herstein : ***Topics in Algebra*** : Willey Eastern Pvt. Ltd., NewDelhi.

Scope:

Chapter 4 : 4.1, 4.2, 4.3, 4.4, 4.5

References:

1) A. R. Vasishtha : ***Modern Algebra*** : Krishna Prakashan Media Pvt. Ltd. Meerut.
2) M. L. Khanna : ***Modern Algebra*** : Jai Prakash Nath and Co. Meerut.
3) Vijay K. Khanna and S. K. Bhambri : ***A course in Abstract Algebra*** : Vikas Publishing House Pvt.Ltd. New Delhi.
4) Surjeet Singh and Qazi Zameeruddin : ***Modern Algebra*** : Vikas Publishing House Pvt. Ltd. New Delhi.
5) Bhupendra Singh : ***Advanced Abstract Algebra*** : Pragati Prakashan Meerut.
6) Shanti Narayan and Sat Pal : ***A Text book of Modern Abstract Algebra*** : S. Chand and Co. Ltd. New Delhi.
7) P. N. Chatterjjee : ***Linear Algebra*** : Prentice-Hall, Upper Saddle River, New Jersey 07458.
8) Joseph A. Gallian : ***Contemporary Abstract Algebra*** (Seventh Edition) : Brooks/Cole 10 Davis Drive Belmont, CA 94002 – 3098 USA.
9) Goyal J. K. and K. P. Gupta : ***Advanced course in Abstract Algebra*** : Pragati Prakashan, Meerut.
10) J. N. Kapoor and K. R. Kalra : ***Modern Algebra*** **(Volume I and II)**: R. Chand and Co. New Delhi.
11) S. Nanda : ***Topics in Algebra***: Allied publishers Pvt. Ltd., New Delhi.

Optional Papers (any ONE)

B.Sc. (Third Year)(Mathematics)(Sixth Semester)

Paper – MAT 603: Mathematical Statistics – II

Periods : 60
Marks : 50

1) Mathematical Expectation, Generating Functions:
Mathematical expectation, Expectation of a function of a random variable, Addition theorem of expectation, Multiplication theorem of expectation, Expectation of linear combination of random variables, Covariance, Correlation coefficient, Variance of a linear combination of random variables. [1]

2) Theoretical Discrete Probability Distributions:
Binomial distribution, moments, Recurrence relation for the moments of Binomial distribution, Moment generating function of Binomial distribution, Additive property of Binomial distribution, Cumulants of Binomial distribution, Recurrence relation for cumulants of Binomial distribution, Poission distribution, Moments of Poission distribution, Recurrence relation for moments of Poission distribution, Moment generating function of Poission distribution, cumulants of Poission distribution, Additive property of independent Poission variates, Geometric didtribution, Lack of memory, Moment of geometric distribution, Moment generating function of Geometric distribution. [1]

3) Theoretical Continuous Distributions:
Rectangular or Uniform distribution, Moments of rectangular distribution, Moment generating distribution of rectangular distribution, Normal distribution, Normal distribution as a limiting case of a binomial distribution, Mode of Normal distribution, Median of Normal distribution, moment generating function of Normal distribution, Cumulant generating function of Normal distribution, moments of Normal distribution, Gamma distribution, Moment generating function of Gamma distribution, Cumulant generating function of Gamma distribution, additive property of Gamma distribution, Exponential distribution, Moment generating function of exponential distribution. [1]

4) Correlation and Regression:
Bivariate distribution, Correlation, Scatter diagram, Karl Pearson's coefficient of correlation, limits for correlation coefficient, Assumptions underlying Karl Pearson's correlation, Regression, Lines of regression, regression curves, Properties of regression coefficients, Angle between two lines of regression. [1]

Recommended Book:
1] S. C. Gupta and V. K. Kapoor : ***Fundamentals of Mathematical Statistics*** (Ninth Edition) : Sultan Chand and Sons, New Delhi.

Scope:
Ch – 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.6.1, 6.7
Ch – 7: 7.2, 7.2.1, 7.2.2, 7.2.6, 7.2.7, 7.2.9, 7.2.10, 7.3, 7.3.2, 7.3.4, 7.3.5, 7.3.7, 7.3.8, 7.5, 7.5.1, 7.5.2, 7.5.2
Ch – 8: 8.1, 8.1.1, 8.1.2, 8.2, 8.2.1, 8.2.3, 8.2.4, 8.2.5, 8.2.6, 8.2.7, 8.3, 8.3.1, 8.3.2, 8.3.3, 8.6, 8.6.1
Ch – 10: 10.1, 10.2, 10.3, 10.3.1, 10.3.2, 10.7, 10.7.1, 10.7.2, 10.7.3, 10.7.4, 10.7.5

B.Sc. (Third Year)(Mathematics)(Sixth Semester)

Paper – MAT 604: Ordinary Differential Equations – II

Periods : 60
Marks : 50

1) Linear Equations with Variable Coefficients:
Introduction, Initial value problems for the homogeneous equation, Solution of homogeneous equation, The Wronskian and linear independence, Reduction of the order of a homogeneous equation, The nonhomogeneous equation, Homogeneous equation with analytic coefficients, The Legendre equation. [1]

2) Linear Equations with Regular Singular Points:
Introduction, The Euler equation, Second order equations with regular singular points- an example, Second order equations with regular singular points- the general case, The Bessel equation. [1]

Recommended Book:
1] Earl A. Coddington : ***An Introduction to Ordinary Differential Equations*** : Prentice India Learning Private Limited, New Delhi-110001, (2009)

Scope:

Chapter 3.- Article 1,2,3,4,5,6,7,8
Chapter 4.- Article 1,2, 3, 4, 7

Reference Books:

1) E. A. Coddington and Levinson Norman : ***Theory of Ordinary Differential Equations*** : McGraw Hill New York, (1955)
2) A.H.Siddiqi and P. Manchanda : ***A First Course in Differential Equations with Applications*** : Macmillan India Ltd., (2006)
3) D.G.Zill and M.R.Cullen : ***Advanced Engineering Mathematics*** (Second Edition) : Jones and Bartlett Publishers, (2000)

13

B.Sc. (Third Year)(Mathematics)(Sixth Semester)

Paper – MAT 605: Programming in C – II

Periods : 45
Marks : 40

1) Decision Making and Branching:
Introduction, Decision making with if statement, Simple if statement, The ifelse statement, Nesting of ifelse statement, The elseif ladder, The switch statement, The ?: Operator, The goto statement [1]

2) Decision Making and Looping:
Introduction, The while statement, The do statement, The for statement, Jumps in loops [1]

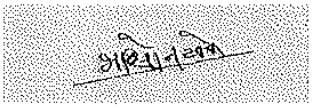
3) Arrays:
Introduction, One dimensional arrays, Declaration, Initialization, Two dimensional arrays, Initializing two-dimensional arrays, Multidimensional arrays. [1]

Recommended Book :
1] E. Balagurusamy **:** ***Programming in ANSI C*** (Second Edition) : Tata McGraw Hill

Scope:
Ch – 5 : 5.1 to 5.9
Ch – 6 : 6.1 to 6.5
Ch – 7 : 7.1 to 7.7

References:
1) Y.P. Kanetkar : ***Let us C*** : BPB Publication
2) Gottfried : ***Programming in C*** : Schaum's Series
3) Moolish Kooper : *Spirit of "C"*
4) D. Ravichandran : ***Programming in C*** : New-Age International Publisher
5) J.B.Dixit :***Mastering C Programs***
6) Pradip D Y and Manas Ghosh : ***Fundamentals of Computing and Programming in C***
7) V.Rajaraman : ***Computer Programming in C*** : PHI Pvt Ltd, New Delhi(2005)

Note: (i) There should be annual practical based on Paper : MAT 505 and MAT 605 of 20 Marks in Mar/Apr Practical Examination
(ii) There should be separate passing for Theory and Practical.



Dr. B. R. Sontakke
(Chairman, Board of Studies in Mathematics)

B.Sc. (Third Year)(Mathematics)(Sixth Semester)

Practical Paper – MAT-PR 605(Based on MAT 605)

Periods : 15
Marks : 10

List o f Experiments/Programs:

1. Program to find minimum between two number using if.
2. Program to Calculate factorial of a number.
3. Program to check given number is prime or not.
4. Program to check given number is Armstrong or not. ($153 = 1^3+5^3+3^3$)
5. Program to find n terms of Fibonacci Series (1 1 2 3 5 8 13 21 .....)
6. Program to find n terms of the Series.

$$\sum_{n=1}^{\infty} \frac{1}{2^n} = \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \cdots.$$

7. Program to Sort any 10 Array Elements.
8. Program to Calculate Addition/Subtraction of two Matrices.
9. Program to calculate multiplication of two matrices.
10. Program to calculate Determinant of Matrix.
11. Program to Find Transpose of a Matrix.
12. Program to check given year is leap or not.
13. Program to find sum of series 1 to n.
14. Program to Calculate Grade of Student by inputting Percenta ge of the student.
15. Program to C heck given number is palindrome or not (ex. 12321)

Note: University Practical Examination will be conducted ann ually.

PRACTICAL QUESTION FORMAT

(MAT-PR-505 &605) (20 Marks) Max.Time :Three Hours

Q.1. Record Book **05 Marks.**

Q.2. Oral (Viva) **05 Marks.**

Q. 3. Write/Edit/Print a program in C **10 Marks.**
(Based on MAT-505& 605)

OR

Q. 4. Write /Edit/Print a program in C **10 Marks.**
(Based on MAT-505& 605)

Dr. Bhausaheb Sontakke
Chairman,
BOS in Mathematics

16

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

CIRCULAR NO.ACAD/SU/Sci./B.Sc. & M.Sc. Syll./5/2015

It is hereby notified for information to all the concerned that, on the recommendation of the Faculty of Science the Academic Council at its meeting held on 30-05-2015 has accepted the **revised semester-wise syllabi as mentioned against their names in the Faculty of Science as under** :-

Sr. No.	Name of the Subject	Semester
[1]	B.Sc. Computer Science Degree Course	III & IV
[2]	B.Sc. Information Technology Degree Course	III & IV
[3]	B.C.A. Science Degree Course	III & IV
[4]	B.Sc. Animation Degree Course	III & IV
[5]	B.Sc. Bioinformatics Degree Course	III & IV
[6]	B.Sc. Computer Science [Optional]	III & IV
[7]	B.Sc. Information Technology [Optional]	III & IV
[8]	B.Sc. Computer Applications [Optional]	III & IV
[9]	B.Sc. Computer Maintenance [Optional]	III & IV
[10]	B.Sc. Environmental Science [Optional]	V & VI
[11]	B.Sc. Bio-Chemistry [Optional]	V & VI
[12]	B.Sc. Forensic Science Degree Course	V & VI
[13]	B.Sc. Industrial Chemistry [Optional]	V & VI
[14]	B.Sc. Electronics [Optional]	V & VI
[15]	B.Sc. Zoology [Optional]	V & VI
[16]	B.Sc. Microbiology [Optional]	V & VI
[17]	B.Sc. Instrumentation Practice [Optional]	V & VI
[18]	B.Sc. Statistics [Optional]	V & VI
[19]	B.A. Statistics [Optional]	V & VI
[20]	B.A. / B.Sc. Mathematics [Optional]	V & VI
[21]	B.Sc. Home Science Degree Course	V & VI
[22]	B.Sc. Textile Interior Decoration Degree Course	V & VI
[23]	B.Sc. Fishery Science [Optional]	V & VI
[24]	B.Sc. Dairy Science & Technology [Optional]	V & VI
[25]	B.Sc. Botany [Optional]	V & VI
[26]	B.Sc. Physics [Optional]	V & VI
[27]	M.Sc. Computer Science	III & IV
[28]	M.Sc. I.T.	III & IV

This is effective from the Academic Year 2015-16 & onwards as appended herewith.

All concerned are requested to note the contents of the 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/SU/SCI./
2015/3761-4160
Date:- 16-06-2015.

★
★
★
★
★
******

Director,
Board of College and
University Development.

..2..

Copy forwarded with compliments to:-

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

Copy to :-

1] The Controller of Examinations,
2] The Director, [E-Suvidha Kendra], in-front of Registrar's Quarter,
Dr. Babasaheb Ambedkar Marathwada University,
3] The Superintendent, [B.Sc. Unit],
4] The Superintendent, [M.Sc. Unit],
5] The Programmer [Computer Unit-1] Examinations,
6] The Programmer [Computer Unit-2] Examinations,
7] The Record Keeper.

-:**:-

S*/-160615/-

DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD.

REVISED SYLLABUS

OF

B.Sc. Botany

THIRD YEAR

Fifth & Sixth Semester

[Effective from - June, 2015-16 & onwards]

DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,

AURANGABAD

Faculty of Science

B.Sc. III YEAR SYLLABUS

Subject- BOTANY

Semester- V AND VI

	Paper No.	Title of Paper	Lectures	Marks
		SEMESTER – V		
	XV	Cell Biology and Molecular Biology	45	50
B.Sc. III	XVI(A)	Diversity of Angiosperms - I OR Plant Breeding and Seed Technology	45	50
	XVI (B)	OR Plant Pathology		
	XVI (C)	OR Biotechnology		

	XVI(D)			
	XVII	Practical based on Paper - XV	45	50
	XVIII	Practical based on Paper - XVI	45	50
		SEMESTER – VI		
	XIX	Genetics and Biotechnology	45	50
	XX (A) OR XX (B) OR XX (C) OR XX (D)	Diversity of Angiosperms - II OR Economic Botany OR Microbiology and Disease Management OR Bioinformatics	45	50
	XXI	Practical based on Paper - XIX	45	50
	XXII	Practical based on Paper - XX	45	50

B.Sc. III Botany (Theory)

Semester -V

Paper XV

(Cell Biology & Molecular Biology)

(45L)

Unit-1

1. Cell:
   Structure of Prokaryotic cell (Bacterial cell) and Eukaryotic cell (plant cell)
   (02)
2. Cell wall and cell organelles:
   Structure and functions of cell wall and Cell organelles – Golgi complex, Endoplasmic reticulum, Lysosomes
   (08)
3. Nucleus:
   Ultra structure, (nuclear membrane, nucleolus, chromatin material, nucleoplasm), Functions of nucleus.

(05)

Unit-2

1. **Cell division:**
   (06)
   a) Cell cycle -G1 phase, S phase, G2 phase and M phase
   b) Mitosis – definition, process and significance.
   c) Meiosis-definition, process and significance.

2. **Nucleic acids:** (09)
   a. DNA: Definition, structure, chemical composition (nitrogenous bases, purines,

pyrimidines, nucleosides, nucleotides, phosphate and sugars) Watson and Crick's model, Z - DNA, B - DNA, functions of DNA

b. Replications of DNA – conservative, semi conservative and dispersive.

c. RNA: Structure, types and functions

Unit-3

1) Chromosome:

(07)

Definition, morphology-size, shape, number, Ultra structure – chromatid, chromonema, chromomere, centromere, kinetochore, secondary constriction, satellite, telomere, heterochromatin, euchromatin, Nucleosome model (Woodlock 1973), chemical composition, Functions of chromosome, Giant chromosomes-polytene and lampbrush chromosome.

2) Chromosomal aberrations :

(08)

a) Structural-deletion, duplication, inversion and translocation

b) Numerical: – euploidy and aneuploidy

*****

B.Sc. III Year (Theory)

Semester – V

Paper XVI (A)

(Diversity of Angiosperms-I) (45 L)

Unit: 1

1. Biodiversity (03)

Definition, concept, origin and evolution

2. Types of biodiversity: (05)

Species, genetic, ecological, cropland and agricultural diversity; biodiversity in India; endemism and hot spots; threatened species, threats to biodiversity

3. Conservation of biodiversity: (07)

Major causes for loss of biodiversity, listing of threatened biodiversity; threatened categories – extinct, endangered, vulnerable, rare and indeterminate. Conservation measures: – ex-situ, and in-situ; biodiversity conservation in India.

Unit -2

Phytotaxonomy: (08)

Classification of Angiosperms with special reference to Linnaeus, A. P. de Candole, Bentham and Hooker.

Study of diversity following families with reference to the system of classification of Bentham and Hooker

(22)

1. Magnoliaceae
2. Nymphaeaceae
3. Papveraceae .
4. Brassicaceae
5. Capparidaceae .
6. Rutaceae
7. Rhamnaceae
8. Combretaceae
9. Lythraceae
10. Cucurbitaceae
11. Apiaceae

******

B. Sc. III Year (Theory)

Semester -V

Paper: XVI (B))

(Plant Breeding and Seed Technology) (45L)

Unit -1

Plant Breeding :

1. Introduction, history, aims and objectives (02)
2. Domestication, plant introduction and acclimatization (02)
3. Hybridization – history, hybridization procedure. (03)
4. Selection methods -mass selection, pureline selection and clonal selection (04)
5. Hybridization in self pollinating plants (03)
6. Hybridization in cross pollinating plants (03)
7. Heterosis and hybrid vigour (02)
8. Mutation in crop improvement (02)
9. Hybridization programme in Jowar and Cotton (06)
10. Experimental designs and biometrical techniques in plant breeding - Randomized block design, Latin square design, Analysis of variance, Assessment of variability, Simple measures of variability (03)

Unit -2

Seed Technology :

1. Seed technology -history, aims and objectives (01)
2. Morphology and anatomy of seed (monocot and dicot seed , endospermic and non endospermic seed) (02)
3. Stages of seed multiplication -
   a. nucleus seed (04)
   b. breeders seed
   c. foundation seed
   d. certified seed

e. registered seed

f. truthful seed

4. Seed certification process (02)
5. Stagewise multiplication of foundation and certified seed in Jowar and Cotton (02)
6. Seed processing – drying, cleaning, dressing, bagging, tagging, storage and marketing (02)
7. New techniques in seed technology (02)

****

B.Sc. III Year (Theory)

Semester –V

Paper XVI (C)

(Plant Pathology)

(45L)

Unit-1

Fundamentals of plant pathology:

1. Plant pathology – history, scope, losses due to pathogens, importance and need to study plant pathology (02)
2. Classification of plant diseases on the basis of symptoms and causal organisms – animate and inanimate (03)
3. Plant pathological institutes – IARI (Indian Agricultural Research Institute), ICRISAT(International Crop Research Institute for Semi Arid Tropics) (02)
4. Seed pathology – concept and importance of seed pathology, seed borne pathogens, methods to study seed borne pathogens (03)
5. Study of air borne pathogens: methods and applications (03)
6. Field and laboratory diagnosis of plant disease - Koch's postulates (02)

Unit-2

Plant diseases:

Study of the following diseases with respect to symptoms, causal organism, disease cycle and disease management:

1) Cereals:	a. Black stem rust of wheat	(05)
	b. Grain smut of jowar	
	c. Ergot of bajra	
2) Pulses:	a. Wilt of pigeon pea	(04)
	b. Yellow vein mosaic of bean	
3) Vegetables:	a. Late blight of potato	(05)
	b. Little leaf of brinjal	
	c. Black rot of onion (*Aspergillus*)	(04)
4) Oil seeds:	a. Tikka disease of groundnut	
	b. Damping off of mustard	
5) Cash crops:	a. Grassy shoot of sugarcane	(06)
	b. Downy mildew of grapes	
	c. Angular leaf spot of cotton d. Citrus canker	
6) Ornamentals:	a. Powdery mildew of rose	(02)
7) Weeds:	a. Rust of Euphorbia	(02)

8) Trees: a. *Cercospora* on *Albizzia* fruits (02)

*****

B. Sc. III Year (Theory)

Semester- V

Paper XVI (D)

(Biotechnology) (45L)

Unit- 1

Biotechnology:

1. **Introduction:** a. Definition, scope and multidisciplinary nature (05)
   b. Biotechnology in India
2. **DNA structure, replication and recombination:** (05)
   a. Structure of DNA
   b. Replication of DNA, Role of DNA polymerase
   c. Denaturation and renaturation of DNA
   d. Recombination
3. **Recombinant DNA technology**: (15)
   a. Introduction, principles and procedure
   b. Enzymes involved in recombinant DNA technology
   c. Vectors
   d. Southern and Northern blotting technique
   e. Techniques in gene mapping
   f. DNA fingerprinting g. PCR
   h. DNA sequencing i. Genomics and DNA libraries
4. **Genetic engineering:** (05)
   a. Introduction to transgenic plants
   b. Vectors for gene deliveries
   c. Marker and reporter genes
   d. Role of agriculture in crop biotechnology
   e. Achievements in plant biotechnology

Unit- 2

1. **Plant tissue culture:** (10)
   a. Principles of tissue culture
   b. Terminology in tissue culture
   c. Cellular differentiation and totipotency
   d. Organogenesis and embryogenesis
   e. Protoplast isolation and culture
   f. Meristem culture
   g. Anther culture
   h. Applications of tissue culture
2. **Research projects:** (05)

a. Human genome project b. Plant genome project
c. DBT, Ministry of Science and Technology.

