



Savitribai Phule Pune University

(Formerly University of Pune)

Three Year B.Sc. Degree Program in Restructuring pattern

(Faculty of Science & Technology)

F.Y.B.Sc. (Restructuring pattern)

Choice Based Credit System Syllabus

To be implemented from Academic Year 2019-2020

Title of the Course: B.Sc. (Restructuring pattern)

Preamble:

BSc Restructuring program is designed to serve the requirements of Choice Based Credit System as per the guidelines of University Grants Commission. In the proposed structure, due consideration is given to restructured courses along with the conventional courses (Regular Pattern).

The continuous assessment of Choice Based Credit System will facilitate systematic and through learning towards better understanding of the subject. The well planned curricula from 1st year to 3rd year comprising of six semesters will definitely motivate the students for inculcating enough skills required for becoming a successful entrepreneur as well as a researcher.

Objectives:

- To foster value based education
- To enrich project based learning and create foundation for research
- To train the students in skill oriented courses
- To increase and improve self confidence, effective communication skills, perfect and proper presentation skill through personality development courses

Course Outcomes:

- Through this pattern, skilled and technical human resources will be made available.
- It will develop self confident and knowledgeable personnel's.
- The course will motivate students in the field of research as well as guide to become a successful entrepreneur.
- It will develop self awareness to enrich decision making ability among the students.
- Personal development will increase the clarity and effectiveness in knowing themselves and their strengths.

Restructuring Pattern

Structure of Choice Based Credit System for Undergraduate Science Restructuring Pattern 2019-20.

Sem-ester	Discipline Specific Core Courses (CC)		Ability Enhancement Compulsory Courses (AECC)		Discipline Specific Elective Courses (DSEC)		Skill Enhancement Courses (SEC)		Total Credit
	Course	Theory 1 + Theory 2 + Practical Credit	Course	Theory + Practical Credit	Course	Theory 1 + Theory 2 + Practical Credit	Course	Theory + Practical Credit	
FYBSc I	CC-I (‘B’ Component)	2+2+1.5= 5.5	-	-	-	-	-	-	22
	CC-II (‘B’ Component)	2+2+1.5= 5.5	-	-	-	-	-	-	
	CC-III (‘B’ Component)	2+2+1.5= 5.5	-	-	-	-	-	-	
	CC-IV (Part-A) (‘A’ Component: Foundation Course-I)	2+1.5= 3.5	-	-	-	-	-	-	
	CC-IV (Part-B) ‘E’ Component: Personality Development- (1) National Service Scheme-I, (2) National Cadet Corps-I, (3) Population Education-I, (4) Family planning and health education-I, (5) Sports-I.	2	-	-	-	-	-	-	
FYBSc II	CC-V (‘B’ Component)	2+2+1.5= 5.5	-	-	-	-	-	-	22
	CC-VI (‘B’ Component)	2+2+1.5= 5.5	-	-	-	-	-	-	

	CC-VII (‘B’ Component)	2+2+1.5= 5.5	-	-	-	-	-	-	
	CC-VIII (Part-A) (‘A’ Component: Foundation Course-II)	2+1.5= 3.5	-	-	-	-	-	-	
	CC-VIII (Part-B) ‘E’ Component: Personality Development- (1) National Service Scheme-II, (2) National Cadet Corps-II, (3) Population Education-II, (4) Family planning and health education-II, (5) Sports-II.	2	-	-	-	-	-	-	
	CC-IX (‘B’ Component)	2+2+2= 6	AECC-I (Environment)	2+0=2	-	-	-	-	
	CC-X (‘B’ Component)	2+2+2= 6	AECC-I (Language Communication)	2+0=2	-	-	-	-	
SYBSc III	CC-XI (‘C’ Component: Part A) (1) Pharmaceutical Chemistry-I, (2) Energy Studies-I, (3) Horticulture and its management-I, (4) Applied entomology-I, (5) Dairy Science-I.	2+2=4	-	-	-	-	-	-	22
	CC-XI (‘D’ Component: Part-B) (1) Soap Manufacturing-I,	2	-	-	-	-	-	-	

