

BHARATI VIDYAPEETH UNIVERSITY, PUNE

Course structure and syllabi of Bachelor of Science **(B.Sc.) degree course of three years duration** **(2010 COURSE)**

THE B.Sc. DEGREE COURSE WILL BE OF THREE YEARS DURATION

The B.Sc. degree of three years duration has been revised from the academic year 2010-2011. First Year B.Sc. revised course will commence from 2010-2011 and will be implemented in successive years.

RULES & REGULATIONS FOR B.Sc. COURSE

ELIGIBILITY FOR ADMISSION TO B.Sc. COURSE :

1. A candidate who has passed the Higher Secondary School Certificate Examination of the Maharashtra State Board or its equivalent examination of any other statutory Board or University and has passed in English and in three Science subjects out of (i) Physics (ii) Chemistry (iii) Biology (iv) Mathematics (v) Geography (vi) Geology etc will be eligible for admission to the First year B.Sc. Degree course.
2. Candidate who has passed H.S.C. examination (10+2) with English and any one of the following vocational subjects is also eligible for admission to the F.Y.B.Sc. course.

Subject code	Subject
79	Auto Electrical
A1	Electrical Maintenance
A2	Mechanical Maintenance
A4	General Civil Engg.
C2	Electronics
C3	Chemical Plant Operation
C5	Elementary Laboratory Technology
D9	Computer Science
J1/J2/J3	Electronics Technology
J4/J5/J6	Maintenance & Repairs of Electrical Domestic Appliances
K1/K2/K3	Auto Engg. Technician
P1/P2/P3	Medical Lab. Technician
P4/P5/P6	X-ray Technician
P7/P8/P9	Ophthalmic Technician
T1/T2/T3	Repair, Maintenance & Rewinding of Electrical Motors.

STRUCTURE OF B.Sc. DEGREE PROGRAMME

Year	Subject Code	Subject Title	Marks
F.Y.B.Sc.		1) Physics : (Semester – I)	
	P - 11	Mechanics & Properties of Matter	50
	P – 12	Modern Physics	50
		2) Chemistry : (Semester – I)	
	C - 11	Physical & Inorganic Chemistry	50
	C - 12	Organic & Inorganic Chemistry	50
		3) Botany : (Semester – I)	
	B - 11	Plant diversity - I	50
	B – 12	Cell Biology	50
		4) Zoology : (Semester – I)	
	Z - 11	Animal systematics and functional anatomy of non chordates	50
	Z – 12	Medical Zoology (human parasitology)	50
		5) Microbiology: (Semester – I)	
	MB-11	Introduction to Microbiology	50
	MB-12	Prokaryotes and Eukaryotes : Anatomy and Interactions	50
		6) Mathematics : (Semester – I)	
	M - 11	Matrix Algebra	50
	M - 12	Calculus - I	50
	M - 13	Graph Theory	50
		7) Statistics: (Semester – I)	
	S - 11	Descriptive Statistics – I	50
	S - 12	Probability – I	50
		8) Geography : (Semester – I)	
	G - 11	Physical Geography	50
	G - 12	Climatology	50
		9) Computer Application: (Semester – I)	
	CA- 11	Computer Fundamentals	50
	CA- 12	Structured Programming	50

Year	Subject Code	Subject Title	Marks
F.Y.B.Sc.		1) Physics : (Semester – II)	
	P - 21	Kinetic Theory & Thermodynamics	50
	P - 22	Electricity & Magnetism	50
		Lab Course	
	P - I	Practical course - I	100
		2) Chemistry : (Semester – II)	
	C - 21	Physical & Inorganic Chemistry	50
	C - 22	Organic & Inorganic Chemistry	50
		Lab Course	
	C - I	Practical Course – I	100
		3) Botany : (Semester – II)	
	B - 21	Plant diversity - II	50
	B - 22	Applied Botany	50
		Lab Course	
	B - I	Practical Course – I	100
		4) Zoology : (Semester – II)	
	Z - 21	Functional anatomy of chordates.	
	Z - 22	Applied Zoology (vermiculture and sericulture)	50
		Lab Course	
	Z - I	Practical Course – I	100
		5) Microbiology: (Semester – II)	
	MB-21	Microbial Nutrition, Growth and Control	50
	MB-22	The Diversity of Microbial World.	50
		Lab Course	
	MB-I	Practical Course – I	100
		6) Mathematics : (Semester – II)	
	M - 21	Algebra	50
	M - 22	Calculus - II	50
	M - 23	Geometry	50
		7) Statistics: (Semester – II)	
	S - 21	Descriptive Statistics – II	50
	S - 22	Probability - II	50
		Lab Course	
S - I	Practical Course – I	100	
	8) Geography : (Semester – II)		
G - 21	Physical Geography	50	
G - 22	Oceanography	50	
	Lab Course		
G - I	Practical Course – I	100	
	9) Computer Application: (Semester –II)		
CA- 21	Computer Fundamentals	50	
CA- 22	Structured Programming	50	
	Lab Course		
CA - I	Practical Course – I	100	
		1200	