B.Sc. III Botany (Practical)

Semester -V

Paper XVII

(Cell Biology & Molecular Biology)

(45 L)

Unit-1

1. Study of the cell structure from onion leaf or *Tradescantia* leaf
2. Preparation of cytological (AA, FAA etc.) fixatives and stains
   (acetocarmine, aceto-orcein).
3. Study of electron micrographs of viruses, bacteria and cyanobacteria
4. Study of electron micrographs of eukaryotic cell and different cell
   organelles
5. Preparation of slides for the study of mitosis (root tips of onion)
6. Preparation of slides for the study of meiosis (*Rhoeo*, *Aloe* or onion flower buds)
7. Preparation of idiogram from the given micrograph of karyotype
8. Observation of giant chromosomes in *Chironomous* larvae
9. Preparation of wool models of mitosis, meiosis, cell structure,
   Chromosome, DNA and RNA.

*****

B.Sc. III Year (Practical)

Semester – V

Paper XVIII (A)

(Diversity of Angiosperms-I)

(45 L)

Unit: 1

1. Study of herbarium
2. Study of analytical characters
3. Preparation of indented and bracketed keys
4. Study of following families:
    1. Magnoliaceae
    2. Nymphaeceae
    3. Papaveraceae
    4. Brassicaceae
    5. Capparidaceae
    6. Rutaceae,
    7. Rhamnaceae
    8. Combretaceae
    9. Lythraceae
    10. Cucurbitaceae
    11. Apiaceae,
5. Mounting of pollen grains (acetolysis method)

Note: Students should undertake excursion to ecologically different areas for plant study and submission of list and photographs of wild plants at the time

of practical examination.

******

B. Sc. III Year (Practical)

Semester -V

Paper: XVIII (B)

(Plant Breeding and Seed Technology)

(45 L)

Unit -1

Plant breeding:

1. Study of floral biology of jowar and cotton
2. Demonstration of male sterility in jowar
3. Artificial emasculation and pollination in jowar and cotton
4. Demonstration of hybridization techniques in jowar and cotton
5. Designing of field experiments
6. Visit to plant breeding centre

Seed technology:

1. Study of morphology and anatomy of monocot, dicot, endosprmic and non endospermic seeds
2. Study of seed germination – observation of normal and abnormal seedlings, germination percentage
3. Blotter test
4. Method of breaking seed dormancy
5. Study of various seed processes – drying, cleaning, dressing, bagging, tapping and marketing
6. Preparation of seed certification tag
7. Viability test (Tetrazolium test)
8. Visit to various seed farms and research centres

****

B.Sc. III Year (Practical)

Semester –V

Paper XVIII (C)

(Plant Pathology)

(45L)

Unit-1

1. Study of Koch's postulates – isolation, inoculation and disease development
2. Study of the following diseases with respect to symptoms, causal organism, disease cycle and disease management
   1) **Cereals:**
      a. Black stem rust of wheat
      b. Grain smut of jowar
      c. Ergot of bajra
   2) **Pulses:**
      a. Wilt of pigeon pea
      b. Yellow vein mosaic of bean
   3) **Vegetables:**
      a. Late blight of potato
      b. Little leaf of brinjal
      c. Black rot of onion (*Aspergillus*)
   4) **Oil seeds:**
      a. Tikka disease of groundnut
      b. Damping off of mustard
   5) **Cash crops:**

a. Grassy shoot of sugarcane
b. Downy mildew of grapes
c. Angular leaf spot of cotton
d. Citrus canker

6) **Ornamentals:**
Powdery mildew of rose

7) **Weeds:**
Rust of Euphorbia

8) **Trees:**
Cercospora on *Albizzia* fruits

*****

B. Sc. III Year (Practical)

Semester- V

Paper XVIII (D)

(Biotechnology)

(45L)

Unit- 1

1. Principle and working of instruments in biotechnology laboratory - Autoclave / Pressure Cooker, Centrifuge, Hot plate, Water bath, Laminar Air flow, Oven, Microscope, pH Meter, Refrigerator, Magnetic Stirrer, Shaker, Agarose Gel Electrophoresis, Green House etc.
2. Sterilization of glasswares
3. Preparation of sterile media, nutrient broth, PDA, M.S. medium, B5 medium, White medium
4. Isolation of bacteria and fungi from air
5. Demonstration of meristem culture
6. Demonstration of anther culture
7. Separation of amino acids by gel electrophoresis

****

B. Sc. III (Theory)

Semester -VI

Paper XIX

(Genetics and Biotechnology)

(45 L)

Unit : 1

1. **Mendelism:** (04)

i. Introduction -G.J. Mendel

ii. Mendelian principles –Law of Dominance , law of segregation, law of independent assortment, back cross and test cross

2. Interaction of genes: (07)

i. Allelic interaction: incomplete dominance, co dominance, lethal genes and blood group inheritance

ii. Non allelic and non epistatic -comb shapes in fowls

iii. Non allelic and epistatic:

a) Complementary genes or duplicate recessive epistasis (9:7)

b) Supplementary genes or recessive epistasis (9:3:4)

c) Dominant epistatic genes or dominant epistasis (12:3:1)

d) Duplicate genes or duplicate dominant epistasis (15:1)

3. Sex determination: (04)

i. Chromosomal theory of sex determination

ii. Mechanism of sex determination in man (xx -xy), Drosophila (xx and xy), birds (zz-zw), grasshopper (xx-xo) and genic balance theory in Drosophila

iii. Sex determination in plants – *Melandrium*

Unit : 2

1. Sex linked inheritance: (07)

X, XY and Y linked inheritance:

i) Colourblindness and hemophilia in man ii) Holandric genes

iii) White eye colour in Drosophila iv) Gynandromorphs

2. Structure and function of gene: (08)

i. Fine structure of gene (Seymour Benzer)

ii. One gene one enzyme hypothesis

iii. Genes and related diseases – phenylketonuria, and alkaptonuria

iv. Detection of genetic diseases –amniocentesis Genetic counseling

Unit: 3

Biotechnology:

(15)

1. Concept of genetic engineering and recombinant DNA technology
2. Restriction endonucleases, their properties and uses
3. Cloning vectors -plasmids and phage vectors
4. Techniques of genetic engineering -isolation of desired gene, gene cloning, transfer of gene into plants
5. Applications of genetic engineering

*****

B.Sc. III Year (Theory)

Semester – VI

Paper XX (A)

(Diversity of Angiosperms-II)

(45 L)

Unit: 1

Plant identification: keys, herbaria and botanical gardens (04)

Origin of angiosperms: origin and evolution, Bennettitalean, Ranalian and Caytonial theory (05)

Binomial nomenclature: Principles and rules (03)

Modern trends in taxonomy: (03)

Cytotaxonomy, chemotaxonomy, and numerical taxonomy

Unit: 2

1.Phytotaxonomy: (10)

Study of Engler & Plantle, Hutchinson, Takthajan system of classification

2.Study of diversity of families:

(20)

a. Asclepiadaceae

b. Scrophulariaceae

c. Oleaceae

d. Convolvulaceae

e. Verbenaceae

f. Amaranthaceae

g. Euphorbiaceae

h. Orchidaceae

i. Liliaceae

j Commelinaceae

****

B. Sc. III Year (Theory)

Semester- VI

Paper: XX (B)

(Economic Botany)

(45L)

Unit -1

Origin, morphology, production, cultivation practices, harvesting and uses of crop plants.

a) **Cereals:** Maize, Pearl millet and Rice

b) **Pulses:** Bengal gram, Black gram and Pigeon pea

c) **Oil seed crops:** Soybean, Mustard and Castor

Unit -2.

a) **Fibre crops:** Jute, Sunhemp and Cotton

b) **Horticultural crops:** Banana, Orange and Mango

c) **Ornamentals:** Rose, Orchids and *Chrysanthemum*

Unit -3.

a) **Beverages:** Tea and Coffee

b) **Forage crops:** Cowpea, Jowar and Lucerne

c) **Vegetable crops:** Brinjal, Potato, Tomato and Onion

d) **Condiments and Spices:** Cardamom, Black pepper and Chillies

*****

B.Sc. III Year (Theory)

Semester –VI

Paper XX (C)

(Microbiology and Disease Management)

(45L)

Unit-1

1. **Microbiology**

Microorganisms in biological world, their classification and features of different groups (03)

2. **Microbial techniques**:

a. Microscopy – simple, compound and electron microscope
b. Micrometry – Principle, working and uses
c. Staining – common stains used in pathology, their preparation and significance, (cotton blue and Gram's Stain)
d. Sterilization of glass wares and media (06)

3. Culture media for isolating plant pathogen

Industrial application of microorganisms - organic acids, alcohol, milk products, antibiotics and bio pesticides (06)

Unit-2

Disease management:

1. Preventive methods: field sanitation, use of clean planting material, crop rotation, trap crops, time of sowing, planting distance and tillage (02)

2. **Control methods –**

a. Seed treatment: concept, objective, traditional and modern methods of seed treatment (02)
b. Soil sterilization: concept, objectives and methods (02)
c. Fungicides: Definition, classification and ideal characteristics of fungicides, study of fungicides with respect to active ingredients, formulations, methods of application, mode of action and uses (08)

i. Sulphur fungicides – Inorganic – Wettable sulphur, Organic – Thirum
ii. Copper fungicides
iii. Mercuric chloride – Agrosan – GN
iv. Heterocyclic nitrogenous compounds – Captan
v. Benzene compounds – Dexon

vi. Antibiotics – Streptomycin and Aureofungin
vii. Systemic – Bavistin and Vitavax
d. Pesticides: Nicotin,Neem and pyrethrum (01)
e. Rhodenticides – Zinc phosphoid (01)
f. Nematicides- Nemagon, Propoxar (01)
g Weedicides- 2,4-D (01)
h. Biological control- definition, need, examples and role (02)
Plant quarantine (01)

3. Control measures and environment: pollution due to chemicals, residual effects, toxicity, safe measures, colour code, antidote, symptoms of poisoning, precautions in using pesticides (03)
4. Pesticide application equipments: principle and working –pneumatic air pump knapsack sprayer, mist blower and duster, types of nozzles (03)
5. Plant clinic: Concept, objective and need (01)
6. Recent techniques in plant pathology: Genetically modified organisms (GMO's), B. T. Cotton, Pheromones (02)

******

B. Sc. III Year (Theory)

Semester- VI

Paper XX (D)

(Bioinformatics)

(45L)

Unit- 1

1. Introduction to bioinformatics and its applications (03)
2. Sampling, sample size, sampling techniques (03)
3. Data collection and presentation: (05)
   a. Types of data
   b. Methods of data collection
   c. Data presentation - line chart, bar chart, histogram, polygon, ogive curve, pie diagram
4. **Measures of central tendency:** (04)
   a. Mean
   b. Median
   c. Mode ,

Unit – 2

1. **Measures of variability**: (05)
   a. Mean deviation,
   b. Standard deviation
   c. Coefficient of variation
   d. Standard error
2. Probability, chi-square test, t – test (05)
3. Introduction to computer basics- general characters, types of computer (03)
4. Hardware-input and output devices, CPU, storage devices (02)

Unit – 3

1. Software – MSDOS, Windows, Linux, concept of files and folders and directories,

(08)

   Application software - Word processor, Spread sheet, Presentation, MS-access, html document
2. Networking technology - LAN, WAN, Arpanet, Internet, Web browsing and servers – Netscape navigator, Internet explorer, search engines like yahoo,

google etc. Introduction to MEDLINE, CCOD and PUBMED for biological information, Introduction to bioinformatics software - bioperl biojava bioxml (07)

B.Sc. III (Practical)

Semester -VI

Paper XXI

(Genetics and Biotechnology)

(45 L)

1. Quiz
2. Working out laws of inheritance by using seed mixtures
3. Problems based on gene interaction
4. Problems based on sex linked inheritance

B.Sc. III Year (Practical)

Semester – VI

Paper XXII (A)

(Diversity of Angiosperms-II)

(45 L)

1 . Study of following families:

1. Oleaceae
2. Asclepiadaceae
3. Convolvulaceae
4. Scrophulariaceae
5. Verbenaceae
6. Amaranthaceae
7. Euphorbiaceae
8. Orchidaceae
9. Liliaceae
10. Commelinaceae

2. Mounting of pollen grains (acetolysis method) and measurement of pollen size.
3. Study of different types of stomata and epidermal structures (Trichome)
4. Identification of plants up to species by using flora (Flora of Bombay Presidency/ Flora of Marathwada)
5. Students should undertake excursion to ecologically different areas for plant

study and submission of list and photographs of wild plants at the time of examination.

*****

B. Sc. III Year (Practical)
Semester- VI
Paper: XXII (B)
(Economic Botany) (45L)

Economic Botany:

1. Study of morphology, structure and simple histochemical tests of food storing tissues in Maize, Rice, Jowar, Gram, Pigeon pea, Potato
2. Study of histochemical tests of lignin and cellulose (Jute, Cotton, Sunhemp)
3. Hand section of Groundnut, Sunflower and staining of oil droplets
4. Study of plantation crops (Tea and Coffee)
5. Study of condiments and spices (Cardamom, Black Pepper and Chillies)
6. Study of horticultural crops (Banana, Orange and Mango)
7. Study of Vegetable crops (Brinjal, Potato, Onion, Tomato)
8. Study of ornamental plants (Rose and *Chrysanthemum*)

*****

B.Sc. III Year (Practical)

Semester –VI

Paper XXII (C)

(Microbiology and Disease Management)

(45L)

1. Study of fungicides as per theory syllabus
2. Preparation of Bordeaux mixture, burgundy mixture and Bordeaux paste
3. Study of insecticides with respect to active ingredient, colour code, formulation, mode of action, antidote and uses
4. Study of *Trichoderma* culture
5. Study of plant protection equipments –pneumatic air pump, knapsack sprayer, mist blower cum duster
6. Principle and working of autoclave, laminar air flow, Tilak air sampler
7. Use of aerobiological techniques to study fungal spora (gravity slide method, Tilak air sampler)
8. Calibration of microscope and measurement of fungal spores
9. Sketching of fungal spore by camera lucida technique
10. Detection of organic acids from healthy and infected leaves by circular paper chromatography
11. Detection of Amino acids from healthy and infected leaves by circular paper chromatography
12. Study of pathogens in fruits from local market
13. Study of fungi from locally available seed samples
14. Preparation of sterile media - nutrient agar, potato dextrose agar
15. Preparation of stains and mounting media - cotton blue, lacto phenol and gram stain

****

B. Sc. III Year (Practical)

Semester- VI

Paper XXII (D)

(Bioinformatics) (45L)

1. Use of operating system and creation of a job from word processor, spread sheet, presentation and data base
2. Creating files, folders and directories
3. Internet browsing and downloading information with special reference to biological literature
4. Creating an e - mail account, sending and receiving e - mail
5. Graphical presentation of data
6. Computer based statistical techniques
7. Frequency table of single discrete variable
8. Computation of mean, median, and mode
9. Computation of mean deviation, standard deviation, coefficient of variation, variance, and standard error
10. Computation of chi- square test, and t - test
11. Students should undertake a visit biotechnology industry, biotechnology research laboratory

*****

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.

New Syllabus

B.Sc. (Zoology) Semester System

First Year

(First Semester and Second Semester 2009-2010)

Second Year

(Third Semester and Fourth Semester 2010-2011)

Third Year

(Fifth Semester and Sixth Semester 2011-2012)

Effective from June 2009-10

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.

B.Sc. Zoology Pattern in Semester System

B. Sc. I Year Zoology

Semester	Course Code	Paper No.	Title of Paper	Marks
I	ZOL-101	Paper – I	Protozoa to Annelida	50
	ZOL-102	Paper – II	Cell Biology	50
	ZOL-103	Paper – III	Practical based upon Paper I	50
	ZOL-104	Paper – IV	Practical based upon Paper II	50
II	ZOL-201	Paper – V	Arthropoda to Echinodermata And Protochordata	50
	ZOL-202	Paper – VI	Genetics - I	50
	ZOL-203	Paper – VII	Practical based upon Paper V	50
	ZOL-204	Paper – VIII	Practical based upon Paper VI	50

B. Sc. II Year Zoology

III	ZOL-301	Paper – IX	Vertebrate Zoology	50
	ZOL-302	Paper – X	Genetics- II	50
	ZOL-303	Paper – XI	Practical based upon Paper IX	50
	ZOL-304	Paper – XII	Practical based upon Paper X	50
IV	ZOL-401	Paper – XIII	Animal Physiology (Special Emphasis On animals)	50
	ZOL-402	Paper – XIV	Biochemistry & Endocrinology	50
	ZOL-403	Paper – XV	Practical based upon Paper XIII	50
	ZOL-404	Paper – XVI	Practical based upon Paper XIV	50

B. Sc. III Year Zoology

V	ZOL-501	Paper –XVII	Ecology		50
	ZOL-502	Pape XVIII (Elective)	A	Fishery sciences –I	50
			B	Animal culture –I	
			C	Entomology-I	
			D	Parasitic protozoa & helminthes-I	
			E	Computer Application & Laboratory Technology-I	
			F	Biotechnology-I	
			G	Dairy sciences -I	
			H	Poultry Sciences -I	
	ZOL-503	Paper XIX	Practical based upon Paper XVII		50
	ZOL-504	Paper XX	Practical based upon Paper XVIII		50
VI	ZOL-601	Paper XXI	Evolution		
	ZOL-602	Paper XXII	A	Fishery sciences –II	50
			B	Animal culture –II	
			C	Entomology-II	
			D	Parasitic protozoa & helminthes-II	
			E	Computer Application & Laboratory Technology-II	
			F	Biotechnology-II	
			G	Dairy sciences -II	
			H	Poultry Sciences -II	
	ZOL-603	Paper XXIII	Practical based upon Paper XXI		50
	ZOL-604	Paper XXIV	Practical based upon Paper XXII		50

B.Sc. V Semester

Course Code - ZOL- 502
PAPERXVIII - A

FISHERY SCIENCE – I
(Elective Paper)

CAPTURE FISHERIES IN INDIA

1.	**Introduction** Definition and history General characters and classification Concept of blue revolution Importance of fishes.	**05**
2.	Freshwater fisheries. Status of freshwater fisheries, past, present and future Freshwater capture fisheries, cat fishes, rout. Effect of aquatic pollution on fisheries.	**10**
3.	Revering and reservoir fisheries. Major river systems of India Important fisheries of Indian rivers system Major reservoirs of Maharashtra Reservoir fisheries and its management. Exploitation of reservoir fisheries	**10**
4.	Brackish water fisheries Principle fisheries of brackish water, milkfish, mullet, tilapia. Fisheries of the chilka, pulicat and Kolleru Lake	**08**
5.	Marine water fisheries. Oil-sardine Mackeal Ribbon fish fisheries. Bombay-duck Pomfret-fishery	**08**
6.	Application of remote sensing technique in pelagic fisheries.	**04**
	Total periods	**45**

B.Sc. V Semester

Course Code - ZOL- 502
PAPER XVIII – B

ANIMAL CULTURE - I
(Elective Paper)

APICULTURE

1.	Introduction and history	**02**
2.	Status, problems and prospects of Bee-keeping practices	**02**
3.	Systematic position and distribution of different honey bees. a) Wild species b) Domesticated species c) Brief account of honey production	**06**
4.	Organization in colony and polymorphism in Wild species Caste differentiation Division of work	**06**
5.	Life cycle of honey bees Morphology of queen, worker and drone	**06**
6.	Behavior of domesticated bees a) Nesting behavior b) Swarming and colony production c) Communication d) Defense, foraging e) Mating f) Comb construction g) Humidity and temperature control	**08**
7.	Food plants and plant –bee relations. a) Pollination by honey bees.	**04**
8.	Disease, pets, prasites and predators of bees and their control. a) Protozoan diseases-Nosemd Bacterial disease- American and European foul brood Viral disease- sac brood Fungal disease- chalk brood and stone brood b) External mites and dipterans, internal mites c) Bats –was math d) predators- wasps, brinks, rats, lizard, mantis, bears etc. e) Poisoning and pestisidal hazards in bees	**08**
9	bee products and their uses	**03**
	Total periods	**45**

B.Sc. V Semester

Course Code - ZOL- 502
PAPERXVII - C

ENTAMOLOGY-I
(Elective Paper)

ECONOMIC ENTAMOLOGY

I	Introduction to Economic entamology.	**03**
II	Methods of collection and preservation of insect.	**05**
III	Type study of grasshopper- systematic position, external morphology, digestive, nervous, reproductive system including development.	**08**
IV	Insect –orders (general characters)	**12**
	Thysanura	
	Collembella	
	Lepidoptera	
	Diptera	
	Coeloptera	
	Hymenoptera	
V	House hold and Human insect pest:-	**06**
	Bed bugs, Mosquito, Rat Flea, and House fly, Cockroach, Pediculus.	
VI	Metamorphosis in insect, types of metamorphosis with example.	**05**
VII	Insect Culture (gross study) Apiculture, Sericulture and lac culture	**06**
	Total periods	**45**

B.Sc. V Semester

Course Code - ZOL- 502
PAPER XVIII – D

PARASITIC PROTOZOA AND HELMINTHES - I
(Elective Paper)

A- PARASITIC PROTOZOA

1. Introduction to parasitology :- Definition-Parasite &host, Parasitism, **05**
   Types of parasites, host-parasite relationship
2. Classification of protozoan parasites. **02**
3. Structure, life cycle, Pathogenecity and control measure of the following;
   - *Entamoeba coli* **03**
   - *Entamoeba gingivalis* **03**
   - *Giardia intestinalis* **03**
   - *Trichomonas vaginalis* **04**
   - *Trypanosoma gambience* **04**
   - *Balantidium coli* **03**
   - *Plasmodium vivax* **04**
   - *Plasmodium falcipparium* **04**
   - *Plasmodium ovale* **04**
   - *Plasmodium malariae* ***03***
   - *Eimeria tenella* **03**

Total Periods 45

B.Sc. V Semester

Course Code - ZOL- 502
PAPER XVIII – E

COMPUTER APPLICATION AND MEDICAL LABORATORY TECHNOLOGY- I
(Elective Paper)

A- COMPUTER APPLICATION

1.	History of computer and their application to biology.	**03**
2.	Operating systems DOS, WINDOWS: Windows XP, Windows 7, and UNIX	**07**
3.	System Units: Mother board, Microprocessor and memory.	**05**
4.	Storage Devices, Input/ output devices.	**04**
5.	Microsoft office (2007): MS-word, MS-Power point, MS- Excel, MS- Publisher.	**05**
6.	Internet: Basics, Internet services, WWW services, E-mail services, Search engines.	**05**
7.	Demonstration of web utilities in biology.	**05**
8.	The introduction to programming.	**01**
9.	Programming using “C’.	**02**
10.	“C’ Data types.	**03**
11.	Simple programs using C.	**05**

Total Periods 45

B.Sc. V Semester

Course Code - ZOL- 502
PAPER XVIII – F

BIOTECHNOLOGY – I
(Elective Paper)

---

1. Introduction to biotechnology Definition and concept Old and new biotechnology Scope and importance, Biotechnology in India.	**03**
2. Genetic engineering Concept and definition Steps involved in gene cloning Application	**04**
3. Isolation & amplification of desired gene Isolation of DNA from cell Genomic library, cDNA library In vitro synthesis of gene Polymerase chain reaction	**04**
4. Enzymes in gene cloning Restriction enzymes (Nomenclature, type) DNA Ligase, taq polymerase, alkaline phosphates Polymerase etc	**04**
5. Cloning vectors Plasmid, bacteriophase, cosmid YAC, BAC, shuttle vector, Agro bacterium etc	**04**
6. Gene transfer methods Transformation, conjugation, Electrophoration, transfection Liposome mediated gene transfer, Gene gun, microinjection etc	**05**
7. Screening of cloned gene Direct selection, Insertional inactivation method Immunological assay, Autoradiography Colony and plaque blotting	**05**
8. Problems and solutions for gene cloning	**02**
Total periods	**45**

B.Sc. V Semester

Course Code - ZOL- 502
PAPER XVIII - G

DAIRY TECHNOLOGY – I
(Elective Paper)

---

1. Milk:-Definition, Composition, Factors affecting composition of milk **05**
- Food and Nutritive value of milk
- Physico-chemical properties of milk.