	(2) Radio Repairing-I, (3) Nursery Development-I, (4) Medical Lab Technician-I, (5) Milk and Milk Products-I.								
SYBSc IV	CC-XII ('B' Component)	2+2+2= 6	AECC-III (Environment)	2+0=2	-	-	-	-	22
	CC-XIII ('B' Component)	2+2+2= 6	AECC-IV (Language Communication)	2+0=2	-	-	-	-	
	CC-XIV ('C' Component: Part A) (1) Pharmaceutical Chemistry-II, (2) Energy Studies-II, (3) Horticulture and its management-II, (4) Applied entomology-II, (5) Dairy Science-II.	2+2=4	-	-	-	-	-	-	
	CC-XI V ('D' Component: Part-B) (1) Soap Manufacturing-II, (2) Radio Repairing-II, (3) Nursery Development-II, (4) Medical Lab Technician-II, (5) Milk and Milk Products-II.	2	-	-	-	-	-	-	
TYBSc V	-	-	-	-	DSEC-I	2+2+2=6	SEC-I	2+0=2	22
					DSEC-II	2+2+2=6	SEC-II	2+0=2	
					DSEC-III: ('C' Component:	2+2=4	-	-	

					<p>Part A) (1) Pharmaceutic al Chemistry-I, (2) Energy Studies-I, (3) Horticulture and its management-I, (4) Applied entomology-I, (5) Dairy Science-I.</p>				
					<p>(‘C’ Component: Part B) Project Based on; (1) Pharmaceutic al Chemistry, (2) Energy Studies, (3) Horticulture and its management, (4) Applied entomology,</p>	2+0=2			

					(5) Dairy Science				
TYBSc VI					DSEC-IV	2+2+2=6	SEC-III	2+0=2	22
					DSEC-V	2+2+2=6	SEC-IV	2+0=2	
					DSEC-VI (‘C’ Component: Part A)				
					(1) Pharmaceutical Chemistry -II, (2) Energy Studies-II, (3) Horticulture and its management-II, (4) Applied entomology-II, (5) Dairy Science-II.	2+2=4	-	-	
					(‘C’ Component: Part B) Project Based on;	2+0=2			

					(1) Pharmaceutical Chemistry , (2) Energy Studies, (3) Horticulture and its management, (4) Applied entomology, (5) Dairy Science					
									Total Credit	132

- In F.Y.B.Sc. Restructuring pattern student offer three regular courses and one restructuring course. (In Regular F.Y.B.Sc. Pattern students offer four courses.)
- Over all credit remain same in regular and restructuring patterns.

Examination Pattern =	Internal Exam:	15 Marks
	External Exam (Semester End Exam):	35 Marks
	Total :	50 Marks.

Savitribai Phule Pune University
Restructure Pattern 2019-20
Science Faculty

Structure of F. Y. B. Sc. Restructuring pattern

Semester	Paper Code	Paper	Core course (Course Code)	Paper Title	Credits
I	RE-A-FC-101	I	CC-IV (Part-A) 'A' Component (Compulsory Course)	Foundation Course- I	3.5
	RE-E-NSS-102	I	CC-IV (Part-B) 'E' Component: (Student opt any one subject).	National Service Scheme-I,	02
	RE-E-NCC-103	I		National Cadet Corps-I	02
	RE-E-PE-104	I		Population Education-I,	02
	RE-E-FPHE-105	I		Family planning and health education-I	02
	RE-E-SP-106	I		Sports-I	02
II	RE-A-FC-111	II	CC-VIII (Part-A) 'A' Component (Compulsory Course)	Foundation Course- II	3.5
	RE-E-NSS-112	II	CC-VIII (Part-B) 'E' Component: (Student opt any one subject).	National Service Scheme-II,	02
	RE-E-NCC-113	II		National Cadet Corps-II,	02
	RE-E-PE-114	II		Population Education-II,	02
	RE-E-FPHE-115	II		Family planning and health education-II	02
	RE-E-SP-116	II		Sports-II.	02

SEMESTER-I**CC-IV (Part-A)****Course code - RE-A-FC-101****Paper Title: Foundation Course- I (Paper -1)****(‘A’ Component: Basic Knowledge Course.) (Credit.3.5)**

Objectives:

1. To Impart moral, Patriotic and Socio-cultural values in the students.
2. To aware the students about various problems emerged in India.
3. To helps the students to know the trends of National and Global development.
4. It helps to learn the concept and its practical application in human life.