Year	Subject Code	Subject Title	Marks
S.Y.B.Sc.		1) Physics : (Semester –III)	
	P - 31	Mathematical Methods for Physics	50
	P – 32	Optics	50
		2) Chemistry: (Semester –III)	
	C - 31	Physical Chemistry & Analytical Chemistry	50
	C – 32	Organic Chemistry & Inorganic Chemistry	50
		3) Botany: (Semester –III)	
	B - 31	Developmental Botany	50
	B – 32	Plant Systematics	50
		4) Zoology: (Semester –III)	
	Z - 31	Functional anatomy of non-chordates	50
	Z – 32	Histology of mammals	50
		5) Microbiology: (Semester –III)	
	MB - 31	Microbial metabolism	50
	MB - 32	Bacterial Genetics	50
		6) Mathematics: (Semester –III)	
	M - 31	Calculus of several variables	50
	M - 32	Differential Equations	50
	M - 33	Linear Algebra	50
		7) Statistics: (Semester –III)	
	S - 31	Probability Distributions & Statistical Inference - I	50
	S – 32	Probability Distribution and Statistical Methods - I	50
		8) Geography: (Semester –III)	
	G - 31	Human Geography	50
	G – 32	Biogeography - I	50
		9) Computer Application: (Semester-III)	
	CA- 31	Advanced C concepts - I	50
	CA-32	Digital Electronics	50
	E – 31	10) English Optional - I : (Semester-III)	50
		OR	
	MA-31	10) Marathi - I : (Semester-III)	50

Year	Subject Code	Subject Title	Marks
S.Y.B.Sc.		1) Physics : (Semester –IV)	
	P - 41	Waves & Oscillations	50
	P - 42	Electronics	50
		Lab Course	
	P - II	Practical course – II	100
		2) Chemistry: (Semester –IV)	
	C - 41	Physical Chemistry & Analytical Chemistry	50
	C - 42	Organic Chemistry & Inorganic Chemistry	50
		Lab Course	
	C - II	Practical Course - II	100

Year	Subject Code	Subject Title	Marks
S.Y.B.Sc.		3) Botany: (Semester –IV)	
	B - 41	Plant Physiology	50
	B - 42	Plant Ecology	50
		Lab Course	
	B - II	Practical course-II	100
		4) Zoology: (Semester –IV)	
	Z - 41	Functional anatomy of chordates.	50
	Z - 42	Physiology of mammals.	50
		Lab Course	
	Z - II	Practical course-II	100
		5) Microbiology: (Semester –IV)	
	MB - 41	Principles of Disease, Epidemiology & Immunology	50
	MB - 42	Applied Microbiology	50
		Lab Course	
	MB - II	Practical course-II	100
		6) Mathematics: (Semester –IV)	
	M - 41	Vector Calculus	50
	M - 42	Group Theory	50
	M - 43	Functions of Complex Variables	50
		7) Statistics: (Semester –IV)	
	S - 41	Probability Distributions & Statistical Inference - II	50
S - 42	Probability Distribution and Statistical Methods - II	50	
	Lab Course		
S - II	Practical course-II	100	
	8) Geography: (Semester –IV)		
G - 41	Applied Human Geography	50	
G - 42	Biogeography - II	50	
	Lab Course		
G - II	Practical course-II	100	
	9) Computer Application: (Semester-IV)		
CA- 41	Advanced C concepts - II	50	
CA- 42	Microprocessors	50	
	Lab Course		
C - II	Practical course-II	100	
E – 41	English Optional - II : (Semester- IV)	50	
	OR		
MA–41	Marathi - II : (Semester-IV)	50	