2. Microbiology of milk:-Introduction **05**
- Growth and Destruction of microorganisms
- Classification of microorganism.

3. Milk and public health: Introduction **03**
   Safe guarding of milk supply
- Clean milk production.

4. Buying and collection of milk :- **04**
- Introduction , Method of buying, Method of collection
- Cooling of milk
- Transportation of milk.

5. Manufacture, Packaging and storage of Pasteurized milk :- **09**
- Introduction., Milk reception operation, Standardization
- Pasteurization, Homogeuration.
- Packing and storage of milk.

6. Judging and grading of milk:-Introduction **06**
- Importance and procedures.

7. Indian dairy products :- **04**
- Introduction
- Importance and Classification

8. Khoa :-
- Introduction, definition classification and Composition.
- Food and Nutritive Value.
- Methods of production and defects of khoa.

9. Channa :- **04**
- Introduction, definition and Composition.
- Channa Based sweets, Food and Nutritive Value.
- Methods of production.

10. Dahi :- **04**
- Introduction, definition and Composition.
- Channa Based sweets, Food and Nutritive Value.
- Methods of production. **Total Periods** **45**

B.Sc. V Semester

Course Code - ZOL- 502
PAPER XVIII - H

POULTRY SCIENCE- I
(Elective Paper)

1.	Introduction to poultry science.	**02**
2.	Classification of poultry breeds;	**08**
	➢ American	
	➢ Asiatic	
	➢ English	
	➢ Mediterronean.	
3.	Digestive, circulatory, Respiratory and Male and female reproductive system of poultry.	**15**
4.	Formation, structure and nutritive value of eggs.	**06**
5.	Breeding of poultry;	**10**
	➢ Selection	
	➢ Objective	
	➢ Methods of Selection	
	➢ Mating system.	
6.	Management of incubators	**02**
7.	Hatching of eggs.	**02**
	Total Periods	**45**

B.Sc. VI Semester

Course Code - ZOL- 602
PAPER XXII - A

FISHARY SCIENCE – II
(Elective Paper)

FISH CULTURE AND FISH TECHNOLOGY

A. fish culture

1. Introduction **15**
   a) Types of freshwater ponds-perennial and seasonal.
   b) Different types of ponds-nursary, rearing and stoking ponds.
   c) Design, contruction and maintenance of nursery, rearing and stocking ponds.
   d) Productivity of ponds
   e) principles of fish collection
   f) Fish culture methods
   g) Culture – cat fisheries
   h) Sewage fed fisheries

2. Fish crop production (fish diseases) **06**
   Protozoan, fungal, bacterial, viral worms diseases
3. Breeding of fishes **08**
   a) Natural spawning of carps
   c) Artificial breeding by hypophysation
   d) Common carp breeding

B. fish technology

4. Fish preservation and processing **08**
   a) Fish processing methods
   b) Fish –spoilage
   c) Value added products
   d) Sanitation and HACCP

5. Crafts and gears **08**
   a) Different types of gears
   b) Different types of crafts
   c) Preservation of gears

Total Periods 45

B.Sc. VI Semester

Course Code - ZOL- 602
PAPER XXII - B

ANIMAL CULTURE – II (Elective Paper)

SERICULTURE

1. History and general account of sericulture industry **02**

2. Status, scope and problems of sericulture industry in India and Maharashtra. **02**
3. Different types of silkworms, their systematic position and distribution. **03**
4. life cycle of mulberry silk worm
5. Morphology of different stages of B. mori. - Egg and types, larva, pupa, adult **03.**
6. structure and working of silk gland **02**
7. Food plants. **10**
   Brief account of food plants required for non –mulbabary silk worms.
   Systematic position mad morphology of mulberry plant.
   Selection of variety, preparation of planting material
   Agro climate condition required for plantation
   Methods of plantation (mulberry cultivation)
   Maintenance of mulberry garden (irrigation and rainfed)
   Common diseases and pest of mulberry and their control.
   Harvesting and preservation of leaves
8. silk worm rearing **10**
   Rearing house, model rearing house and others.
   Rearing equipments and their uses.
   Disinfection of rearing house and equipments
   Egg incubation, buck boding and its importance.
   Hatching and brushing of larvae, methods of brushing
   Feeding and its schedule
   Bed cleaning, methods of bed cleaning
   Role of environmental conditions in rearing
   Moulting, care taken during moultiong
   Spacing and its schedule
   Mounting spinning, harvesting of cocoon
   Transportation and marketing of cocoon.

9.	Important diseases, pest of silk worm and their control:- Bacterial, fungal, viral, protozoan	**04**
	Pest predators- beetle, mites, ants, lizards, birds, rats etc	**02**
10.	Introduction to post harvesting technology (reeling) Cocoon stifing, methods of stifing. Preservation and storage of cocoons. Cocoon cooking, methods of cocoon coking Reeling- country charkha, filature.	**06**
11.	Sericulture as agro cottage, employment generating village industry.	**01**
12.	Economics of sericulture.	**01**
	Total Periods	**45**

B.Sc. VI Semester

Course Code - ZOL- 602
PAPER XXII - C

ENTAMOLOGY – II
(Elective Paper)

PEST MANAGEMENT

I	pest –Definition, types of pest, agricultural, veterinary and medical pest.	**06**
II	study of major crop pest: - Classification, Characters. Jawar- Stem borer, Midge flies Cotton- Red cotton bug, pink bollworm Groundnut-White grub**,** pod sucking bug Sugarcane- Pyrilla, Stem borer.	**12**
III	Study of Stored grain pests: Rice weevil, pulse bettle	**08**
IV	Control measures of insect pest. Methods of control measures-Chemical, Biological, integrated pest management.	**08**
V	migration of insect.	**03**
VI	Insecticides and plant protection appliances like Hand compression spray, Hand rotating duster, bucket pump	**08**
	Total Periods	**45**

B.Sc. VI Semester

Course Code - ZOL- 602
PAPER XXII - D

PARASITIC PROTOZOA AND HELMINTHES – II
(Elective Paper)

B- PARASITIC HELMINTHES

1. General characters and classification of helminthes **02**
2. Structure ,life history, pathogenecity and control measure of the following;
   - *Schistosoma haematobium* **03**
   - *Taenia Saginata* **03**
   - *Echinococcus granulossus* **03**
   - *Trichinella spiralis* **03**
   - *Enterobius vrmicularis* **03**
   - *Ancylostoma duodenale* **02**
   - *Wuchereria bancroftii* **03**
   - *Dracunculus medinensis*. **01**
3. Gross morphology of Trematoda Cestoda and Nematode. **06**
4. Reproductive organs of Trematodes Cestodes and Nematodes. **06**
5. Body wall of Trematodes Cestodes and Nematodes. **06**

Total periods: - 45

B.Sc. VI Semester

Course Code – ZOL - 602
PAPER XXII - E

COMPUTER APPLICATION AND MEDICAL LABORATORY TECHNOLOGY - II
(ELECTIVE PAPER)

B-MEDICAL LABORATORY TECHNOLOGY

1. Basic Laboratory principles and procedure. **08**

Introduction

Laboratory management system.

Responsibility of laboratory worker.

Laboratory safety and aids and Training of technician.

2. Basic requirement of Laboratory. **12**

Glassware, solution and reagent, equipment and instruments.

(Autoclave, Hot air oven, Incubator, Water bath Centrifuge, Colorimeter, PH meter, Haemoglobometer, Micrometer, Glocometer.)

3. Routine examination of body fluids. **10**

Collection and examination procedure /method with special reference to clinical significance.

Blood, HB percentage, WBC, RBC count, Homeostasis (mechanism of blood coagulation).

Urine- Physical examination (Color and Odour),Chemical examination

(Protein, Glucose, Bilurubin, Uroblinogene Blood, Ketone bodies, Acetone bodies)

Sputum- Microscopic examination.

Semen- Microscopic examination, Sperm count, Sperm motility, Sperm morphology, Examination for the presence of semen.

4. Basic histopathological techniques. **10**
Collection, fixation, preparation of tissue for section

Staining and observations with critical comments.

5. Scope and importance of laboratory technique in clinical field of medical science. **05**

Total Periods: - 45

B.Sc. VI Semester Course

Code - ZOL - 604
PAPER XXII – F

BIOTECHNOLOGY - II
(Elective paper)

---

1. Animal cell culture **06**
   - Basic requirements, Culture media & sterilization
   - Contamination and sterilization of laboratory.
   - Application and limitations of cell culture

2. Manipulation of reproduction and transgenic animals **05**
   - Invitro fertilization, nuclear transplantation (Dolly sheep)
   - Transgenic animals –methods
   - (Retroviral vector method, microinjection and ES cell methods)

3. Protein engineering **06**
   - Site-directed mutagenesis (Cassette mutagenesis oligonucliotide directed)
   - Applications of mutagenesis, Hybrodoma technology
   - Commercial production of enzymes

4. Gene therapy and DNA fingerprinting **06**
   - Introduction, ex vivo, in vivo gene therapy
   - Antigene &antisence gene therapy
   - DNA fingerprinting

5. Human disease-diagnosis using biotechnology **02**

6. Applications of biotechnology **06**
   - Agriculture
   - Medicine
   - Industry

Total Periods: - 45

B.Sc. VI Semester

Course Code - ZOL- 602
PAPER XXII - G

DAIRY TECHNOLOGY – II
(Elective paper)

---

1. Concentrated indigenous dairy products :- **08**

- Definition, Composition, Methods of production and yield of Peda, Burfi, Rabdi, Basundi and Gulabjamun.

2. Fermented indigenous dairy product: - **05**

- Definition, Composition, Methods of production and yield of Chakka, Shrikhand and Shrikhand wadi.

3. Frozen indigenous dairy product: - **06**

- Definition Composition, Methods of production and yield of Kulfi, Malai ka Barf.

4. Fat rich indigenous dairy product: - **06**

- Definition Composition, Methods of production and yield of Butter and Ghee.

5. Special milk :- **10**

- Definition Composition and Methods of production of Milk Shake, Flowered milk, Toned milk, Fortified milk, Recombined milk and Soya milk.

6. Study of microbial toxins in dairy products **05**

7. Role of dairy industry as on entrepreneur for development of small scale industry**.05**

Total Periods

45

B.Sc. VI Semester

Course Code - ZOL- 602
PAPER XXII - H

POULTRY SCIENCE - II
(Elective Paper)

---

1. Poultry Management ; **10**

- Brooder management.:- Housing, sanitation&hygine,litter, Temperature space
- Grower management.
- Layer management.
- Rising of Broilers.

2. Housing for poultry; **14**

- selection site for poultry form
- Free range or extensive system.
- Semi intensive system.
- Intensive system.
- Folding System

3. Feeding of poultry. **05**

Requirement of poultry feed, feed ingredients,
Conventional and nonconventional poultry feed

4. Processing of poultry products. Preservation of poultry products. **05**
5. Marketing of poultry products. **03**

6. Poultry diseases; **08**

Parasitic, Protozoan
Bacterial, Fungal.

Total Periods 45

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

CIRCULAR NO. SU/Sci./B.Sc. Syllabi/100/2016

It is hereby notified for information to all concerned that, on the recommendation of the Ad-hoc Board in Computer Science and I.T. the **Academic Council at its meeting held on 01 & 02 June, 2016** has accepted the following revised syllabi as mentioned against their names under the Faculty of Science :-

Sr. No.	B.Sc. III Year Revised Syllabus		Semester
[1]	B.Sc. Computer Science	Degree Course	V & VI
[2]	B.Sc. Information Technology	Degree Course	V & VI
[3]	B.C.A. Science	Degree Course	V & VI
[4]	B.Sc. Animation	Degree Course	V & VI
[5]	B.Sc. Computer Science	Optional	V & VI
[6]	B.Sc. Information Technology	Optional	V & VI
[7]	B.C.A. Science	Optional	V & VI
[8]	B.Sc. Computer Maintenance	Optional	V & VI

This is effective from the **Academic Year 2016-2017** and onwards.

These **syllabi are also available on the University Website www.bamu.ac.in**

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.SU/B.Sc./2016/2389-639
A.C.M.A.I.No.10

Date:- 07-06-2016.

★ ★ ★ ★ ★ ★ ★
******

Director,
Board of College and
University Development.

..2..

Copy forwarded with compliments to :-

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

Copy to :-

1] The Controller of Examinations,

2] The Section Officer, [B.Sc. Unit],

3] The Section Officer, [B.C.S. Unit],

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

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

6] The In-Charge, E-Suvidha Kendra, [Professional Unit], Rajarshi Shahu Maharaj Pariksha Bhavan, Dr. Babasaheb Ambedkar Marathwada University,

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

-=**=-

S/-0070616/-*

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

Revised Syllabus of

B.Sc. Computer Science

(Optional)

Semester – V and VI

Effective from 2016-17

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

Curriculum Structure and Scheme of Evaluation: B.Sc. Computer Science (Optional)

Sr. No.	Course Code	Name of the Subject	Scheme of Teaching			Scheme of Evaluation(Marks)			
			T Hrs/ Week	P Hrs/ Week	Total Hrs/ Week	University Theory Exam.	University Practical Exam.	Duration	Total Marks
Semester V									
1	CSO15	Software Engineering	3		3	50	-	2	50
2	CSO16*	Web Designing	3		3	50	-	2	50
3	CSO16*	VB.Net	3		3	50	-	2	50
4	CSO17	Case Study	-	3	3	-	50	3	50
5	CSO18	Pr. Based on CSO16	-	3	3	-	50	3	50
Total of Semester – V			6	3	9	100	100		200

Semester VI									
1	CSO19	Data Communication and Networking	3		3	50	-	2	50
2	CSO20*	Ethics and Cyber Low	3		3	50	-	2	50
3	CSO20*	E-Commerce	3		3	50	-	2	50
4	CSO21	Seminar	-	3	3	-	20	3	50
5	CSO22	Project		3	3		80		
Total of Semester – VI			6	3	9	100	100		200

*** Indicate optional paper (any one from 2 and 3)**

Semester V

Paper No.: CSO15 **Comp. Sci. (Gen.) Semester : V**
Paper title: Software Engineering

Unit –I	
	Software and Software Engineering What is Software, Characteristics of software, categories of Software, attributes of WebApps, software Engineering, Software Process, Essence Software Engineering Practice, General Principles, Software Myths
Unit –II	
	Software Process and Process Models Software process Model Process Flow, Process Models, Waterfall model, Incremental Process Model, Evolutionary Process Models, Concurrent Models, Specialized Process Models, The Unified Process, Personal and Team Process Models, Product and Process **Agile** Introduction to Agility, Agility and the Cost of Change, Agile Process, Agility Principles, Human Factors, Extreme Programming (XP), XP Values, XP Process, Industrial, Critics of XP
Unit –III	
	Principles That Guide Practice Principles That Guide Process, Principles That Guide Practice, Communication Principles, Planning Principles, Modeling Principles, Construction Principles, Deployment Principles

Books:

1) Software Engineering a Practitioner's Approach By Roger S. Pressman (Seventh Edition) McGraw Hill.
1) An Integrated Approach to Software Engineering, Pankaj Jalote, Narosa

Paper No.: CSO16* **Comp. Sci. (Gen.) Semester : V**
Paper title: Web Designing

Unit –I	
	Introducing HTML5 Understanding HTML, XHTML, and HTML5, Introducing semantic markup, Syntax, Attributes, Working with elements, Creating an HTML document Embedding content, Embedding HTML by using inline frames, Working with hyperlinks, Adding images to your HTML document, Embedding plug-in content **Advances of HTML5** HTML5 Layout container Format using element Working with Tables: creating regular and irregular tables, heading, columns and rows, captions, header, footer.
Unit –II	
	Introducing JavaScript Basic of JavaScript JavaScript Variables, Operators & Its Precedence, Special Values, Predefined Built-Infunctions, Functions Declaration & Call String Functions Conditions and looping structure, Inline JavaScript & External JavaScript **Advances in JavaScript** Object in JavaScript, Concept of array, how to use it in JavaScript, types of an array, array methods DOM Concept in JavaScript, DOM Objects, DOM Search Methods Event handling in JavaScript: Capturing & Bubbling, Subscribing, Unsubscribing and Cancelling Event, Windows Event, Keyboard and Mouse Events.
Unit –III	
	Cascading Style Sheet Introduction to CSS3 Defining and Applying a Style, Inline, Embedded and External Style Sheet. Selectors: element, id and class selector, grouping selector, attribute, Specificity and cascading CSS properties: Color, box Model, border, padding, margin, float, clear

Books and References:

1) Programming in HTML5 with Javascript and CSS3 , Glenn Johnson (http://www.daoudisamir.com/references/vs_ebooks/html5_css3.pdf)
2) Beginning HTML5 andCSS3 By Richard Clark, OliStudholme,Christopher Murphy and DivyaManian.(http://www.alvinisd.net/cms/lib03/TX01001897/Centricity/Domain/1077/beginning_html5_and_css3.pdf)
3) A Definitive Guide to HTML5 , By Adam Freemans

Paper No.: CSO16* **Comp. Sci. (Gen.) Semester : V**
Paper title: VB.NET

Unit –I	
	Introduction: Introduction to .NET and .NET Framework, Difference between CUI & GUI, Event Driven Programming, the VB IDE, Operators, Conditional statements and looping statements. Sub Procedure, functions and exception handling
Unit –II	
	Windows Forms : General Properties, Events handling events like mouse, keyboard, Types of forms MDI, adding removing controls at run time. **Controls** : The control class, Text Box, Rich Text Box, Label, Buttons, Checkbox, Radio Button, Panels, Group Boxes, List Box, Combo Box, Picture Box, Scroll Bars, Splitters, Track Bars, Pickers, Timer.
Unit –III	
	Object-Oriented Programming : Class and Object, Class Vs. Object Members, Creating Classes, Objects, Structures, Modules, Constructors, Data Members, Methods, Properties, Event

Books and References:

1) Visual Basic .NET Programming Black Book" by Steven Holzner, Dreamtech Press
2) "Mastering in Visual Basic .NET" by Evangelos Petroutsos, Sybex Publication.

Paper No.: CSO17 Comp. Sci. (Gen.) Semester : V
Paper title: Software Engineering Case Study

Using any Software engineering model case study on development of a software.