Year	Subject Code	Subject Title	Marks
T.Y.B.Sc.		1) Physics : (Semester - V)	
	P - 51	Mathematical Methods for Physics	50
	P - 52	Quantum Mechanics	50
	P - 53	Solid state Physics	50
	P - 54	Electronics	50
	P - 55	Classical Mechanics	50
	P - 56	Communication & Electronics - I	50
		2) Chemistry: (Semester - V)	
	C - 51	Physical Chemistry	50
	C - 52	Inorganic Chemistry	50
	C - 53	Organic Chemistry	50
	C - 54	Analytical Chemistry	50
	C - 55	Industrial Chemistry	50
	C - 56	Environmental Chemistry	50
		3) Botany: (Semester - V)	
	B - 51	Biology of Cryptogams (Algae & Fungi)	50
	B - 52	Biology of Seed Plants (Angiosperms)	50
	B - 53	Plant Pathology	50
	B - 54	Biostatistics ,Genetics	50
	B - 55	Biochemistry, Molecular biology	50
	B - 56	i) Horticulture & Gardening – I OR ii) Aerobiology	50
		4) Zoology: (Semester - V)	
	Z - 51	Cell biology	50
	Z - 52	Genetics	50
	Z - 53	Applied Zoology-Inland fisheries and aquarium fishkeeping	50
	Z - 54	Ecology	50
	Z - 55	Biochemistry	50
	Z - 56	Functional anatomy of chordates	50
		5) Microbiology : (Semester - V)	
	MB-51	Medical Microbiology,	50
	MB-52	Clinical Pathology	50
	MB-53	Food and Dairy Microbiology	50
	MB-54	Virology	50
	MB-55	Genetics of Prokaryotes,	50
	MB-56	Enzyme Kinetics and Regulation	50
		6) Mathematics : (Semester - V)	
	M - 51	Real Analysis	50
	M - 52	Abstract Algebra	50
	M - 53	Problem solving course based on Paper M – 51 & M - 52	50
	M - 54	Discrete Mathematics	50
	M - 55	Differential Geometry	50
	M - 56	Problem solving course based on Paper M – 54 & M - 55	50

Year	Subject Code	Subject Title	Marks
T.Y.B.Sc.	M - 57	A) Computer Programming & Applications B) Principles of Computer Science (Theory & Practical) C) Computational Mathematics	50
	M - 58	A) Mechanics (Statics) B) Operations Research C) Special Functions	50
	M - 59	Problem solving course based on Paper M – 57 & M - 58	50
		7) Statistics: (Semester – V)	
	S – 51	Distribution Theory- I	50
	S – 52	Statistical Inference – I	50
	S – 53	Sampling Methods and Design of Experiments – I	50
	S – 54	Applied Statistics-I	50
	S – 55	Applied Statistics – III	50
	S – 56	Computer Programming ‘C’ Programming (Turbo C) – I	50
		8) Geography: (Semester – V)	
	G – 51	World Regional Geography	50
	G – 52	Geography of India	50
	G – 53	Resources	50
	G – 54	Economic Geography	50
	G – 55	Applied Geography	50
	G – 56	Geography of Water Resources OR Geography of Soils OR Population Geography	50
		9) Computer Application: (Semester-V)	
	CA-51	Operating System	50
	CA-52	Visual Basic .NET Programming	50
	CA-53	Software Engineering	50
	CA-54	Database Management System	50
	CA-55	Data and File Structures	50
	CA-56	Computer Networks	50

Year	Subject Code	Subject Title	Marks
T.Y.B.Sc.		1) Physics : (Semester - VI)	
	P - 61	Electrodynamics	50
	P - 62	Nuclear Physics	50
	P - 63	Atomic & Molecular Physics	50
	P - 64	Computer Programming	50
	P - 65	Thermodynamics & Statistical physics	50
	P - 66	Communication & Electronics - II	50
		Lab Course	
	P - III	Practical Course – III	100
	P - IV	Practical Course – IV	100
	P - V	Practical Course - V	100
		2) Chemistry: (Semester - VI)	
	C - 61	Physical Chemistry	50
	C - 62	Inorganic Chemistry	50
	C - 63	Organic Chemistry	50
	C - 64	Analytical Chemistry	50
	C - 65	Industrial Chemistry	50
	C - 66	Environmental Chemistry	50
		Lab Course	
	C - III	Practical Course III - Physical Chemistry	100
	C - IV	Practical Course IV-Inorganic Chemistry	100
	C - V	Practical Course V - Organic Chemistry	100
		3) Botany: (Semester - VI)	
	B - 61	Biology of Cryptogams (Bryophyta & Pteridophyta)	50
	B - 62	Biology of Seed Plants (Gymnosperms)	50
	B - 63	Environmental Biology	50
	B - 64	Plant breeding,	50
	B - 65	Plant Biotechnology	50
	B - 66	i) Horticulture & Gardening – II OR ii) Medico Botany, Seed Technology	50
		Lab Course	
	B - III	Practical course - III	100
	B - IV	Practical course - IV	100
	B - V	Practical course - V	100
		4) Zoology: (Semester - VI)	
	Z - 61	Developmental biology	50
	Z - 62	Evolution	50
	Z - 63	Apiculture	50
	Z - 64	Environmental pollution	50
	Z - 65	Molecular biology	50
	Z - 66	Comparative anatomy of chordates and microtechniques	50
		Lab Course	
	Z - III	Practical course – III	100
	Z - IV	Practical course – IV	100
	Z - V	Practical course – V	100