Paper No.: CSO18 Comp. Sci. (Gen.) Semester : V

Paper title: Web Designing if Selected

1. Create a simple website by using Visual Studio Express
2. Create additional pages
3. Embedding Content
4. Create a webpage using <table> and elements
5. Create a webpages using conditional and looping statements.
6. Create a calculator webpage
7. Create a Webpage to introduce National Bird/Animal/Emblem/Flower
8. Learn more about positioning by adding more elements to the webpage to define a header and footer for the page. Use CSS style rules to set the position.
9. Learn more about CSS selectors by adding more elements to the page and try setting the format by selecting the elements without using an id.
10. Learn more about colors by changing the color scheme, using RGB values.

Paper No.: CSO18 **Comp. Sci. (Gen.) Semester : V**
Paper title: VB.NET if Selected

Minimum 12 Practical to be performed as per the guidelines of teaching Faculty depending upon all theory units of concerned subject.

Semester VI

Paper No.: CSO19 **Comp. Sci. (Gen.) Semester : VI**
Paper title: Data Communication and Networking

Unit –I	
	Introduction Communication System, Components of communication system, Computer network Advantage and applications of computer n/w. point-to-point and multipoint line configuration, LAN, MAN and WAN. Analog and Digital signals, Data Transmission: Parallel and Serial, Synchronous and Asynchronous transmission, Transmission Mode: Simplex, half-duplex and full-duplex. **Network Topologies** Mesh, Star, Tree, Bus and Ring and Hybrid Topology (Advantages and disadvantages of each)
Unit –II	
	Transmission media Guided and unguided media, Twisted-pair, UTP and STP cable, coaxial cable, Optical Fiber cable, Radio waves, Microwaves, Satellite Communication (*Transmission characteristics and advantages of each type*) **Modulation & Multiplexing** Concept of modulation and demodulation, Digital-to-analog conversion, Amplitude Shift Keying (ASK)/AM, Frequency Shift Keying (FSK)/FM, Phase Shift keying (PSK)/PM.
Unit –III	
	The Mobile Telephone System: First Generation(1G), Second Generation(2G), Third Generation(3G), Internet over cable, Spectrum Allocation, cable Modem, ADSL Versus Cable.

Books:

1) Introduction to Digital and Data Communications, Michal A Miller, JAICO, publishing.
2) Data Communication and Networking: C.S.V. Murthy, Himalaya Publishing House
3) Data Communication and Networking :: Behrouz A. Forouzan; Mc-Graw Hill Pub.
4) Computer Networks by A. S. TANENBAUM, DAVID J. WETHERALL PRENTICE HALL PublicationSoftware

Paper No.: CSO20* **Comp. Sci. (Gen.) Semester : VI**
Paper title: Ethics and Cyber Law

Unit –I

	Basic Concepts of Technology and Law, Understanding the Technology of Internet, Scope of Cyber Laws, Cyber Jurisprudence. Law of Digital Contracts The Essence of Digital Contracts.
Unit –II	
	The System of Digital Signatures. The Role and Function of Certifying Authorities. The Science of Cryptography, E-Governance, Cyber Crimes and Cyber Laws. Introduction to Intellectual Property.
Unit –III	
	Information Technology Act 2000 Cyber Law Issues in E-Business Management. Major issues in Cyber Evidence Management, Cyber Law Compliancy Audit, The Ethics of Computer Security. Relevant Rules Notifications, Information Technology (Amendment) Act, 2008.

Books and References:

1) Godbole,"Information Systems Security", Willey
2) Merkov, Breithaupt,"Information Security", Pearson Education
3) Yadav, "Foundations of Information Technology", New Age, Delhi
4) Schou, Shoemaker, "Information Assurance for the Enterprise", Tata McGraw Hill
5) Sood,"Cyber Laws Simplified", Mc Graw Hill
6) Furnell, "Computer Insecurity", SpringerA Definitive Guide to HTML5 , By Adam Freemans

Paper No.: CSO20* **Comp. Sci. (Gen.) Semester : VI**
Paper title: E-Commerce

Unit –I	
	Introduction, IT and business, E-commerce: Concepts Electronic Communication, PCs and Networking, E-mail, Internet and intranets. EDI to E-commerce, EDI, UN/EDIFACT
Unit –II	
	Concerns for E-commerce Growth, Internet bandwidth, Technical issues, Security issues. India E-commerce Readiness, Legal issues, Getting started. Security Technologies: Encryption, Symmetric key Encryption, Public key encryption, Public key encryption using digital Signatures. Hashing techniques, Certification and key Distribution, Cryptographic.
Unit –III	
	The elements of E-commerce. SSL-Secure Socket Layer, SET-Secure Electronic Transaction Protocol for Credit card payment, E-Cash, E-check, Smart cards. Electronic Payment System: Digital Cash, Digital Wallets, Digital checking payment systems, Electronic Billing, Wireless payment systems. Software Package: PGP e-mail encryption software

Books and References:

1) E-Commerce: The Cutting Edge of Business, Kamlesh K. Bajaj & Debjani Nag, Tata McGraw Hill.
2) E- Commerce Strategy , Technologies and Applications, David Whiteley, McGraw Hill Edition
3) E- Security, Electronic Authentication and Information Systems Security Sundeep Oberoi, TMG
4) E-Commerce Concepts, Models , Strategies by - G.S.V Murthy
5) E-Commerce- Kenneth C.Laudon and Carol Guercio Traver
6) Internet marketing and E-commerce-Ward Hanson and Kirthi Kalyanam

Paper No.: CSO21 **Comp. Sci. (Gen.) Semester : VI**
Paper title: Seminar

Student should prepare and present a seminar on any latest topic should be related to Computer Science.

Paper No.: CSO22 **Comp. Sci. (Gen.) Semester : VI**
Paper title: Major Project

Students group (maximum 3 students) should design and develop a project.

-=**=-

S*/-170516/-

S-01 & 02 June, 2016 AC after Circulars from Circular No.100 & onwards - 1 -

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

CIRCULAR NO. SU/Sci./B.Sc. Syllabi/100/2016

It is hereby notified for information to all concerned that, on the recommendation of the Ad-hoc Board in Computer Science and I.T. the **Academic Council at its meeting held on 01 & 02 June, 2016** has accepted the following revised syllabi as mentioned against their names under the Faculty of Science :-

Sr. No.	B.Sc. III Year Revised Syllabus		Semester
[1]	B.Sc. Computer Science	Degree Course	V & VI
[2]	B.Sc. Information Technology	Degree Course	V & VI
[3]	B.C.A. Science	Degree Course	V & VI
[4]	B.Sc. Animation	Degree Course	V & VI
[5]	B.Sc. Computer Science	Optional	V & VI
[6]	B.Sc. Information Technology	Optional	V & VI
[7]	B.C.A. Science	Optional	V & VI
[8]	B.Sc. Computer Maintenance	Optional	V & VI

This is effective from the **Academic Year 2016-2017** and onwards.

These **syllabi are also available on the University Website www.bamu.ac.in**

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.SU/B.Sc./2016/2389-639
A.C.M.A.I.No.10

Date:- 07-06-2016.

******

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.

Copy to :-

1] The Controller of Examinations,

2] The Section Officer, [B.Sc. Unit],

3] The Section Officer, [B.C.S. Unit],

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

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

6] The In-Charge, E-Suvidha Kendra, [Professional Unit], Rajarshi Shahu Maharaj Pariksha Bhavan, Dr. Babasaheb Ambedkar Marathwada University,

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

-=**=-

S/-0070616/-*

NAAC Re-accredited with Grade 'A'

Dr. Babasaheb Ambedkar Marathwada University

Aurangabad-431004

REVISED SYLLABUS OF

B.Sc. (Computer Science)

Three Year Course

(With Effective From: 2014-15)

हे ज्ञानिची पवित्रता | ज्ञानीचि आथि ||

Dr. Babasaheb Ambedkar Marathwada University
Aurangabad-431004.
Tel.No. : 0240-2403400/431, Fax:0240-2403113
Website : www.bamu.ac.in, http://bamua.digitaluniversity.ac.in

Dr. Babasaheb Ambedkar Marathwada University.

Appendix 'A'

A Candidate shall be admitted to the I year of the B.Sc. (Computer Science) degree course only if he/she satisfies the following condition:

1. He/ She must have passed the higher secondary (multipurpose) examination conducted by H.S.C. board Government of Maharashtra with science / technical subjects Or an Examination of any statutory University and Board recognized as equivalent thereto.

   OR

   He/She must have passed examination prescribed at the end of second year of the junior college conducted by the H.S.C. board, Government of Maharashtra with English, Second language, Physics, Chemistry, Mathematics and or Biology or one of the technical subjects prescribed at the said examination as the optional or elective subjects or an examination recognized as equivalent thereto.

   OR

   Candidate having offered prescribed vocational course (MCVC) with Computer techniques/I.T./Electronics.

   OR

   Three years Diploma Course in engineering conducted by the board of technical Education, Maharashtra State.

2. He/ She must have passed at qualifying examination.

A candidate who has passed the B.Sc.(Computer Science) examination of this university may be allowed to present himself subsequently at the degree examination in a subject or subjects other than those he has taken earlier provided that he puts in three years of attendance as a regular candidate for First, Second and Third year in the subject or subjects concerned excluding compulsory English, Second Language and remaining optional subject(s).

A candidate shall not be allowed to appear for such examination if he has passed the higher examination.

The Degree of Bachelor of Science (Computer Science) shall be conferred on candidate who has pursued a regular course of study consisting of six semesters in the relevant subject as prescribed and has appeared at the end examination and passed under the credit based system in all the examination prescribed for the Degree course in the faculty.

The pattern of the examination and the scope is indicated in the syllabus.[Annexure B]

- The Number of students in a theory class shall not exceed 60.
- Maximum number of students in a batch for practicals in first four semesters shall consist of 20 students and for fifth & sixth semester the batch shall consist of 15 students.
- The rules for admission to the subsequent (next) semesters will be the same as per the University guidelines.
- For Each course the concerned teacher will have to conduct Class tests after completion of 15 and 20 lectures. The mark list of the same is to be submitted to the university authority within 7 working days after the completion of class tests.
- Final Examination will be conducted by the University based on the complete syllabus.
- Final Practical Examination will be conducted by the university and examiners will submit the mars in the prescribed format of students for practical examination to the university.

The Number of Teaching Staff & infra-structure required to run the course will be as follow:-

The graduation is very important phase in the life of our young students. The college responsibly is not only to deliver a quality syllabus based education, but also to motivate them to be a good healthy citizen. In this direction, the college must have sufficient facilities to run the course. A guideline is listed below. The College must have following minimum facilities:

Infrastructure:

1. One Class room to accommodate 60 students. (approximately 250 sq.ft.)
2. A well equipped software Laboratory having a LAN system of 30 nodes and having internet connectivity with broad band. All legal software, antivirus software, firewall be available for smooth functioning of the laboratory.
3. A hardware laboratory having twenty microprocessor kits with add on cards as per their syllabus. Staff room of 100 sq.ft. with one table and one Almeria for each faculty member.
4. One office space of 100 sq.ft. with appropriate furniture.
5. One lady room of 100 sq.ft. with attached toilet.
6. One reading room of 200 sq.ft. with seating arrangements for at least 30 people. The library may be accommodated in the library.
7. One copy of every text book among five students for each subject be available along with one copy of reference book as per the syllabus.
8. Library must subscribe for computer and scientific magazines. Appropriate general reading materials must be available for overall development of students.
9. An open space for sports activities. The college must be encouraged to have sport equipments.

Staff:

1. The head of the department in the scale of reader/Professor.
2. The minimum number of teachers must be appointed as per the work load.Per semester, the work load may be computed on the basis of theory classes, tutorials and practical class per batch. Minimum number of teachers to run the course must be five excluding the head. Teachers must be appointed by the university/UGC norms. The quality of the course is directly related to quality of teachers for the course.
3. There must be one clerk in the office to look after administrative work. The placement of all staffs must be maintained properly.
4. One qualified librarian

 An appropriate number of class IV employees.

Sr. No.	Paper Number	Name of the Paper Titles	Scheme of Teaching	Scheme of Evaluation(Marks)		
			Theory / Practical (Lect./week)	Theory / Practical (Marks)	Exam Duration (in hrs.)	Total Mark
V Semester						
1	CS501-T	Software Cost Estimation	3	50	2	50
2	CS502-T	Basic of Android O. S.	3	50	2	50
3	CS503-T	Core Java-II	3	50	2	50
4	CS504-T	Basic of Computer Graphics	3	50	2	50
5*	CS505-T	Beginners Prog. with PHP	3	50	2	50
6*	CS506-T	Basic of ASP.Net	3	50	2	50
7#	CS507-T	Data Mining	3	50	2	50
8#	CS508-T	Advanced Networking	3	50	2	50
9	CS509-P	Pr. Based on Adv. Java	4	100	2	100
10		Pr. Based on Comp. Graphics	4		2	
11	CS510-P	Pr. Based on Android O.S.	4	100	2	100
12		Pr. Based on PHP/ASP.Net	4		2	
VI Semester						
1	CS601-T	Software Quality & Testing	3	50	2	50
2	CS602-T	Android Application Development	3	50	2	50
3	CS603-T	Theory of Computation	3	50	2	50
4	CS604-T	Advanced Computer Graphics	3	50	2	50
5*	CS605-T	Advanced Prog. With PHP	3	50	2	50
6*	CS606-T	Programming Language: C#	3	50	2	50
7#	CS607-T	e-Commerce	3	50	2	50
8#	CS608-T	Ethics and Cyber Law	3	50	2	50
9	CS609-P	Pr. Based on Android Develop.	4	100	2	100
10		Pr. Based on PHP / C#	4		2	
11	CS610-P	Major Project	8	100	4	100
12						

*** and #: Any one paper is to be opted from the group**

PATTERN OF QUESTION PAPERS

Note : 1) All questions carry equal marks.

2) All questions are compulsory.

Q. No.	Format	Marks
1.	Multiple Choice/Fill in the blank/Match the pair/ one line answer. 1) 2) • • 10)	1 x 10 = 10
2.	a) b) OR a)	5 * 2 =10 10
3.	a) b) OR a)	5 * 2 =10 10
4.	a) b) OR a)	5 * 2 =10 10
5.	Write Short Notes On: (Any Two) a) b) c) d)	5 * 2 =10
	Total	**50**

* Not More than 3 bits should be asked in each question of 10 Marks.

(Only for Paper Setter)

B.Sc.(Computer Science)

Semester -V

Course: B.Sc.(C.S.) – V Seme Paper Code: CS-501

Software Cost Estimation

Unit- I

Introduction

Observation on Estimation, Planning process, Software Scope and Feasibility, Types of Resources, Project estimation.

Unit-II

Decomposition Techniques

Software sizing, Problem-Based Estimation, LOC-Based Estimation with example, FP- Based Estimation with example, Process-Based Estimation with example, Designing Use Cases, Use Cases- Based Estimation with example, Estimate Reconciliation.

Unit-III

Empirical Estimation Models

Structure of Estimation Model, COCOMO Models, Software Equation, Estimation for Object-Oriented Projects, Estimation for Agile Development, Estimation for Web Projects, Creating a Decision Tree, Outsourcing.

Reference Books:

1. Software Engineering a Practitioner's Approach By Roger S. Pressman (Seventh Edition) McGraw Hill

2. An Integrated Approach to Software Engineering, Pankaj Jalote, Narosa.

Course: B.Sc.(C.S.) – V Seme **Paper Code: CS-502**

Basic of Android Operating System

Unit – I **Environment Setup:** Setup Java Development Kit (JDK), Android SDK,

Eclipse IDE, Android Development Tools (ADT) Plugin, Create Android Virtual Device, Architecture: Linux kernel, Libraries, Android Runtime, Application Framework.

Application Components

Application Components Activities, Services, Broadcast Receivers, Content

Providers, Additional Components, Create Android Application, Anatomy of Android Application, The Main Activity File, The Manifest File, The Strings File, The R File, The Layout File, Running the Application.

Unit-II

Resources Organizing & Accessing: Alternative Resources, Accessing

Resources

Intents and Filters: Intent Objects, Action, Android Intent Standard Actions, Data, Category, Extras, Flags, Component Name, Types of Intents: Explicit Intents, Implicit Intents.

UI Layouts

Android Layout Types, Relative Layout Attributes, Grid View Attributes, Sub-Activity, Layout Attributes, View Identification, UI Controls, Android

UI Controls, TextView Attributes, AutoComplete Text View Attributes, Button Attributes, ImageButton Attributes, CheckBox Attributes, ToggleButton Attributes, RadioButton Attributes, RadioGroup Attributes.

Unit-III

Event Handling:

Event Listeners & Event Handlers, Event Listeners Registration, Styles and Themes, Defining Styles, Using Styles, Style Inheritance, Android Themes, Default Styles & Themes, Custom Components, Creating a Simple Custom Components.

Books & References:

1) Android Tutorial, Simply Easy Learning by tutorialspoint.com.

Link:http://www.tutorialspoint.com/android/android_tutorial.pdf

2) Professional Andriod 4 Application Development :Retomeier, Wrox publication.

3) Andriod Apps for Absolute beginners : Wallace Jadson, Apress.

4) The Complete Andriod Guide: Kevin Purdy

5) Javapoint Tutorial : http://www.javapoint.com/andriod-tutorial

Course: B.Sc. (C.S.) – V Seme **Paper Code: CS-503**

Core Java-II

Unit – I

Input/Output Stream: File, Directories, FilenameFilter, Byte stream, Character stream**,** InputStream ,OutputStream ,Working with Reader classes, InputStreamReader, BufferedReader , FileInputstream , FileOutputStream, Writer classes

Utilities: Simple Type Wrapper: Number**,** Character, Boolean,

Enumerations: Dictionary and StringTokenizer, Date,Math :Tramsendentals, Exponential, Rounding function,

Unit -II

Applets : Introduction to Applet , Types of Applet, Applet vs Application , Applet class, advantages of Applet , Applet Lifecycle, My First Applet, Applet tag, Passing Parameters to Applet .

Graphics:Basic Shapes: drawLine, drawArc, fillArc, drawPolygon, fillPolygon, Color & Color Methods, Fonts.

Unit III

Java Database Connectivity (JDBC): Design of JDBC, JDBC configuration, Executing SQL statement, QueryExecution, Scrollable and updatable resultsets, row sets, metadata, Transaction Processing.

Networking: InetAddress, Datagrams, Socket for client and Server, URL, URL Connection.

Reference Books:

1. Java Complete Reference, Herbert Schildt, Seventh Edition, Tata McGraw Hill.
2. Java Handbook, Herbert Schildt, Tata McGraw Hill.
3. Java EE 6 for Beginners, Sharanam Shah, Vaishali Shah, Shroff Publishers and Distributors
4. Advanced Java™ 2 Platform How to Program by H. M. Deitel , P. J. Deitel,S. E. Santry
   Prentice Hall publication.

Course: B.Sc.(C.S.) – V Seme **Paper Code: CS-504**

Basic of Computer Graphics

Unit-I

Basics Concept in Computer Graphics

Introduction to Computer Graphics, Application of Computer Graphics, Classification of Computer Graphics, Types of Graphics Devices, Video Display Devices, Input Devices, Display File and its Structure, Display file Interpreter, Display Processor, Graphics file Format.

Graphics in C:

Introduction to graphics in C : initgraph(), detectgraph() and closegraph() function, Drawing object in C , Line, Circle, Rectangle, Ellipse, Changing foreground & background colors, Filling object by color function.,drawpoly, fillpoly, floodfill, getcolor, settext, outtext,style,fonts,coloring.

Unit-II

2-D Transformation

Translation, Rotation, Scaling, Homogenous Coordinates for Translation, Homogenous Coordinates for Rotation, Homogenous Coordinates for Scaling, Composogation from 2D Transformation, Other TransformationReflection, Shear, and Inverse Transformation.

Unit-III

Line, Circle and Character Generation

Basics concept in line Drawing, Line Drawing Algorithm, Digital Differential Analyzer, Bresenham's Line Algorithm, Antialiasing of Lines, Method of Antialiasing, Increasing Resolution, Unweighted Area Sampling, Pixel Phasing, Representation of Circle ,Polynomial Method, Trigonometric Method, Circle Drawing Algorithm, DDA Circle Drawing Algorithm, Bresenham's Circle Drawing Algorithm, Character Generation, Stroke Method, Starbust Method, Bitmap Method.