Year	Subject Code	Subject Title	Marks
T.Y.B.Sc.		5) Microbiology : (Semester – VI)	
	MB-61	Chemotherapy and Biomedical Instrumentation	50
	MB-62	Immunology	50
	MB-63	Biotechnology	50
	MB-64	Agricultural and Environmental Microbiology	50
	MB-65	Genetics of Eukaryotes and Gene Manipulation	50
	MB-66	Microbial Metabolism and Biochemical Evolution	50
		Lab Course	
	MB-III	Practical course – III	100
	MB-IV	Practical course – IV	100
	MB-V	Practical course – V	100
		6) Mathematics : (Semester – VI)	
	M – 61	Real Analysis	50
	M – 62	Abstract Algebra	50
	M – 63	Problem solving course based on Paper M – 61 & M – 62	50
	M – 64	Discrete Mathematics	50
	M – 65	Differential Geometry	50
	M – 66	Problem solving course based on Paper M – 64 & M – 65	50
	M – 67	A) Computer Programming & Applications B) Principles of Computer Science (Theory & Practical) C) Computational Mathematics	50
	M – 68	A) Mechanics (Dynamics) B) Operations Research C) Special Functions	50
	M – 69	Problem solving course based on Paper M – 67 & M – 68	50
		Statistics: (Semester – VI)	
	S – 61	Distribution Theory – II	50
	S – 62	Statistical Inference – II	50
	S – 63	Sampling Methods and Design of Experiments – II	50
	S – 64	Applied Statistics – II	50
	S – 65	Applied Statistics-IV	50
	S – 66	Computer Programming ‘C’ Programming (Turbo C) – II	50
		Lab Course	
	S – III	Practical course – III	100
	S – IV	Practical course – IV	100
	S – V	Practical course – V	100
		8) Geography : (Semester – VI)	
	G – 61	World Regional Geography	50
	G – 62	Geography of India	50
	G – 63	Environment	50
	G – 64	Economic Geography	50
	G – 65	Applied Geography	50

Year	Subject Code	Subject Title	Marks
T.Y.B.Sc.	G – 66	Geography of Water Resources OR Geography of Soils OR Population Geography	50
		Lab Course	
	G - III	Practical course - III	100
	G - IV	Practical course - IV	100
	G - V	Practical course - V	100
		9) Computer Application: (Semester-VI)	50
	CA-61	Operating System	50
	CA-62	Visual Basic .NET Programming	50
	CA-63	Software Engineering	50
	CA-64	Database Management System	50
	CA-65	Data and File Structures	50
	CA-66	Computer Networks	50
		Lab Course	
	CA-III	Practical course - III	100
	CA-IV	Practical course - IV	100
	CA-V	Practical course - V	100

EXAMINATION

- 1) A candidate shall not be admitted to the any Semester Examination of the First Year, Second Year and Third Year, unless he/she has satisfactorily kept the respective terms for the courses at the college of this University.
- 2) An application (which must be in the prescribed form and accompanied by the prescribed fee) for admission to any of the examination of B.Sc. Degree Course shall be submitted by a candidate to the Registrar through the Principal of the college attended by him/her on or before the prescribed date along with a certificate from the Principal. (i) of his/her having attended the course and kept the terms in the various subjects and of having satisfied the other conditions laid down by the University and (ii) of his/her being fit candidate for the examination.
- 3) A candidate shall not be admitted to the First Year of B.Sc. examination for the first time unless he/she produces a certificate from the Principal to the effect that he/she has attended at least 3/4th of the aggregate number of periods for Physical Training or has been exempted there from on the ground that (a) he/she is medically unfit to undergo such training (b) he/she is a member of the N.C.C. or (c) he/she has been regularly taking part as a member of the college team in the recognised tournaments of the major games.

4) **Internal Evaluation:**

There will be 10 marks for the Internal Evaluation of each subject (Theory) in every semester.

5) **Semester Examination:**

The Semester Examination will be held at the end of the each Term of the first, second and third year, which shall be called "Semester Examination". The Semester Examination of each subject will be of 40 marks and will be of two hours duration. The final result of the student in each subject will be based on marks obtained by the student in Internal Evaluation and Semester Examination taken together.