Text Books:

1. Procedural Elements for Computer Graphics: D.F.Rogers
2. Mathematical Elements for Computer Graphics: D.F.Rogersand J.A.Adams
3. Computer Graphics : A.P.Godse, (IIIrd Edition) ,Technical Publication

Reference Books:

1. Computer Graphics by M. Pauline Baker, Donald Hearn, (2ndEdition) PHI Publication
2. Principles of Interactive Computer Graphics By. William. M. Newman. (IInd Edition) Mc.Graw Hill Publication.
3. Computer Graphics by V.K. Pachghare, (II nd Edition), Laxmi Publication

Course: B.Sc.(C.S.) – V Seme **Paper Code: CS-505**

Beginners Programming with PHP

Unit-1: Introduction to PHP: What is PHP? Why PHP? Evolution of PHP. Installation: PHP on windows and Linux, Configuring: Apache & PHP, Running & Testing PHP Script, Combining PHP with HTML.
PHP Language Basics: Building blocks of PHP: Variables, Data Types, Operators and Expressions and Constant.
Decision within PHP: *if , if.. else, if.. elseif .. else, switch*, Ternary Operator

Unit – 2: Looping within PHP: *while, do...while, for, Break* & *Continue* statement Functions in PHP: What is function, why functions, Calling function, Returning Value from function, Recursive function.
Arrays in PHP: What & Why Array, Creating Array, Associative Array, Multidimensional Arrays, Accessing Array, Manipulating Arrays, Sorting Arrays, Merging Arrays,

Unit -3: Objects in PHP**:** What is Class & Object, Creating a Class & Object, Object properties, object methods, Overloading, inheritance, Constructor and Destructor. String in PHP: Creating and Accessing String, formatting String, Searching String, Manipulating String.
Date and Time: Understanding TimeStamp, Getting Date and time, Extracting values of date-time, Formatting date-time.

Reference Books:

1) **Beginning PHP 5.3 ,** Author: Matt Doyle**,** Wiley Publishing, Inc.
2) **SAMS Teach yourself PHP in 24 hours,** Author: Matt Zandstra, Sams Publishing.
3) **"PHP, MySQL and Apache All in One"** , Author: Juliea C. Meloni, SAMS series

Course: B.Sc.(C.S.) – V Seme **Paper Code: CS-506**

Basic of ASP.Net

UNIT I -

Web designing, web browser, web pages, home page, web site, web servers, world wide web , Concepts of hypertext, hypermedia, versions of HTML ,Evolution of .NET, Benefits of .NET Framework, Architecture of .NET Framework, Components of .NET Framework.

UNIT II –

ASP.NET Page Life Cycle, understanding ASP.NET controls, applications, web servers, installation of IIS. Web forms, web form controls, server controls, client controls, adding controls to web form, buttons, text box, labels, checkbox, radio buttons, list box, drop, down list, Ad rotator control . Adding controls a runtime, Running a web application.

UNIT III –

Creating a multiform web project, Form validation: client side and server side validation, Validation controls: Required Field Validator, Range Validator, Comparison Validator, Regular Expression Validator, Custom Validator, Validation Summary, Calendar control.

References:

1) .NET 4.0 Programming(6-in-1) Black Book- (Dremtech Press)
2) The Completer Reference ASP.NET – Mathew Macdonald (TMH)
3) Professional ASP.NET – Wrox publication
4) VB.NET Programming Black Book – Steven Holzner (Dreamtech pub.)
5) Introduction to .NET framework – Wrox publication.
6) ASP.NET Unleashed - bpb publication.

Course: B.Sc.(C.S.) – V Seme **Paper Code: CS-507**

Data Mining

Unit -1

Data Mining Introduction:

What is Data Mining?, Definition, DBMS Vs Data Mining, DM Techniques, Issues and Challenges in DM, DM Application Areas, DM Applications-Case Studies, Current Trends Affecting DM, Basic Data Mining Task.

Unit – 2

Association Rule:

What is an Association rule?, Method to discover Association Rule, A Priori Algorithm, Partition Algorithm.

Clustering Techniques: Clustering Paradigm, Partitioning Algorithm, Similarity and Distance Measure, Hierarchical Algorithm.

Unit – 3

Decision Tree: What is a decision tree? Tree Construction Principle, Best Split, Splitting indices, Splitting Criteria

Web Mining: Introduction, Web Content Mining, Web Structure Mining, Web Usage Mining.

Reference:

1. **Data Mining Techniques :** Arun K. Pujari ,
2. **Data Mining: Introductory and Advanced Topics:** M.H.Dunham Pearson Education.
3. **Data Mining: Concepts & Techniques,** Morgan Kaufman. 2006

Course: B.Sc.(C.S.) – V Seme **Paper Code: CS-508**

Advanced Networking

Unit I

The OSI reference model: concept of layers, protocols, interfaces and services, TCP/IP model.

Data Link Layer: Error correction & detection, Types of errors, Detection VS Correction, Block Coding, Linear Block codes(single parity check, hamming codes), Cyclic codes, CRC Encoder & Decoder, CRC Polynomial, Checksum.

Data Link Control & Protocols: Framing, Flow & Error Control, Simplest, Stop-N-Wait, Stop-N-Wait ARQ, Go Back N ARQ, Selective Repeat ARQ, Piggybacking. HDLC

Unit II

Network Layer: Logical addressing, IPv4 Addresses, Classful & Classless addresses, NAT, IPv6 Addressing,

Network layer protocol: Internetworking, IPv4, IPv4 protocol packet format, IPv6 Protocol & Packet format, IPv4 VS IPv6, Transition from IPv4 to IPv6, Address

Resolution protocols: (ARP, RARP), BOOTP, DHCP, Routing Protocols - Delivery, forwarding, routing, types of routing, routing tables, Unicast Routing, Unicast Routing protocols, RIP, Concepts of OSPF, BGP & Multicast Routing

Unit III

Transport Layer: Process to process delivery, UDP, TCP.

Congestion Control & Quality of Service: Data traffic, Congestion, Congestion Control (Open Loop, Closed Loop & Congestion control in TCP), QoS and Flow Characteristics.

Application Layer: DNS, Remote Logging(Telnet), SMTP, FTP, WWW, HTTP

Reference:

1) Data Communication & Networking (Forouzan) , Tata McGraw-Hill Education

Additional Reference:

1) Computer Networks and Internets - Douglas Comer, Prentice Hall

2) Computer Networks - Andrew Tanenbaum, Prentice Hall

Course: B.Sc.(C.S.) **Semester : V**

Topic: Pr. Based on Adv. Java **Paper No.: CS509P (A)**

Minimum 10 Practicals to be performed as per the guidelines of teaching Faculty depending upon all theory units of concerned subject.

Course: B.Sc.(C.S.) **Semester : V**

Topic: Pr. Based on Computer Graphics **Paper No.:**

CS509P (B)

Minimum 10 Practicals to be performed as per the guidelines of teaching Faculty depending upon all theory units of concerned subject.

Course: B.Sc.(C.S.) **Semester : V**

Topic: Pr. Based on Android O.S. **Paper No.: CS510P (A)**

Minimum 10 Practicals to be performed as per the guidelines of teaching Faculty depending upon all theory units of concerned subject.

Course: B.Sc.(C.S.) **Semester : V**

Topic: Pr. Based on PHP/ASP.Net **Paper No.: CS510P (B)**

Minimum 10 Practicals to be performed as per the guidelines of teaching Faculty depending upon all theory units of concerned subject.

B.Sc.(Computer Science)

Semester -VI

Course: B.Sc.(C.S.) – VI Seme Paper Code: CS-601

Software Quality and Testing

Unit-I

Quality Concepts

Software and Quality, Garvin's Quality Dimensions, McCall's Quality Factors, ISO 9126 Quality Factors, Risk, Quality and Security, SE Methods, Project Management Techniques, Quality Control and Assurance

Quality Assurance

Elements of Software Quality Assurance, SQA Task Goals and Matrices, Formal Approach to SQA, Six Sigma for SE, ISO 9000 Quality Standards, SQA Plan.

Unit-II

Software Testing Strategies

Verification and Validation, Picture of Software Testing Strategies, Criteria for complication of testing, Strategies issue, Strategies for Conventional Software and Web Apps, Validation Testing, System Testing, Debugging.

Unit-III

Testing Conventional Applications

Testing Fundamentals, Internal and External view, White-Box Testing, Basic Path Testing, Control Structure Testing, Black-Box Testing, Testing Client-Server Architecture.

Testing Web Applications

Dimensions of Quality, Errors within a Web App, Testing Strategy and planning, Testing process, Content Testing, Database Testing, User Interface Testing, Navigation Testing, Configuration Testing, Load Testing, Stress Testing.

Reference Books:

1. Software Engineering a Practitioner's Approach By Roger S. Pressman (Seventh Edition) McGraw Hill.
2. An Integrated Approach to Software Engineering, Pankaj Jalote, Narosa.

Course: B.Sc.(C.S.) – VI Seme Paper Code: CS-602

Android Application Development

Unit I: Android SDK Features

Access to Hardware including Camera, GPS, and Accelerometer, Native Google Maps, Geocoding, and Location-Based Services, Background Services, SQLite Database for Data Storage and Retrieval, Shared Data and Interapplication Communication, P2P Services with Google Talk, Extensive Media Support and 2D/3D Graphics, Optimized Memory and Process Management, The Dalvik Virtual Machine, Advanced Android Libraries.

Android Development Tools

Types of Android Applications, Hardware-Imposed Design Considerations, Users, Environment, The Android Emulator, Dalvik Debug Monitor Service (DDMS), The Android Debug Bridge (ADB).

Unit II: Applications and Activities:

Application Manifest, Manifest Editor, Android Application Life Cycle, Understanding Application Priority and Process States, Externalizing Resources, Fundamental Android

UI Design: The Android Widget Toolbox, Layouts, Compound Controls, Custom

Widgets and Controls, Android Menu System, Activity Menu,Intents, Broadcast Receivers, Adapters, and the Internet: Intents to Launch Activities, Intent Filters to Service Implicit Intents, Intent Filters for Plug-ins and Extensibility, Intents to Broadcast Events, Android-Supplied Adapters, Internet Resource.

Data Storage, Retrieval, and Sharing

Creating and Saving Preferences, Retrieving Shared Preferences, Saving the Activity State, File Management Tools, Databases in Android: SQLite, Cursors and Content Values, Content Providers.

Maps, Geocoding, and Location-Based Services: Location Providers, Geocoder, Map-Based Activities.

Unit III: Advanced Development in Android:

Controlling Services, Threads, Customizing Toasts, Toasts in Worker Threads, Notification Manager, Triggering Notifications. Peer-to-Peer Communication: Android Instant Messaging, Sending & Listening SMS.

Accessing Android Hardware: Media APIs, Controlling Camera Settings, Sensor Manager, Accelerometer and Compass, Android Telephony, Bluetooth, Managing Network and Wi-Fi Connections. Advanced Android Development: Paranoid Android, AIDL to Support IPC for Services, Internet Services, Rich User Interfaces.

Books & References:

1) Android Tutorial, Simply Easy Learning by tutorialspoint.com.
   Link:http://www.tutorialspoint.com/android/android_tutorial.pdf
2) Professional Andriod 4 Application Development :Retomeier, Wrox publication.
3) Andriod Apps for Absolute beginners : Wallace Jadson, Apress.
4) The Complete Andriod Guide: Kevin Purdy

Javapoint Tutorial : http://www.javapoint.com/andriod-tutorial

Course: B.Sc.(C.S.) – VI Seme Paper Code: CS-603

Theory of Computation

Unit-I

Introduction: Sets, relations, functions, graphs, trees, mathematical induction.

Regular expressions: FA and regular expression, pumping lemma for regular sets, applications of pumping lemma, closure properties of regular sets, regular sets and grammar, types of grammar (type 0, type 1, type 2, type 3)

Unit-II

Finite automata: definition, transition systems, acceptability of strings, NFA, DFA, equivalence of DFA and NFA, melay moore model, minimization of automaton, Applications.

Unit-III

Formal Languages, Chomsky classification of languages, languages, their relation and automaton.

Reference Books

1. J E Hopcroft, R Motwani and J D Ullman, Introduction to Automata theory, Languages
   and Computation, Pearson Education Asia, 2003.
2. Daniel A Cohen, Introduction to Computer Theory, Hardcover (1990) by. John Wiley &
   Sons
3. K. L P Mishra, N Chandrashekharan, Theory of Computer Science, PHI 2001
4. Martin John C, Introduction to Language ad Theory of computations (TMH) 2004

Course: B.Sc.(C.S.) – VI Seme Paper Code: CS-604

Advanced Computer Graphics

Unit-I

3-D Transformation

Translation,ScalingRotation,Shearing, Reflection, Multiple Transformation Projection, Perspective Projection, Parallel Projection, Types of Parallel & Perspective Projection, Vanishing Points. Diffuse Illumination, Specular Reflection.

Unit-II

Curves and Fractals

Curve Generation, Representation of Parametric & Non-Parametric Curves, Spline Representation Parametric Representation of Circle & Ellipse, Bezier curves, B-Spline curves Fractals, classification of fractals, Topological Dimension, fractal Dimension, Hilbert's curves ,Koch curve.

Unit-III

Colour Model and Animation

Properties of Light, CIE Chromaticity Diagram, Colour Primary Systems, Color Matching Experiments, Colour Models: RGB, CMY and HSV.Introduction of Animation, Animation Using Colour Table, Animation of Wireframe Models.

Text Books:

1. Procedural Elements for Computer Graphics: D.F.Rogers
2. Mathematical Elements for Computer Graphics: D.F.Rogers and J.A.Adams
3. Computer Graphics by M. Pauline Baker, Donald Hearn, (2ndEdition) PHI Publication

Reference Books:

1. Computer Graphics: A.P.Godse,(IIIrd Edition), Technical Publication
2. Principles of Interactive Computer Graphics By. William. M. Newman. (IInd Edition) Mc.Graw Hill Publication.
3. Computer Graphics by V.K. Pachghare, (II nd Edition), Laxmi Publication

Course: B.Sc.(C.S.) – VI Seme **Paper Code: CS-605**

Advanced Programming with PHP

Unit-I: Handling HTML Forms in PHP: Creating HTML Form, Capture Data Sent,

Handling: Empty form data, Multi-Value fields, Validating Form Data, Difference between GET and POST, Global and Environment Variables, Generating Web-form in PHP, Create Multi-step Form, Hidden fields, Redirecting the user.

Unit – II: Cookies and user sessions in PHP: State and Stateless Webpage,

Cookies: Anatomy of cookies, Setting a cookies with PHP, Deleting a

cookies, Creating Session Cookies,

QueryString: Working with QueryString, Creating QueryString.

Session: Using PHP Session to Store Data: Creating a Session, Reading & Writing Session Data, Destroying a Session, Create a User Login System.

Unit – III: Introducing Database and SQL: Basics of MySql, Connecting to the Database Server, Creating Database, Creating Table.

Retrieving data: Limit the number of results returned, Order and group results, Query multiple tables at once, Use various MySQL functions and other features to build more flexible queries

Manipulating data from SQL with PHP: Inserting new records into tables using INSERT statements, changing field values within records with UPDATE statements, deleting records using DELETE statements.

Reference Books:

1) **Beginning PHP 5.3 ,** Author: Matt Doyle**,** Wiley Publishing, Inc.
2) **SAMS Teach yourself PHP in 24 hours,** Author: Matt Zandstra, Sams Publishing.
3) **"PHP, MySQL and Apache All in One"** , Author: Juliea C. Meloni, SAMS series

Course: B.Sc.(C.S.) – VI Seme **Paper Code: CS-606**

Programming Language: C Sharp

UNIT I :

Introduction : Basic Concepts, Features, Common Language Specification

C# Types: Simple type, Struct type, Object type Class type, Interfaces, String type, Arrays , Boxing & unboxing Conversions , Implicits , Explicits , Standard & User Defined Conversions.

UNIT II :

Control Statements : Selection Statements – if , Switch, Iteration Statements – For, For-Each, While , Do statements.

Classes & Methods : Constructors & Destructors ,Methods-Parameters, Overriding, Hiding class properties , Indexes , Modifiers, Class member Access, Multi cast deligates

Inheritance & Polymorphism : Inheritance- Basic class & Derived Class , Polymorphism , Base class with Virtual method, Derived class with override methods

UNIT III :

Interfaces: Base, body , members , methods , properties , events, indexes, mapping, implementation

Exception Handling : Checked & Unchecked statements, compiler settings for overflow checking , Programmatic overflow checking , Exception handling statements – try & catch , try & finally , try- catch-finally , throwing exception & rethrowing exception

Reference Books :

1 . C# : A Beginners Guide – Childt , Herbert (Tata Mcgraw Hill , New Delhi)
2. C# The basics , Vijay Mukhi (BPB Publications)
3. C# Programming (Wrox Publications)
4. C# Programming Black Book – Matt Telles (DreamTech Publications)

Course: B.Sc.(C.S.) – VI Seme **Paper Code: CS-607**

E-Commerce

Unit-I

Introduction, IT and business, E-commerce: Concepts Electronic Communication, PCs and Networking, E-mail, Internet and intranets. EDI to E-commerce, EDI, UN/EDIFACT

Unit-II

Concerns for E-commerce Growth, Internet bandwidth, Technical issues, Security issues. India E-commerce Readiness, Legal issues, Getting started.

Security Technologies: Encryption, Symmetric key Encryption, Public key encryption, Public key encryption using digital Signatures. Hashing techniques, Certification and key Distribution, Cryptographic.

Unit-III

The elements of E-commerce. SSL-Secure Socket Layer, SET-Secure Electronic Transaction Protocol for Credit card payment, E-Cash, E-check, Smart cards.

Electronic Payment System: Digital Cash, Digital Wallets, Digital checking payment systems, Electronic Billing, Wireless payment systems.

Software Package: PGP e-mail encryption software

Textbook:

1. E-Commerce: The Cutting Edge of Business, Kamlesh K. Bajaj & Debjani Nag, Tata McGraw Hill.
2. E- Commerce Strategy , Technologies and Applications, David Whiteley, McGraw Hill Edition

Reference Books:

1. E- Security, Electronic Authentication and Information Systems Security Sundeep Oberoi, TMG
2. E-Commerce Concepts, Models , Strategies by - G.S.V Murthy
3. E-Commerce- Kenneth C.Laudon and Carol Guercio Traver
4. Internet marketing and E-commerce-Ward Hanson and Kirthi Kalyanam

Course: B.Sc.(C.S.) – VI Seme **Paper Code: CS-608**

Ehtics & Cyber Law

Unit-I

Basic Concepts of Technology and Law, Understanding the Technology of Internet, Scope of Cyber Laws, Cyber Jurisprudence. Law of Digital Contracts The Essence of Digital Contracts.

Unit-II

The System of Digital Signatures. The Role and Function of Certifying Authorities. The Science of Cryptography, E-Governance, Cyber Crimes and Cyber Laws. Introduction to Intellectual Property.

Unit-III

Information Technology Act 2000 Cyber Law

Issues in E-Business Management. Major issues in Cyber Evidence Management, Cyber Law Compliancy Audit, The Ethics of Computer Security. Relevant Rules Notifications, Information Technology (Amendment) Act, 2008.

Text books:

1. Godbole,"Information Systems Security", Willey
2. Merkov, Breithaupt,"Information Security", Pearson Education
3. Yadav, "Foundations of Information Technology", New Age, Delhi
4. Schou, Shoemaker, "Information Assurance for the Enterprise", Tata McGraw Hill
5. Sood,"Cyber Laws Simplified", Mc Graw Hill
6. Furnell, "Computer Insecurity", Springer

Course: B.Sc.(C.S.) **Semester : VI**

Topic: Pr. Based on Android Development **Paper No.: CS609 P (A)**

Minimum 10 Practicals to be performed as per the guidelines of teaching Faculty depending upon all theory units of concerned subject.

Course: B.Sc.(C.S.) **Semester : VI**

Topic: Pr. Based on PHP/C# **Paper No.: CS609 P (B)**

Minimum 10 Practicals to be performed as per the guidelines of teaching Faculty depending upon all theory units of concerned subject.

Course: B.Sc.(C.S.) **Semester : VI**

Topic: Major Project **Paper No.: CS610**

Note:

1) It is expected that concerned Faculty is to introduce and make the students aware about the Project Development Environment as well as distribute all the students in group with minimum 2 and maximum 4 student's strength.

Minimum contents of Project Report

1. Introduction
2. Problem definition.
3. System Requirement Specification
   - 3.1. User Interview
   - 3.2. Current System flow diagram
   - 3.3. Proposed System.
4. E-R Diagram
5. DFD
6. Sample Screens
7. Conclusion

Program	Course	Cross-cutting Issues	Topics Covered
BA I, II, III	History	Trade & Commerce, Urbanization, Rayatwari sattlement	British Rules in India (1757-1857 AD) History of Early medieval India (650 - 1200 AD) History of India (1757 - 1885 AD)

HISTORY SYLLABUS IIND

D.R.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

AURANGABAD

Syllabus of

Second Year

B.A.(HISTORY)

Semester - III rd and IV th

{effective from 2014 - 15 & onwards}

Chairman
Board of Studies in History
Dr. Babasaheb Ambedkar Marathwada
University, Aurangabad

SYLLABUS OF B.A. II nd

DR.BABASAHEB AMNEDKAR MARATHWADA UNIVERSITY, AURANGABAD.

SYLLABUS OF B.A. II nd YEAR (HISTORY)

SEMESTER SYSTEM
(effective from 2014-2015)

1. Each semester consist of two papers
2. Each paper will be of 50 Marks
3. Semester end examination will be of 90 minutes for each papers.

Paper No	Title of the paper	Periods Allotted
	SEMESTER III RD	
V	Histiry of early India (Up to B.C.300)	60
VI	History of Delhi Sultanat (A.D.1200-A.D.1526) OR British Rule in India A.D.1757-A.D.1857	60
	SEMESTER IV	
VII	History of India (B.C.300-A.D.650)	60
VIII	History of Mugal India A.D.1526-A.D.1757	60
	OR	
	History of India (A.D.650 - A.D.1200	
	OR	
	History of Soviet Unoin (A.D.1917 - A.D.1985)	

Note :- One Period of 50 Minutes.

[redacted]
Chairman
Board of Studies in History

HISTORY SYLLABUS IIND

OR

PAPER NO. VI - BRITISH RULE IN INDIA (A.D. 1757 A.D. 1857)

Sr.No	Name of the Chapter	Periods Allotted
1	Advant and foundation of British rule in India : A)Political condition of India during 18th Century B)Battle of Plassey	12
2	**Review of administrative policies of colonial rule :** From Clive to Canning	10
3	**Economic policy of the colonial rule** **A)** Policy towards Indian Industries. **B)** Policy towards Indian agriculture. **C)**Monopoly in trade and commerce	12
4	**Expansion and consolidation of British rule :** British dream of empire building in India. Annexation of Awadh, Panjab, Rajasthan, Mysore, Kerala and defeatn of Marathas – (a brief	14
5	**Uprising of 1857** : Causes, course and consequences	12
	Total Period	60

HISTORY SYLLABUS IIND

OR

PAPER NO. VIII - HISTORY OF EARLY MEDIEVAL INDIA (650 – 1200 A. D.)

Sr.No	Name of the Chapter	Periods Alloted
1	Sources and approaches to study early medieval India	10
2	A) Processes and structure of early medieval state with reference to North India: Pratiharas and rise of Rajput dynasties, Western India: Rashtrkuta, Chalukya and South India: Cholas, and Pallava B) Arab Invasion , Invasion of Mahmud Ghazani and Mahammad Ghori.	14
3	A) Social condition: feudal formation of society, caste proliferation, untouchability, patriarchy, B) Religious movements: Buddhism, Jainism, Shaivism, Vaishnvism, Nath cult,Virshaivism	12
4	Economy in early medieval India: Changing structure of agrarian society, village society, land ownership, Trade and commerce, cities and urbanization	12
5	Cultural Life: literature in Sanskrit and regional languages, Temple architecture, Music and Art.	12
	Total Period	60

DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD

SYLLABUS OF

Third Year

B.A. (History)

Semester Vth & VIth

(Effective From: - 2015-2016 & onwards)

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD

SYLLABUS OF B.A.III rd

YEAR (HISTORY) SEMESTER SYSTEM

(Effective From: - 2015-2016)

1) Each Semester consist of Four papers
2) Each paper will be of 50 marks:
3) Semester-end examination will be of 90 minutes for each paper.

Paper No.	Title of the paper	Credits Allotted	Periods Allotted
	SEMESTER – V th		
9	Historiography	04	60
10	History of Indian National Movement (A.D. 1885 – A.D. 1947)	04	60
11	Women's Struggle in Modern India OR History of Modern China (A.D. 1900 – A.D.1950) OR History of India (A.D. 1757- 1885)	04	60
12	Project work	04	60
	SEMESTER- VI th		
13	Fields of History (Archaeology, Museology and Tourism)	04	60
14	Landmarks in the History of modern world	04	60
15	Glimpses of the History of Marathwada OR Nationalist movements in south - East Asia	04	60
16	Project work	04	60

NOTE:

1. One period of 50 minutes
2. 60 periods are meant for classroom teaching and Project work.

OR

PAPER-II HISTORY OF INDIA (A.D. 1757- 1885)

Sr.No.	Name of the Chapter	Period Allotted
1	Advant of European Powers in India Indian Polity & Economy in the Mid-Eighteenth Century	09
2	Expansion and consolidation of British Power Bengal, Punjab, Audh, Mysore, Maharashtra.	09
3	Early Phase of British Rule I. Administrative & Judical Structure II. Education III. Press IV. Activities of Missionaries	08
4	Economy I. Agarian Settlement – Permanent Settlement Ryatwari Settlement & Mahalwari system Commercialization of agriculture II. Traditional handicraft industry & Question of de – industrialization. III. Railway, Post & Telegraphs. IV. Large Scale Industry- Cotton, Jute Iron & Steel. V. Famine & British Policy. VI. Internal & External Frade .	12
5	Socio- Religions reform Movement Brahmo Samaj Satyshodhak Samaj Arya Samaj Prarthana Samaj	08
6	Resistance to colonial Rule I. Nature to form of Resistance II. Pre-1857 Peasent & Trible resistance. III. Revolt of 1857 – nature, causes leadership & impact.	09
7	Rise and growth of Indian nationalism Early political organizations & Foundation of Indian National Congress	05
	Total periods:	60

NOTE:

1] 60 periods = 04 credits

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

CIRCULAR NO.ACAD/SU/Arts/B.A.III Yr. Syll./1/2015

It is hereby notified for information to all the concerned that, on the recommendation of the Faculty of Arts the Academic Council at its meeting held on 30-05-2015 has accepted the **Revised Syllabi under the Faculty of Arts as under :-**

Sr. No.	Name of the Subject	Semester
[1]	Marathi	V & VI
[2]	Hindi	V & VI
[3]	English	V & VI
[4]	Urdu & Arabic	V & VI
[5]	Pali and Buddhism	V & VI
[6]	Sanskrit	V & VI
[7]	Islamic Studies	V & VI

This is effective from the Academic Year 2015-16 & onwards as appended herewith.

All concerned are requested to note the contents of the 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/SU/COMM./
2015/2605-3004
Date:- 15-06-2015.

★
★
★
★
★
******

Director,
Board of College and
University Development.

Copy forwarded with compliments to:-

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

Copy to :-

1] The Controller of Examinations,
2] The Director, [E-Suvidha Kendra], in-front of Registrar's Quarter,
Dr. Babasaheb Ambedkar Marathwada University,
3] The Superintendent, [B.A. Unit],
4] The Programmer [Computer Unit-1] Examinations,
5] The Programmer [Computer Unit-2] Examinations,
6] The Record Keeper.

-=**=-

S*/-150615/-

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY AURANGABAD

SYLLABUS

OF

OPTIONAL ENGLISH COURSE (SUBSIDIARY AND MAIN)

FOR

B.A. THIRD YEAR

SEMESTER FIVE AND SIX

(EFFECTIVE FROM JUNE 2015 AND ONWARDS)

OUTLINE OF B.A. THIRD YEAR OPTIONAL ENGLISH COURSE

SEMESTER FIVE

Paper No.	Paper Title	Paper Code	Paper Type
IX	Twentieth Century English Literature	OPE-5	Subsidiary
X	Introduction to Literary Criticism and Terms	OPE-6	Subsidiary
XI(A) XI(B)	American Literature *OR* Indian Writing in English	OPE-7	Main
XII	Project Work on History of English Literature (from Renascence Age to the Age of T.S. Eliot)	OPE-8	Main

SEMESTER SIX

Paper No.	Paper Title	Paper Code	Paper Type
XIII	Twentieth Century English Literature	OPE-5	Subsidiary
XIV	Introduction to Literary Criticism and Terms	OPE-6	Subsidiary
XV(A) XV(B)	American Literature *OR* Indian Writing in English	OPE-7	Main
XVI	Project Work on History of English Literature (from Renascence Age to the Age of T.S. Eliot)	OPE-8	Main

SYLLABUS
B.A. THIRD YEAR OPTIONAL ENGLISH COURSE
(MAIN AND SUBSIDIARY)

Semester Five and Six

The course of B.A. Third Year Optional English is grouped into two sections, one is the Subsidiary and the other is the Main. The Subsidiary English Course consists of two papers to be studied in two semesters and the Main English Course too consists of two papers to be studied in two semesters. Thus B.A. Third Year Optional English Course together with the Subsidiary and the Main comprises of four papers to be studied in Semester Five and Six. The Subsidiary group of papers is compulsory for the students and the Main group of papers is optional. Paper Nos. XII and XVI (History of English Literature) from the group Main are for the Project Work to be done and submitted by the students to the concern Department at the end of Semester Six.

AIMS OF THE COURSE:

1) To introduce the students to Modern English Literature as production of the age.
2) To familiarize the students with the literary terms and introduce to them the various streams in literary criticism and develop in them skills for literary evaluation.
3) To help the students to approach and appreciate Indian literature in English and make them see its place among world literature in English.
4) To introduce the students to American literature and its diverse cultures reflected in its writing.
5) To make the students able to understand the background of English literature and help them to write on its development.

OBJECTIVES OF THE COURSE:

1) To make the students understand how the literature of modern period relates to the important trends of the period.

2)To make the students aware of the fact that all readers are critics and introduce them to basic texts in criticism while developing critical thinking in them.

3) To introduce the students to the thematic concerns, genres and trends of both Indian Writing in English and American Literature.

4) To lead the students to see how texts are affected by the context.

COURSE CONTENT

SEMESTER FIVE

PAPER NO. IX: TWENTIETH CENTURY ENGLISH LITERATURE (SUBSIDIARY)

UNIT ONE: POETRY

TEXT: ELIOT'S POEMS: i) ***THE LOVE SONG OF J. ALFRED PRUFROCK*** (1917)

ii) ***PRELUDES*** (1917)

UNIT TWO: DRAMA

TEXT: G.B. SHAW'S PLAY: ***PYGMALION: A ROMANCE IN FIVE ACTS*** (first staged in 1914 & pub. in1916)

UNIT THREE: FICTION

TEXT: D. H. LAWRENCE'S FICTION: ***SONS AND LOVERS*** (1913)

PRESCRIBED TEXT BOOKS:

Jain, Manju. *Selected Poems and Critical Reading of the Selected Poems of T.S. Elio*t. OUP. New Delhi: 1992.

Shaw, G.B. *Pygmalion: A Romance in Five Acts*, Introduction by A.C.Ward. Orient Longman. Hyderabad:1992.

Lawrence, D.H. *Sons and Lovers*. Kalyani Publishers. New Delhi: 1993.

SUGGESTED CRITICAL READING:

Stephen, Martin. *An Introductory Guide to English Literature*. Longman York Press. England: 1990.

Lawrence, Kaven et al. *The McGraw-Hill Guide to English Literature.Vol. Two: William Blake to Lawrence.* McGraw-Hill Publishing Company. New: York: 1992.

Basu, Pawan Kumar,Edt. *T. S. Eliot: An Anthology of Recent Criticism.*Pencraft International. Delhi: 1993.

Sarker, Sunil Kumar. T. S. Eliot: Poetry, Plays and Prose. Atlantic Publishers and Distributors. New Delhi: 2000.

Harry, Geoffrey. *Sons and Lovers*. Humanities Press International. Hong Kong:1987.

Murfin, Ross C. *Sons and Lovers*: *A Novel of Division and Desire*. Twayne Publishers. Boston:1987.

Kermode, Frank. *Lawrence*. Fontana Modern Masters. Fontana Press. London: 1985.

Chesterton, G.K. *George Bernard Shaw*. Atlantic Publishers and Distributors. New Delhi: 1990.

PAPER NO. X: INTRODUCTION TO LITERARY CRITICISM AND TERMS (SUBSIDIARY)

UNIT ONE: ARISTOTLE

TEXT: His ***OBSERVATIONS ON TRAGEDY***

UNIT TWO: SIR PHILIP SIDNEY

TEXTS: His ***CLASSICISM*** and the **VALUE HIS CRITICISN**

UNIT THREE: LITERARY TERMS

i) ***ALLEGORY*** ii) ***BATHOS*** iii) ***BURLESQUE*** iv) ***CARICATURE*** v) ***FLAT AND ROUND CHARACTER*** vi) ***GENRE*** vii) ***IMAGERY*** viii) ***IRONY*** ix) ***METAPHOR*** x) ***MYTH***

PRESCRIBED TEXT BOOKS:

Prasad, Birjadish. *An Introduction to English Criticism*. Macmillan Publishers India Ltd.Delhi: 2012.

Gray, Martin. *A Dictionary of Literary Terms*. Pearson Education

Ltd.New Delhi:2011.

SUGGESTED COMPLIMENTARY READING:

Longman and Andrew. *An Introduction to Literary Criticism.* Doaba Book House. Delhi: ---.

Chakrabarti, Piyas. *Anthem Dictionary of Literary Terms and Theory.* Anthem Press. Delhi: 2006.

Peck, John and Coyle Martin. *Literary Terms and Criticism.* Third Edition. Palgrave. China: 2002.

PAPER NO. XI(A): AMERICAN LITERATURE (MAIN)

UNIT ONE: POETRY

TEXT: EMILY DICKINSON'S POEMS:

i) ***THERE CAME A WIND LIKE A BUGLE***
ii) ***APPARENTLY WITH NO SURPRISE***
iii) ***THEY SAY THAT "TIME ASSUAGES"***
iv) ***"HOPE" IS THE THING WITH FEATHERS***
v) ***THE HEART ASKS PLEASURE FIRST***

UNIT TWO: DRAMA

TEXT: EUGENE O'NEILL'S PLAY: ***THE HAIRY APE*** (1921)

UNIT THREE: FICTION

TEXT: MARK TWAINS'S FITION: ***THE ADVENTURES OF HUCKLEBERRY FINN*** (1884)

PRESCRIBED TEXT BOOKS:

Oliver, Egbert S.Edt.*American Literature: 1890-1965: An Anthology.* Eurasia Publication House (Pvt.) Ltd. New Delhi: 1994.

O'Neill, Eugene. *The Hairy Ape: A Comedy of Ancient and Modern Life.* B.I. Publications Ltd. Bombay: 1990.

Twain, Mark. *The Adventures of Huckleberry Finn.* USB Publisher' Distributors Ltd. New Delhi: 1992.

SUGGESTED CRITICAL READING:

Cunliffe, Marcus. *The Literature of the United States.*4 Edition. Penguin Books. Englan:1991.

Gray, Richard. *A History of American Literature*. Blackwell Publishing. USA: 2004.

Gupta, Monika. *The Plays of Eugene O'Neill*: *A Critical Study*. Atlantic Publishers and Distributors. New Delhi:2001.

Agrawal, R.K. *The Poetry of Emily Dickinson: Major Themes and Paradoxical Vision*. Radha Publication. New Delhi: 1993.

Kar, P.C, Edt. *Mark Twain: An Anthology*. Pencraft International. Delhi: 1992.

Mohan, T.M.J. Indra. "O'Neill's *The Hairy Ape* as a Reflection of Contemporary Society". *Studies in Literature in English*. Vol.X. Mohit K. Ray, Edt. Atlantic Publishers and Distributors. New Delhi: 2005.

Patil, Mallikarjun. "*The Hairy Ape*: A Critique of American Capitlism". *Studies in Literature in English*. Vol.XV. Mohit K. Ray, Edt. Atlantic Publishers and Distributors. New Delhi: 2009.

Rao, S. Prakash. "Mark Twain: *The Adventure of Huckleberry Finn*". *Current Perspective on American Literature*. Atlantic Publishers and Distributors. New Delhi: 1995.

Patil, Mallikarjun. *Studies in American Literature*. Atlantic Publishers and Distributors. New Delhi: 2009. (for *Huck Finn*, *The Hairy Ape*)

OR

PAPER NO.XI (B): INDIAN WRITING IN ENGLISH (MAIN)

UNIT ONE: POETRY

TEXT: NISSIM EZEKIEL'S POEMS:

i)**VERY INDIAN POEM IN INDIAN ENGLISH**

ii) **NIGHT OF THE SCORPION**

UNIT TWO: DRAMA:

TEXT: VIJA TENDULKAR'S PLAY: ***SILENCE! THE COURT IS IN SESSION*** (1978)

UNIT THREE: FICTION

TEXT: RAJA RAO'S FICTION: ***KANTHPURA*** (1938)

PRESCRIBED TEXT BOOKS:

Peeradina, Saleem, Edt. *Contemporary Indian Poetry in English*: *An Assessment and Selection*. Macmillan India Ltd. New Delhi: 2008.

Tendulkar, Vijay. *Silence! The Court is in Session*.Trns. by Priya Adharkar. OUP. Calcutta: 1978.

Rao, Raja. *Kanthapura*.Orient Paperbacks.Delhi: 1971.

SUGGESTED CRITICAL READING:

Sing, K.K. *Indian English Poetry After Independence*. Book Enclave. Jaipur: 2012.

Gopal, N.R. and Sachar, Suman. *Indian English Poetry and Fiction: A Critical Evaluation*.Atlantic Publishers and Distributors. Delhi: 2000.

Dwivedi, Suresh C, Edt. *Perspective on Nissim Ezekiel*. Kitab Mahal. New Delhi: 1989.

Raghu, A. *The Poetry of Nissim Ezekiel*. Atlantic Publishers and Distributors. Delhi: 2002.

Narayan, Shyamala A. *Raja Rao: Man and His Work*. Sterling Publishers Pvt. Ltd. New Delhi: 1988.

Dayal, P. *Raja Rao*: *A Study of His Novels*. Atlantic Publishers and Distributors. New Delhi: 1991.

Dey, Esha. *The Novels of Raja Rao: The Theme of Quest*. Prestige. New Delhi: 1972.

PAPER NO.XII: PROJECT WORK ON HISTORY OF ENGLISH LITERATURE (**MAIN**) (from Renascence Age to the Age of T.S. Eliot)

The Project Work is to be done by the students themselves seeking guidance from the head or, the concerned teacher to complete it. It shall be **written** by the students on the papers provided by the

University/ College or recommended by the teacher. The completed Project shall be submitted by them to the concerned Department during the period of the sixth semester. It carries hundred marks which will be given after the evaluation of it. The length of the project shall be moderate or, matching to its topic. The students have to do the certain tasks during the fifth semester as mentioned bellow.

TASK I: To know about the Project.
TASK II: To select the topic for the Project.
TASK III: To register the topic.

PRESCRIBED TEXT BOOK:

Sampson, George. *The Concise Cambridge History of English Literature*. Third Edition. Cambridge University Press. New Delhi: 2014.

SEMESTER SIX

PAPER NO. XIII: TWENTIETH CENTURY ENGLISH LITERATURE (SUBSIDIARY)

UNIT ONE: POETRY

TEXT: W.B. YEATS'S POEMS: i) ***EASTER 1916***
ii) ***THE SECOND COMING***
iii) ***AMONG SCHOOL CHILDREN***

UNIT TWO: DRAMA

TEXT: JOHN OSBORNE'S PLAY: ***LOOK BACK IN ANGER*** (first staged in1956 & pub. in 1957)

UNIT THREE: FICTION

TEXT: KINGSLEY AMIS'S FICTION: ***LUCKY JIM*** (1954)

PRESCRIBED TEXTBOOKS:

Osborn, John. *Look Back in Anger*: *A Play in Three Acts*. Intro. by P.Sinha and Notes by Nissim Ezekiel. OUP. Bombay:1992.

Jeffares, Norman. *W.B. Yeats: Selected Poetry*. Radha Publishing House. Culcutta: ---.

Amis, Kingsley. *Lucky Jim*. With an Introduction by David Lodge. Penguin Books. Great Britain; 1953.

SUGGESTED CRITICAL READING:

Taneja, G.R. Edit. W.B. Yeats: *An Anthology of Recent Criticism*. Pencraft International. Delhi:1995. Caplan, Ralph.

"Kingsley Amis." *Contemporary British Novelists.* Charles Shapiro, Edt. Southern Illinois Univ. Press. USA: 1976.

Mrs. Ponni, Balchandran. "John Osborne's *Look Back in Anger*: A Clarion Protest". *Twentieth Century Literature in English*. Vol. 2. M.K. Bhatnagar, Edt. Atlantic Publishers and Distributors. New Delhi: 1996.

PAPER NO. XIV: INTRODUCTION TO LITERARY CRITICISM AND TERMS (SUBSIDIARY)

UNIT ONE: WILLIAM WORDSWORTH

TEXTS: i) His ***CONCEPT OF POETIC DICTION***

ii) His ***CONCEPT OF POETRY***

UNIT TWO: F. R. LEAVIS

TEXTS: i) His ***CONCEPTION OF LITERATURE***

ii) His ***CONCEPTION OF BUSINESS CRITICISM***

UNIT THREE: LITERARY TERMS

i) ***PARADOX*** ii) ***PERSONIFICATION*** iii) ***REALISM*** iv) ***SATIRE*** v)***SENTIMENTALITY*** vi) ***STYLE*** vii) ***SYMBOL*** viii) ***THEME*** ix) ***TECHNIQUE*** x) ***WIT***

PRESCRIBED TEXT BOOKS:

Prasad, Birjadish. *An Introduction to English Criticism*. Macmillan Publishers India Ltd.Delhi: 2012.

Gray, Martin. *A Dictionary of Literary Terms*. Pearson Education Ltd.New Delhi:2011.

SUGGESTED COMPLIMENTARY READING:

Longman and Andrew. *An Introduction to Literary Criticism*. Doaba Book House. Delhi: ---.

Chakrabarti, Piyas. *Anthem Dictionary of Literary Terms and Theory*. Anthem Press. Delhi: 2006.

Peck, John and Coyle Martin. *Literary Terms and Criticism*. Third Edition. Palgrave. China: 2002.