6) **Rules regarding ATKT to S.Y./T.Y.B. Sc**

a) **S.Y.B. Sc.**

A student will be allowed to keep terms at S.Y.B. Sc. level if he/she fails in not more than six heads of passing in courses at first and second semesters taken together.

b) **T.Y.B. Sc.**

A student will be allowed to keep terms at T.Y.B. Sc. level, if

- i) he/she fails in not more than four heads of passing in courses at third and fourth semesters taken together.
- ii) he/she clears in all heads of passing at F.Y.B. Sc. Semester-I and semester-II .

7) **Environment Studies**

As per the order of Honourable Supreme Court of India, this course is compulsory for every undergraduate student. The college is implementing this module course in Environment Studies in the second year of all degree courses. There will be 50 lectures for this course. The examination will be conducted at the

end of Semester IV and will carry 50 marks. These marks will be converted into the grades accordingly. These grades will be mentioned in the degree marksheet. If any student fails in this course, the result of his/her degree course will be withheld by the university.

8) Standard of Passing

- a) The candidate who has secured 20 marks out of 50 shall be declared to have passed in the paper.
- b) The candidate who has not secured at least 16 marks in a particular paper in the Semester Examination will have to secure at least 16 marks in the subsequent Semester examination in the particular paper.

Award of Class

A Class should be awarded to a student of B. Sc. Degree on the aggregate marks in the Second Year and Third Examination. The award of class shall be as follows -

- a) Aggregate 70% and above - First Class with Distinction
- b) Aggregate 60% and above but less than 70% - First Class
- c) Aggregate 55% and more but less than 60% - Higher Second Class
- d) Aggregate 50% and more but less than 55% - Second Class
- e) Aggregate 40% and more but less than 50% - Pass Class
- f) Below 40% - Fail

University Terms

The dates for the commencement and conclusion of the First and the Second terms shall be fixed by the University authorities. The terms can be kept by students, who have registered their names with the University.

9) Class Improvement:

The rules regarding the improvement of the class of B.Sc. course will be as follows, as notified by Bharati Vidyapeeth University:

1. The candidate who has passed UG and PG degree examinations of this university with class as shown in column no. 1 and who desires to improve the class as shown in column no. 2 below will be permitted at his/her option to appear for the same examination without being required to keep any terms.

Column no. 1	Column no. 2
Pass Class or Second Class or Higher Second Class or First Class as the case may be	Second Class or Higher Second Class or First Class or First Class with Distinction as the case may be

2. For improvement of class, the candidate will be required to apply and allowed to appear only for the theory examinations.
 3. A candidate shall have to reappear for minimum 1/3 and/or maximum of all the theory papers at a time, on which the class is awarded. Candidate should ensure that the examination time table for the subject he is appearing will not clash.
 4. Performance of the candidates reappearing for the subject less than 1/3 of the total theory examinations mentioned above will not be considered. However, his/her appearance will be counted as an attempt.
 5. If the candidate, who has reappeared for the final year examination under the provisions for his/her class, is successful in improving his/her class by such reappearance, he/she will have to surrender to the university the original degree and the statement of marks that he/she had obtained in that course/subject. Unless original degree and the statement of marks are returned to the university by the candidate, the new degree certificate and statement of marks cannot be issued to the candidate. In the revised degree certificate/statement of marks to be given to the candidate a mention will be made of the fact that he/she improved his/her class under class improvement attempt.
 6. A candidate appearing for the improvement of the class/grade shall not be entitled to get benefit of any other rules/orders of the university regarding condonation /grace marks.
 7. A candidate appearing for the improvement of class/grade shall not be entitled to get any prize/medal/scholarship/award etc.
 8. A candidate who has reappeared for the above examination/s under the provision fails to improve his/her class/grade, his/her performance at such reappearance at such reappearance shall be ignored.
 9. If the candidate makes no improvement in the class, then earlier performance will be retained.
 10. A candidate will be allowed to reappear for the examination for improvement of class/grade within a period of three years from the date of his/her passing the degree examination.
 11. The candidate will be given maximum of three attempts for the improvement of his/her class.
 12. The candidate who desires to apply for improvement of class should submit his/her application form for improvement of class from the College/School of Distance Education, Study Centre through which he/she has undergone the course. Form should be submitted for improvement before 31st August for the October/November examination and 28th February for April/May examination season. No form for improvement of class shall be accepted after the prescribe dates for the respective/corresponding examination season.
 13. Revised mark-sheet will be issued with remark '**Under improvement attempt**'.
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