PAPER NO. XV (A): AMERICAN LITERATURE (MAIN)

UNIT ONE: POETRY

TEXT: ROBERT FROST'S POEMS i) ***MENDING WALL***
ii)***ROAD NOT TAKEN***

UNIT TWO: DRAMA

TEXT: TENNESSEE WILLIAMS'S PLAY:
A STREETCAR NAMED DESIRE (1947)

UNIT THREE: FICTION

TEXT: ERNEST MILLER HEMINGWAY'S FITION: ***THE OLD MAN AND THE SEA*** (1952)

PRESCRIBED TEXT BOOKS:

Oliver, Egbert S.Edt.*American Literature: 1890-1965: An Anthology*. Eurasia Publication House (Pvt.) Ltd. New Delhi: 1994.

Williams, Tennessee. *A Streetcar Named Desire*. Penguin Books. England:2009.

Hemingway, Ernest. *The Old Man and the Sea*. Harper Collins Publishers India. New Delhi: 1994.

SUGGESTED CRITICAL READING:

Donaldson, Scott. *The Cambridge Companion to Ernest Hemingway*. Cambridge University Press. New York: 1998.

Dahia, Bhim S. *The Hero in Hemingway: A Study in Development*. Bahri Publications Pvt. Ltd. New Delhi: 1978.

Sing, Jaspal. *Semiotic Analysis of Hemingway's Old Man and the*

Sea. Bahri Publications. New Delhi: 1990.

Balchandran, K. "Tennessee Williams' *A Streetcar Named Desire* as a Domestic Tragedy". *Twentieth Century Literature in English*, Vol. 2. M.K. Bhatnagar Edt. Atlantic Publishers and Ditributors. New Delhi:1996.

Panda, R.N. "Intertextuality of Dramatic Discourse: A Study through… *A Streetcar named Desire*".*Studies in Literature*. Vol. VII. Mohit K. Ray, Edt. Atlantic Publishers and Distributors. New Delhi: 2004.

Patil, Mallikarjun. *Studies in American Literature*. Atlantic Publishers and Distributors. New Delhi: 2009. (for *The Old Man and the Sea*)

OR

PAPER NO.XV (B): INDIAN WRITING IN ENGLISH (MAIN)

UNIT ONE: POETRY

TEXT: ARUN KOLATKAR'S POEMS i)***THE BOAT RIDE***

UNIT TWO: DRAMA:

TEXT: GIRISH KARNAD'S PLAY: ***TUGHLAQ***

UNIT THREE: FICTION

TEXT: U.R. ANANTHAMURTHY'S: ***SAMSKARA*** Or ***A RITE FOR A DEAD MAN***

PRESCRIBED TEXT BOOKS:

Peeradina, Saleem, Edt. *Contemporary Indian Poetry in English*: *An Assessment and Selection*. Macmillan India Ltd. New Delhi: 2008.

… *Three Modern Plays: Tughlaq, Evam Indrajit, Silence! The Court is in Session*. OUP. India: 2013.

Murthy, U.R. Anantha. *Samskara, A Rite for a Dead Man*. Trans. by AK. Ramanujan. OUP. Delhi: 1992.

SUGGESTED CRITICAL READING:

Sing, K.K. *Indian English Poetry After Independence*. Book Enclave. Jaipur: 2012.

Gopal, N.R. and Sachar, Suman. *Indian English Poetry and Fiction: A Critical Evaluation.*Atlantic Publishers and Distributors. Delhi: 2000.

Vaja, Iros. *Myths in Girish Karnad's Plays: A Critical Study*. Paradise Publishers. Jaipur: 2010.

Naik, M.K."The Limit of Human Power: A Comparative Study of *Tughlaq*…". *Studies in Indian English Literature*. Sterling Publisher Pvt. Ltd. New Delhi:1987.

PAPER NO.XVI: PROJECT WORK ON HISTORY OF ENGLISH LITERATURE (**MAIN**) (from Renascence Age to the Age of T.S. Eliot)

The students have to submit their projects to the concerned teacher for assessment.

PRESCRIBED TEXT BOOK:

Sampson, George. *The Concise Cambridge History of English Literature*. Third Edition. Cambridge University Press. New Delhi: 2014.

2nd January 2015 **Chairman**
University Campus **Board of Studies in English**

APPENDIX-I
QUESTION PAPER PATTERN
SEMESTER FIVE

PAPER NO. IX: TWENTIETH CENTURY ENGLISH LITERATURE (SUBSIDIARY)

Time: Two Hours. Marks: 50.

1. Question one will be on Eliot's poems with internal choice 16 Marks.
2. Question two will be on Shaw's play with internal choice 17 Marks.
3. Question three will be on Lawrence's fiction with internal choice 17 Marks.

PAPER NO. X: INTRODUCTION TO LITERARY CRITICISM AND TERMS (SUBSIDIARY)

Time: Two Hours. Marks: 50.

1. Question one will be on Aristotle with internal choice 17 Marks.
2. Question two will be on Sidney with internal choice 17 Marks.
3. Question three will be on literary terms with internal choice (Four out of eight) 16 Marks.

PAPER NO. XI (A): AMERICAN LITERATURE (MAIN)

Time: Two Hours. Marks: 50.

1. Question one will be on Dickinson's poems with internal choice 16 Marks.
2. Question two will be on O'Neill's play with internal choice 17 Marks.
3. Question three will be on Twain's fiction with internal choice 17 Marks.

OR

PAPER NO.XI (B): INDIAN WRITING IN ENGLISH (MAIN)

Time: Two Hours. Marks: 50.

1. Question one will be on Ezekiel's poems with internal choice 16 Marks.
2. Question two will be on Tendulkar's play with internal choice 17 Marks.
3. Question three will be on Raja Rao's fiction with internal choice 17 Marks.

SEMESTER SIX

PAPER NO. XIII: TWENTIETH CENTURY ENGLISH LITERATURE (SUBSIDIARY)

Time: Two Hours. Marks: 50.

1. Question one will be on Yeasts' poems with internal choice 16 Marks.
2. Question two will be on Osborne's play with internal choice 17Marks.
3. Question three will be on Amis's fiction with internal choice 17 Marks.

PAPER NO. XIV: INTRODUCTION TO LITERARY CRITICISM AND TERMS (SUBSIDIARY)

Time: Two Hours. Marks: 50.

1. Question one will be on Wordsworth with internal choice 17 Marks.
2. Question two will be on Leavis with internal choice 17 Marks.
3. Question three will be on literary terms with internal choice (Four out of eight) 16 Marks.

PAPER NO. XV (A): AMERICAN LITERATURE (MAIN)

Time: Two Hours. Marks: 50.

1. Question one will be on Frost's poems with internal choice 16 Marks.
2. Question two will be on Williams' play with internal choice 17Marks.
3. Question three will be on Hemingway's fiction with internal choice 17 Marks.

OR

PAPER NO.XV (B): INDIAN WRITING IN ENGLISH (MAIN)

Time: Two Hours. Marks: 50.

1. Question one will be on Kolatkar's poems with internal choice 16 Marks.
2. Question two will be on Karnad's play with internal choice 17 Marks.
3. Question three will be on Murhty's fiction with internal choice 17 Marks.

APPENDIX-II

MODEL QUESTION PAPERS
SEMESTER FIVE

PAPER NO. IX: TWENTIETH CENTURY ENGLISH LITERATURE (SUBSIDIARY)

Time: Two Hours. Marks: 50.

Q.1.Comment upon the various roles Prufrock assumes in the poem. 16 Marks.

Or

'*The Prelude'* is an imagistic representation of urban life'. Justify.

Q.2.Explain how the classical legend is worked out in Shaw's *Pygmalion*. 17 Marks.

Or

Write a note on the transformation of Eliza Doolittle in *Pygmalion*.

Q.3. '*Sons and Lovers* describes Paul Morel's efforts to choose life over darkness'. Elaborate. 17 Marks

Or

Write a note on the working-class background in *Sons and Lovers*.

PAPER NO. X: INTRODUCTION TO LITERARY CRITICISM AND TERMS (SUBSIDIARY)

Time: Two Hours. Marks: 50.

Q.1.What are the characteristics and constituents parts of a tragedy according to Aristotle?. 17 Marks.

Or

Write a note on Aristotle's idea of the structure and kinds of the plot of a tragedy.

Q.2.What are Sidney's ideas of classicism? 17 Marks.

Or

State the value of Sidney's criticism

Q.3.Explain any four literary terms choosing from the group given below. 16 Marks.

i)allegory ii) flat and round character iii) caricature iv) genre v) imagery vi) irony vii) myth viii) metaphor

PAPER NO. XI (A): AMERICAN LITERATURE (MAIN)

Time: Two Hours. Marks: 50.

Q.1.Comment on Emily Dickinson's mystic perception of the world around her. 16 Marks.

Or

Write a note on recurrent themes in Dickinson's poems that you have studied.

Q.2. '*The Hairy Ape* is about Yank's futile attempts at taking revenge on Mildred Douglas'. Justify. 17 Marks.

Or

Write a note on the Yank's character.

Q.3.Write an essay on the friendship between Huck Finn and Jim. 17 Marks.

Or

Sketch the character of Jim.

OR

PAPER NO.XI (B): INDIAN WRITING IN ENGLISH (MAIN)

Time: Two Hours. Marks: 50.

Q.1.Comment on the speaker's tone in *Very Indian Poem in Indian English*. 16 Marks.

Or

Describe the event of a scorpion's stinging the mother in *Night of the Scorpion*.

Q.2. '*Silence! The Court is in Session* begins as a mock trial and ends as the real one with Benare as the victim.' Justify. 17Marks

Or

Write a note on males' attitude towards a woman in the play.

Q.3. Discuss *Kanthpura* as a novel of a remarkable rendering of India's struggle for Independence. 17Marks.

Or

Raja Rao's fascination with Gandhism.

SEMESTER SIX

PAPER NO. XIII: TWENTIETH CENTURY ENGLISH LITERATURE (SUBSIDIARY)

Time: Two Hours. Marks 50.

Q.1. '*Easter 1916* and *The Second Coming* are Yeats' complex reactions to the contemporary events in his time.' Elucidate. 16 Marks.

Or

Write a note on *Among School Children*.

Q.2.Comment on the marital conflict between Jimmy and Alison in *Look Back in Anger*. 17 Marks.

Or

Write a note on the corporate image of the Angry Young Man in *Look Back in Anger*.

Q.3.Explain Jim Dixon's subversive attitudes in the novel *Lucky Jim.* 17 Marks.

Or

Sketch the character of Jim Dixon as an Angry Young Man.

PAPER NO. XIV: INTRODUCTION TO LITERARY CRITICISM AND TERMS (SUBSIDIARY)

Time: Two Hours. Marks: 50.

Q.1. Review Wordsworth's concept of poetic diction. 17 Marks.

Or

Explain Wordsworth's concept of poetry.

Q.2.Write a note on F.R. Leavis' conception of literature. 17 Marks.

Or

What is F.R. Leavis' concept of the Business of Criticism?

Q.3.Explain <u>any four</u> literary terms choosing from the group given below. 16 Marks.

i) paradox ii) satire iii) style iv) symbol v) theme vi) technique vii) wit viii) personification

PAPER NO. XV (A): AMERICAN LITERATURE (MAIN)

Time: Two Hours. Marks: 50.

Q.1.What message does Frost give in *Mending Wall*? 16 Marks.

Or

Explain how Frost's *Road Not Taken* is related to decision making in life?

Q.2.Do you agree with the view that Blanche's tragedy occurs due to her superior outlook of life? 17 Marks.

Or

Sketch the character of Blanche DuBois as a Southern aristocratic lady

Q.3.How is *The Old Man and the Sea* is about man's struggle against nature? 17 Marks.

Or

Write a note on old man's tragic fishing trip in the novel.

OR

PAPER NO.XV (B): INDIAN WRITING IN ENGLISH (MAIN)

Time: Two Hours. Marks: 50.

Q.1. In '*The Boatride* Kolatkar tries to explore the significance of external facts'. Comment. 16 Marks.

Or

Write a note on a series of scenes in the poem.

Q.2. '*Tughlaq* is a tragedy of idealism'. Support the statement. 17 Marks.

Write a note on Azam and Aziz as comic characters in the play.

Q.3. '*Samskara* or *Rite for a Dead* is about decaying Brahmin colony in a south Indian village.' Elucidate. 17Marks.

Or

Write a note on Priests' community in the village.

****

-=**=-

S*/-170415/-

Dr. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD

Revised Syllabus of

Economics

B.A - Third Year

SEMESTER – V and VI

[Progressively Effect from 2015-16 & onwards]

Dr. Dileep Arjune
B.O.S. Chairman
Economics

Revised Structure of Syllabus and Papers

for

ECONOMICS

Syllabus of B.A. Third Year

Semester System

A] 50 marks for each paper.

B] Semester-Wise examination will be of 120 minutes for each paper.

Paper No.	Title of the Paper	Credit Allotted	Periods	Marks
	Semester – Fifth			
Eco -109	International Economics (Compulsory)	04	60	50
Eco -110	Agricultural Economics (Compulsory)	04	60	50
Eco – 111	History of Economic Thought (Optional)	04	60	50
	OR			
Eco -111(A)	Mathematical Economics	04	60	50
	OR			
Eco- 111(B)	Labour Economics	04	60	50
Eco – 112	Project Works (Annually)	04	60	--

Paper No.	Title of the Paper	Credit Allotted	Periods	Marks
	Semester – Sixth			
Eco – 113	Research Methodology	04	60	50
	OR			
Eco-113 (A)	Regional Economics			
Eco – 114	Industrial Economics	04	60	50
	OR			
Eco- 114 (A)	Foreign Trade and International Institutions	04	60	50
Eco – 115	Indian Economic Thinker	04	60	50
	OR			
Eco – 115 (A)	Economic Thoughts of Dr. B.R. Ambedkar and Mahatma Phule	04	60	50
	OR			
Eco- 115(B)	Econometrics	04	60	50
	OR			
Eco- 115 (C)	Economy of Maharashtra			
Eco – 116	Project Work (Annual Assessment)	04	60	100

Note:

1] One period of 50 minutes.
2] 15 periods = 01 credit
3] 04 credits = 60 periods
4] Each paper is comprised of 04 credits.

[Dr. Arjune Dilip]
Chairman
Board of Studies in Economics
Dr. Babasaheb Ambedkar
Marathwada University, Aurangabad

ECO – 111 History of Economic Thought (Optional)

Objectives:

This paper deals with basic ideas of classical, new classical and marginalist economist. The object of this paper is to understand students the basic economic ideas of various economic thinkers of the world.

Unit: I Early Period:

Mercantilism: Main characteristics; Thomas Mun – Physiocracy; natural order; primacy of agriculture, social classes, tableau economique, taxation.

Unit: II Classical Period:

Adam Smith- division of labour, theory of value, Capital accumulation, distribution, views on trade, Economic progress; David Ricardo- value, theory of rent, distribution, ideas on economic development and international trade; Tomas R. Malthus- Theory of Population; Karl Marks- dynamics of social change, theory of value, surplus value, profit and crisis of capitalism, Economic ideas of J. B. Say.

Unit: III Marginalists:

Marshal as a great synthesizer; role of time in price determination, economic methods, ideas on consumer's surplus, elasticities, prime and supplementary costs, representative firm, external and internal economies, quasi-rent, organization as a factor of production, nature of profits.

Unit: IV Keynesian Ideas:

The aggregate economy, Liquidity preference Theory and Liquidity trap; Marginal efficiency of capital and marginal efficiency of investment, wage rigidities under employment equilibrium, role of fiscal Policy; deficit spending and public works, multiplier principle.

BASIC READING LIST:

- Blackhouse, R. (1985), A History of Modern Economic Analysis, Basil Balackwell – Oxford.
- Gide C. and G. Rist (1956), A History of Economic Doctrines, (2nd Edition), George Harrop & Co., London.

- Grey, A. and A.E. Thomson (19800, The Development of Economic Doctrine, (2nd Edition), Longman Group, London.
- Rolle, E. (1973), A History of Economic Thought, Faber, London.
- Seshadri, G.B. (1997), Economic Doctrines, B.R. Publishing Corporations, Delhi.
- Blaug, (1997), Economic Theory in Retrospect; A History of Economic Thought From Adam Smith to J.M. Keynes, (5th Edition), Cambridge University Press, Cambridge.
- Dasgupta, A.K. (1985), Epochs of Economic Theory, Oxford University Press, New Delhi.

OR

ECO – 111 (A) Mathematical Economics (Optional)

Objectives:

This paper is designed to equip students to understand the economic concepts and theories which use mathematical tools and techniques to refine the verbal logic. The use of calculus ahs permitted formulation of economic problems in multivariable mode and yield valuable insight about optimizing human behavior.

Unit: I Quantitative Methods:

Elementary ideas of differential calculus, Matrix- types of matrix, algebra of matrix; and determinants, solution of simultaneous equations- Cramer's rule, Maxima and Minima in a single variable; distance between two points, straight line equations.

Unit: II Consumer's Theory:

Utility function- Total utility and Marginal utility, budget line, constrained optimization, consumer's equilibrium, Elasticity of demand.

Unit: III Theory of Production:

Cost and revenue functions, Relation between total, average and marginal cost and revenue.

Unit: IV Market Structure:

Equilibrium of the firm under perfect competition, Monopoly, price discrimination, Market equilibrium; Demand and Supply function.

BASIC READING LIST:

- Allen, R.G.D. (1974), Mathematical Analysis for Economists Macmillan Press, London.
- Chiang, A.C. (1986), Fundamental Methods of Mathematical Economics, (3rd Edition), McGraw Hill, New Delhi.
- Colell, A. Mas,et. at. (19910, Microeconomic Theory, Harvard University Press, Cambridge, Mass.
- Hands D.W. (1991), Introductory Mathematic Economics, D. C. Health.
- Henderson, J. and R.E. Quandt (1980), Microeconomic Theory: A Mathematical Approach, McGraw Hill, New Delhi.
- Handy, S.T. (1997), Operational Research, Prentice- Hall of India, New Delhi.
- Mukherji, B. and B. Pandit (1982), Mathematical Methods of Economic Analysis, Allied Publishers, New Delhi.

OR

ECO – 111 (B) Labour Economics (Optional)

Objectives:

Labour is the main input of any industry. This paper provides a deep knowledge regarding recent labour policies in India. The main object of this paper is to provide detailed information to students

about labour market, employment, wage determination and industrial dispute.

Unit: I Labour Market:

Nature and characteristics of labour market in developing economies like India; Demand for labour and supply of labour, Government labour policies after 1991.

Unit: II Employment:

Definition- Relationship between employment and development, Unemployment – Concept, causes and measures to reduce unemployment, rural and urban unemployment, educated unemployment, Employment Policy in Eleventh Plan period.

Unit: III Wage Determination:

Subsistence wage fund, marginal and modern theories of wages, collective bargaining and wage determination, concept of fair wages, living wage and minimum wage, wage and inflation.

Unit: IV State and Labour:

Important labour legislations in India, Industrial Disputes and Labour Union, Government's role in settlement of industrial disputes, problems of rural labour (Unorganized Sector - labour) in Maharashtra.

BASIC READING LIST:

- Lester R.A. (1964), Economics of Labour, 2e, MacMillan, New York.
- Das, N. (1960), Unemployment, Full employment and India, Asia Publishing House, Mumbai.
- Dunlop, J.T. ed. (1957), Theory of Wage Determination, MacMillan, Landon.

ECO – 113 Research Methodology

Objectives:

The main objective of this paper is to provide information about social sciences research to the students of economics. This paper deals with importance of social research, research design, data collection and presentation of data.

Unit: I Introduction:

Meaning, nature, scope and objectives of social science research, Theory, concepts, hypothesis, stages of scientific research, Motivating factors of social research.

Unit: II Research Design:

Meaning and need of research design; Types of research design (only introduction)– descriptive, exploratory, diagnostic and experimental.

Unit: III Data Collection:

Facts- features; Primary data collection methods- Direct observation, questionnaire, schedule, interview; Secondary data collection methods- Personal documents, Public documents and Limitations.

Unit: IV Data Presentation and Analysis:

One– dimensional diagrams; Two– dimensional diagrams; Graphs of time series; Graphs of frequency distribution.

BASIC READING LIST:

- Kothari, C.R. (1988), Research Methodology Method and Techniques, Wiley Eastern Limited, New Delhi.
- Ghose, B.N. (1982), Scientific Methods and Social Research, Sterling Publishers Pvt. Ltd., New Delhi.
- Goode William J. and Hatt, Paul (1952), Methods in Social Research, McGraw Hill, New York.
- Gopal, M.H. (1964), An Introduction to Research Procedure in Social Sciences, Asia Publishing House, Mumbai.

- Hans Raj (1979), Theory and Practice in Social Research , Surjeet Publications, New Delhi.
- Sadhu, A.N. and Singh Amerjet (1980), Research Methology in Social Sciences, Himalaya Publishing House, Mumbai.
- Tandon, B.C. (1979), Research Methodology in Social Science, Chaitanya Publishing House, Allahabad.
- Aggarwal, B.M. (2010), Business Mathematics and Statistics, Ane Book Pvt. Ltd., New Delhi.
- Gupta, S.C. (1993), Fundamentals of Applied Statistics, S. Chand & Sons, New Delhi.

OR

ECO – 113 (A) Regional Economics

Objectives:

The intervene effectively and meaningfully, to pull up economically and socially the less developed regions, it is necessary to understand the dynamics of regional development. This paper begins with an elucidation of the terms and concepts, Students are given a broad overview of the techniques of regional analysis. The paper also contains a section on the regional aspects of the Indian economy including the Indian experience in regional policy formulation and implementation.

Unit: I Concepts:

Why Regional Economics?, What is a region?, Different types of regions; Regional Income; Problems of estimation; Indicators of regional development.

Unit: II Regional Policy:

People prosperity versus place prosperity; Formulation of interregional objectives; Consistency between national and regional objectives; Alternate regional policy measures; Historical evidence

Unit III Inter-regional Differentials in India's Development:

Agriculture, Industry, Physical Infrastructure, Social Sector.

Unit IV Regional Policy in India:

The pre- 1970 era identification of backward regions; Concerted policy measures, Liberalization and regional policy.

BASIC READING LIST:

- Chand M. and Puri, V.K. (1983), Regional Planning in India, Allied and Publishers, New Delhi.
- Hoover E. M. (1974), An Introduction to Regional Economics, Alfred A. Knopf, New York.
- Isard W. (19600, Methods of Regional Analysis, MIT Press, Cambridge. Mass.
- Nair, K.R.G. (1982), Regional Experience in a Developing Economy, Wiley-Eastern, New Delhi.
- Richardson H. W. (1969), Regional Economics, weidenfield and Nicolson, London.
- Brahmananda P. R. and Panchmukhi (Eds.), (2001), Development Experience in the Indian Economy; Inter-State Perspectives, Bookwell, Delhi.

ADDITIONAL READING LIST:

- Beckman M. (1968), Location Theory, Random House, London.
- Bhalla G.S. and Alagh Y.K. (1979), Performances of Indian Agriculture: A District-Wise Study, Sterling, New Delhi.
- Dholakia R.H. (1985), Regional Disparity in Economic Growth in India, Himalaya Publishing House, Mumbai.
- Friedman J. and W. Alonso (Eds), (1975), Regional Policy Readings in Theory and Application, MIT Press, Cambridge, Mass.
- Glasson J. (1975), An Introduction to Regional Planning: Concept, Theory and Practice, Hutchison. London.
- Rao H. (1984), Regional Disparities and Development in India, Ashish Publishing House, New Delhi.
- Williamson J. G. (1985), Regional Inequality and the Process of National Development, Economic Development and Cultural Change, Vol. 13, No. 4, Part II, July.

ECO – 114 Industrial Economics

Objectives:

In the contemporary world with globalization and liberalization more and more attention is being given to industry. This paper intends to provide knowledge to the students on the basic issues such as concepts and organization of a firm, productivity, efficiency, capacity utilization and debates involved in the industrial development of India.

Unit I: Introduction:

Need, importance and role of industries in economic and social development, Industry and agriculture sector linkages, Industrial classification.

Unit II: Industrial Organization and Ownership Structure:

Public, Private, Joint and Co-operative sectors, private corporate sector, MNCS and their role.

Unit III: Location and Dispersion:

Location of industries - Theories of location, diversification, integration and merger of industrial units, Dispersion and problem of regional imbalance.

Unit IV: Composition of Industrial Sector:

Structure of large - scale industries in India. Sugar, Cotton, Iron and Steel, Agro Processing Industries, Cottage and Village Industries and Rural industrialization.

BASIC READING LIST:

- Barthwal,R.R.(1992),Industrial Economics: An Introductory Text Book, Wiley Eastern Ltd. New Delhi.
- Cherunilam, F. (1994),_Industrial Economics: Indian Perspective, (3rd Edition), Himalaya Publishing House, Mumbai.
- Desai, B. (1999), Industrial Economy in India, (3rd Edition), Himalaya Publishing House, Mumbai.

- Kuchhal, S.C. (1980), Industrial Economics, Himalaya Publishing House, Mumbai.

ADDITIONAL READING LIST:

- Ahluwalia I.J. (1995), Industrial Growth in India, Oxford University Press, New Delhi.
- Brahmananda, P.R. and V.R. Panchamukhi (Eds) (1987), The Development Process of the Indian Economy,_ Himalaya Publishing House, Mumbai.
- Clarkson, K.W. and R Miller (1985) , Industrial Organization : Theory, evidence and Public policy, McGraw Hill, Kogakusha, Tokyo.
- Devine, P. J. et. al. (1978), An Introduction to Industrial economics, (3rd edition), George Allen and Unwin, London.
- Government of India, Economic Survey (Annual), New Delhi.
- Government of India, Ninth Five Year Plan (1997 - 2000), Vol. I & II, Planning Commission, New Delhi.
- Mamoria and Mamoria (2000), Dynamics of Industrial relation in India, (15th Edition), Himalaya Publishing House, Mumbai.
- Naidu, K.M. (1999), Industrialization and Regional Development in India, Reliance publishing House, New Delhi.
- Reserve Bank of India; Report on Currency and Finance (Annual), Mumbai.

OR

ECO – 114 (A) Foreign Trade and International Institutions

Objectives:

The paper provides a deep understanding about the broad principles and theories, which tend to govern the free, flow of trade in goods, services and capital. Besides, preparing the students about the relevance and limitations of these principles, the contents of the paper spread over different units, lay stress on the theory and nature of the subject which, in turn, will greatly help them to examine the impact of the trade policies followed both at the national and international levels.

Unit-I: Foreign Trade in India:

Recent change in the composition and direction of foreign trade; causes and effects of persistent deficit in the balance of

payments; measures adopted by the government to correct the deficit. Need for and rational of trade reforms in India. Recent export and import policies of India, role of multinational corporations in India.

Unit-II: International Economic Institution:

Limitations of devaluation, functions of IMF, World Bank and GATT/WTO, Reform of the international monetary system and Indian regional trade agreement- SAARC, ASEAN, and BRICS.

Unit-III: New Trade Policy, Features and Evaluations:

Provisions and implications- Priority for exports; Market-orientation of trade, Self-balancing mechanism; critical evaluation-different from of old policies; outward – looking strategy; Beneficial elements; several limitations and limits.

Unit-IV: Rupee, Exchange Rate and Convertibility:

Falling Exchange Rate-Meaning and magnitude; main objectives; Consequences and evaluation- convertibility of Rupee-meaning and the system; important benefits; condition of success.

BASIC READING LIST:

- Aggrawal M. R. (1979), Regional Economic Co-operation in South as iq, S. Chand and Co. New Delhi.
- Bhagwati, J. (Ed.) (1981), International Trade Selected Readings, Cambridge University press, Mass.
- Crockett, A. (1982), International Money: Issue and Analysis ELBS and Nelson, London.
- Greenway, D. (1983), International Trade Policy, Macmillan Publishers Ltd. London.
- Heller, H. R. (1968), International Monetary conomics,Prentice Hall, India.
- Joshi, V. and I. M. D. Little, (1998), India's Economic Reforms, 1999-2001, Oxfprd University press.
- Nayyar, D. (1976), India's Exports and Export Policies in the 1960's, Combridge University press, Combridge.
- Panchmukhi, V. R. (1978), Trade policies of India: A quantitative Analysis, Concept publishing company, New Delhi.

- Agrawal A. N. (2010) Indian Economy: Problem of Development and planning, New Age International Publishers, New Delhi.

ECO-115: Indian Economic Thinkers

Objectives:

This paper is essential for a student who aspires for advanced training in economics in India. The evolution of economic idea in each instance was as much a response to immediate economic problems and policy issues as much as it was a self-conscious attempt to refine earlier analysis by correcting mistakes and filling in the gaps in analysis.

Unit- I: Economic Thought of Koutilya:

Economic policies, concept of welfare state, principle of taxation.

Unit- II: Economic Ideas of Nauroji, Ranade and Datt:

Economic ideas of Dadabhai Nauroji – contribution to economic policies, Drain Theory, M.G. Ranade- Economic policies, political economic policies. R.C. Dutt- Economic ideas. Manvendra Roy- Economic ideas and concept of new humanism.

Unit- II: Economic Ideas of Mahatma Gandhi: Economic ideas of Mahatama Gandhi– Sarvodaya, Village Swaraj, Swadeshi. Dr. B.R.Ambedkar- State socialism, Problems of Rupee, Public finance. Mahatma Phule's views on agriculture, reasons of farmer's poverty. D.R. Gadgil- Economic planning & co-operation, Y.B. Chavan: Thoughts of agriculture, industries & socialism.

Unit- IV: Economic Thoughts of Amartya Sen:

Economic welfare, Social Choice.

BASIC READING LIST:

- Kautilya, (1992), The Arthashastra Edited Rearranged Translated and Introduced by L.N. Rangrajan, Penguin Books, New Dehli.
- Dr. Babasaheb Ambedkar Writings and Speeches: Vol.6complied by Vasant Moon, Education Dept., Govt. of Maharashtra.
- Gandhi, M.K. (1947), India of My Dreams, Navajivan Publishing House, Ahmedabad.
- Koot, G.M. (1988), English Historical Econmics : 1850-1926, Cambridge University Press, Cambridge.
- Rao, M.N. (1964), Memoris, Allied Publishing house, Bombay.
- Prinicples of Economics: KPM Sundharam, M.C.Vaish.
- Selected Writings and Speeches of Dr. Gadgil on Planning and political Problems. Ed. By. Subha Brahme.
- Mahatma Fule: Ed. By Y.D. Fadke.
- Manvendra Ray Ed. By V.B. Karnik.
- Naoraji, D. (1962), Poverty and Un – British Rule in India, Law Price Publications, Delhi.
- Singh, Y.D. (Ed). (1965), Economic History if India, 1857-1965, Allied Publishers Private Limited, Bombay.
- Dutt, R.C. (1950), The Economic History of India underEarly British Rule, Low Price Publications, Delhi.

ECO – 115 (A) Economic Thoughts of Dr. B.R. Ambedkar and Mahatma Phule

Objectives:

This main objective of this paper is to provide Information of basic economic thoughts of Dr. Ambedkar and Mahatma Phule.

Unit - I Basic Economic Ideas of Ambedkar:

a) Currency and taxation

b) State socialism

c) Caste and economic development

Unit - II Dr. Ambedkar's Views on Development:

a) Agriculture, land reform and water policy
b) Nationalization of Industry
c) Economic Planning, Population

Unit – III Economic Thoughts of Mahatma Phule:

a) Phule's View on Brahmanism
b) Religious Exploitation
c) Social change theory and development

Unit – IV Agricultural Thought of Mahatma Phule:

a) Jal Niti (Water Policy)
b) Views on Moneylenders
c) Poverty of Farmers

BASIC READING LIST:

- Narendra Jadhav (1992), Dr. Ambedkar: Economic Thought and Philosophy, Popular Prakashan Pvt. Ltd., Mumbai.
- Sadhana Thakur (2013), Socio-Economic Thoughts of B. R. Ambedkar, Daya Publishing House, New Delhi.
- Nagar V.D. and Nagar K.P. (1992), Economic Thought and Policy of Dr. Ambedkar, Segment Book, The University of Michigan.
- Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 18 Part-I,II, Dr. Babasaheb Ambedkar Charita Sadhana Prakashan Samiti, Higher & Tech. Edu., Govt. of Maharashtra, Mumbai.
- Kasare M.L. (1996), Economic Philosophy of Dr. B.R. Ambedkar, B. I. Publication Ltd. New Delhi.
- Chanchreek K.L., Saroj Prasad, Devi Singh Ashok (2013), Economic Thoughts of Dr. B.R. Ambedkar (in two Vol.), Shree Publisher,
- महात्मा फुले समग्र वाङ्मय (1991), संपादक : य. दि. फडके, महाराष्ट्र राज्य साहित्य व संस्कृती मंडळ, मुंबई.
- धनंजय कीर (1996), महात्मा जोतीराव फुले, पॉप्युलर प्रकाशन, मुंबई (चौथी आवृत्ती)
- Bakshi S.R. and Lipi Mahajan (2000), Jyotirao Phooley. IN Encyclopedic History of Indian Culture and Religion: Vol. 5: Social Reformers. Deep & Deep Publication, Delhi
- Satyashodhak Samaj Report – Pune.

- Kamble Uttam ( ), (in Marathi medium), Water Policy of Mahatma Phule, Saket Prakashan, Mumbai.

OR

ECO-115(B) Econometrics

Objectives:

In order to understand economic problems clearly, the knowledge of econometrics is very essential. The students in this direction are expected to have an elementary knowledge of basic concept in the econometrics. Further in the field of econometrics, Economics and Econometrics, Econometrics Models and Regression Analysis should be clearly understood by the students. This paper is meant to train the student in this direction.

Unit I: Introduction:

Meaning and nature of econometrics; Types of econometrics; Economics and econometrics, Econometrics and Statistics, Econometrics and mathematics, Importance and Limitations of econometrics

Unit II: Basic Concepts in Econometrics:

Econometrics models; Features of models, Characteristics of a good model, Model and structure; Types of variable, Types of equations; Steps in an econometrics.

Unit III: Two Variable Regression Analysis:

Population regression function; Linearity in variables and parameters; stochastic specification of PRF; Significance of stochastic disturbance term; The simple regression function.

Unit IV: Two Variable Regression Problems:

The method of ordinary least squares ;The classical linear regression model-Assumptions ;Standard errors; Properties of least squares estimators-Gauss –Markov Theorem.

BASIC READING LIST:

- Gujarati D.N.(1988) Basic Econometrics, McGraw –Hill Book Company ,New York.
- Koutsoyiannis A. (2008) Theory of Econometrics , Palgrave, New York ,2nd edition.
- Henri Theil (1979) Principal of Econometrics , John Wiley and Sons,Inc,Londan.
- Jonston J (1960) Econometric Methods.
- Henderson and Quandt ( ) Microeconomics Theory – A Mathematical Approach , Mc Grow – Hill Book Company ,New York.
- Agrawal H.S.(1976) Introduction to Econometrics , Lakshimi- Narayan Publication Agra.
- B.C; Kapoor Kranti (2005) Fundamentals of Econometrics, Himalaya Publishing House, Nagpur.
- Kalirajan K.P.(1995) Applied Econometrics Oxford & IBH Publishing Co.Pvt Ltd,New Delhi.

OR

ECO-115(C) ECONOMY OF MAHARASHTRA

Objectives:

The students should know the basic features of the economy of Maharashtra. The students should also be able to understand the problems related to agriculture, industries, cooperative sector and infrastructure in the Maharashtra state.

Unit-I: Features of the economy of Maharashtra:

Structure and size of population - Nature and causes of Unemployment and Poverty in Maharashtra - Policy measures to overcome the problems of unemployment and poverty.

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD.

Syllabus of

B.A. III YEAR

Sociology

Semester–V & VI

[Effective from 2015-16 & onwards]

24/9/2015
Chairman - BOS - Sociology

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad. (M.S.)

Sociology
B.A. Third Year (effective from 2015-2016)
Semester V

Paper IX - Sociological Traditions
Paper X - Introduction to Research Methodology
Paper XI - Social Problems in India
OR
Urban Sociology
Paper XII Practical

Semester VI

Paper XIII - Sociological Theories
Paper XIV - Social Research Methods
Paper XV - Social Disorganization in Contemporary India
OR
Urban Society in India
Paper XVI - Practical

Paper XI - Social Problems in India

Objectives

- As a Nation of diversity and plural society India witnessed many issues in past and present this course is designed to identify and analyze some of emerging social problems from sociological perspective.
- To sensitize the students about social problems of contemporary India and to discuss the measures on it

Course outline

1. Corruption and Crime

(a) Corruption in India and its implications (nature and causes)
(B) White collar crime, Suicide
(C) Measures on corruption

2. Displacement and Rehabilitation

(a) Displacement and Problems of Developmental projects (SEZ)
(b) Problem of Land acquisition for industrial projects (Acts and Ambiguity)
(c) Commercialization of agriculture
(d) Measures on Rehabilitation problems

3. Problem of Inequality

(a) Educational inequality (Poor, Weaker Section and Women)
(b) Rural India against Urban India
(c) Globalization and increasing inequality

Books recommended:

1. Beteille Andre (1974) Social Inequality, New Delhi OUP
2. K.L.Sharma (2009) Social inequality in India, Rawat Publications, Jaipur and New Delhi 2009
3. Maheshwari S.R.: Rural Development in India
4. Reports of Govt. of India- Corruption and Crime
5. Guha Ramchandra (1994) Sociology and the Dilemma of Development, New Delhi OUP
6. Fernandes, Walter and Enakshi Ganguly Thukral (Eds.), 1989, 'Development, Displacement and Rehabilitation: Issues for a National Debate', Indian Social Institute, New Delhi
7. Bhatia (2014) 'Violance Against Women Responses from the health and legal systmes' Sonali Publications
8. Mandal (2014) 'Handbook of Social Inequality' Anmol Publications
9. Grusky (2012) 'The Inequality reader Contemporary and Foundational Readings in Race, Class and Gender' Rawat Publications.
10. Latha (2014) 'Readings in Criminology' Gyan Publications
11. Makwana (2015) ' Contemporary Crime in Indian Society' Gyan Publication
12. Heredia 'Religious Disarmament Rethinking Conversion in India' Gyan Publications 2014

OR

Paper XI Urban Sociology

Objectives

- Urban Sociology is important branch of Sociology which indulge in Urban features, studies and urban theories this course is designed to provide information to student about urban sociology and to furnish the basic elements of the subject and to draw attention of the students towards increasing urbanization

Course Outline:

1. **Introduction**
   (a) Nature and Scope of urban Sociology
   (b) Importance of Urban Sociology
   (c) Concepts- Urban Locality, Urbanization, suburb, Metro Cities, Heterogeneity

2. **Process of Urban Development**
   (a) Urban Revolution
   (b) Medieval City
   (c) Industrial Urban Development

3. **Urban Sociological Theories**
   (a) Theory Concentric Zone- Burges
   (b) Mechanical and Organic Solidarity- Durkheim
   (c) Metropolis and Mental life – George Simmel
   (d) Robert Louise wirth – 'Urbanism -As a way of life'

Books Recommended:

1. Rao M.S.A. (1975) Urban Sociology in India, Orient Long men New Delhi
2. N Jaypalan (2002) Urban Sociology, Atlantic Publishers and Distributors n New Delhi
3. Giriraj Gupta(1983) Urban India, Vikas Publishing House, New Delhi
4. Ravinder Singh (2003) Urbanization in Indian ; Sociological contributions, Sage Publications New Delhi

Paper XV - Social Disorganization in Contemporary India

- Objective: With rapid industrialization and modernization Indian society is witnessing drastic changes, with this transformation Indian society also witnessing few negative changes in social institutions. The course is designed to elaborate on such changes and to know causes and impact of social disorganization.

Course Outline

1. **Problem of Disorganization**
   (a) Concept and nature Social Disorganization
   (b) Causes of social disorganization; [population heterogeneity , Lack of Mobility, cynicism, underdevelopment, changing values and culture]

2. **Violence and social disorder**
   (a) Violence against women
   (b) Terrorism in India
   (c) Problem of Naxalism in India

3. **Regionalism**
   (a) Regionalism (concept) , Factors of Regionalism (Geographical, Historical, Social and Political)
   (b) Regionalism in India (causes and consequences)
   (c) Analysis of regional imbalance: special reference to Marathwada and Vidharbha

Books Recommended

1. Sarkar Sumit, Modern India 1885-1947, Mac Millan India Limited
2. Vasant Desai (1991) Fundamentals of Rural Development , Himalaya Publishing House, Bombay
3. Indian Rural Economics : S. P. Jain, Vikas Publication
4. All current and relevant material including the official information of Govt of India and Govt of Maharashtra
5. Current Statistics reports of Government.

OR

Urban Society in India

- Objectives: This course is designed to analyze critically social problems of urban India and to discuss regarding impact of modernization and industrialization on Indian urban sphere.

1. **Urban India**
   (a) Growth of urban population in India
   (b) Emergence of Cities
   (c) Overcrowding (Rural Urban Migration)

2. **Social Problems of urbanization**
   (a) Prostitution
   (b) Urban Family (Changing Nature)
   (c) Poverty and Unemployment
   (d) Slums and Housing problems

3. **Urbanization and Industrialization**
   (a) Impact of industrialization (shortage of Electricity, waste disposal)
   (b) Transport and Traffic
   (c) Pollution (Air, Noise, chemical and water)

Books Recommended:

1. Alfred De Souza(1979) The Indian City : Poverty , Economic and urban development, Manohar Publications. New Delhi
2. Desai A R and Pillai S D (1970) Slums and Urbanization, Popular Prakashan Bombay
3. Ramchandrean R (1991) Urbanization and urban Systems in India OUP, Delhi
4. Edward W Soja (2000) post Metropolis; Critical Studies of Cities and Regions, Oxford Blackwell.
5. Rajendra K. Sharma (1997) Urban Sociology. Atlantic Publishers & Distributers, New Delhi
6. A.K. Shrivastava (1989) Urbanization : Concept & Growth, H.K. Publishers and Distributors, New Delhi

24/4/15
Chairman-BOS-Sociology