Semester – I Syllabus				
Paper I : 3.5 credit (Theory Credit 2 + Practical based Activity Credit 1.5)				
Theory				
Unit No.	Unit	Sub Unit		Credit
1.	A Study of Global and Indian Concepts	a	Nationalism,	Credit- 1
		b	Economic Imperialism,	
		c	Socialism,	
		d	Humanity,	
		e	Liberty,	
		f	Democracy,	
		g	Globalization,	
		h	Liberalization,	
		i	Privatization,	
		j	Religion.	
2.	Transformation Movements in Maharashtra	a	Social and Religious movement in Maharashtra: - Prarthana Samaj, Satyashodhak Samaj.	Credit- 1
		b	Classified movements: - Famine Movement, Women’s movements.	
		c	Educational movement in Maharashtra: - Nature and growth	
Practical based Activity - Credit 1.5				
1.	Recent trends in Indian economy	a	Economy- Meaning and types, pattern of Indian economy	Credit- 1
		b	Financial inclusion	
		c	Inclusive growth	
		d	GST.	
2.	Science and Scientific Method	a	Science- Definition,	Credit- 0.5
		b	Classification of science	
		c	Scientific Methods	
		d	Sources of data collection	
		e	Report writing	

SEMESTER-II**CC-VIII (Part-A)****Course code - RE-A-FC-111****Paper Title: Foundation Course- II (Paper -II)****(‘A’ Component : Basic Knowledge Course.) (Credit.3.5)**

Semester – II Syllabus				
Paper -II Credit: 3.5 (Theory Credit 2 + (Activity) Practical's Credit 1.5)				
Theory				
Unit No.	Unit	Sub Unit		Credit
1.	Basic Concept in Political Science, Political Issues	a	Indian Constitution creation and importance	Credit- 1
		b	Democracy- Definition and Types, Merits and Demerits of Indian democracy	
		c	Human Rights and Responsibilities	
		d	Right to Information Act (RTI-2005)	
		e	Local Governments	
2.	Value Education	a	National values - Democracy, socialism, secularism, equality, justice, liberty, Freedom and fraternity	Credit- 1
		b	Social Values - Pity and probity, self control, universal brotherhood. Professional Values -	
		c	Knowledge thirst, sincerity, regularity, punctuality and faith.	
		d	Religious Values – Personality, Tolerance, wisdom,	
		e	Aesthetic values – Love, appreciation, respect to literature and fine arts	
Practical based Activity - Credit 1.5				
1.	Contemporary Social Issues in India	a	Population-Characteristics, Causes and effects of growing population in India.	Credit- 1
		b	Urbanization-Concept and problems	
		c	Gender Disparity-Concept, causes and measures to eliminate gender disparity.	
		d	Women Empowerment-Concept and Significance.	
2.	Geography of India	a	Physiographical regions in India	Credit- 0.5
		b	States and its capitals	
		c	Rivers	
		d	Dam	
		e	Forests	
		f	Deserts	

Semester Exam Pattern

Credit: 3.5 (Theory- Credit 2 + Practical Based Activity- Credit 1.5)

- Internal Exam : 15 Marks
- Semester Exam : 35 Marks
- Total : 50 Marks

: 2 hours for Semester theory Examination

References:

- 1) Foundation Course- 1- Dr. Ashok Jain, sheth Publishers Pvt. Ltd., Mumbai
- 2) Indian Economy- Dr. Desai, Dr. Nirmal Bhalerao – Nirali Publications.
- 3) Transformation of Modern Maharashtra- Vasant Jadhav
- 4) Indian Economy- Rudra Dutt & K.P.M. Sundaram, S. Chand Publication, New Delhi
- 5) Indian Geography- H. K. Doiphode, Study circle Publication Pvt Ltd, Pune
- 6) Right to Information – Yashada Academy and Publication Pune
- 7) Science Technology & Social Transformation (Foundation course - 2) – S.A Chitanand- Dr. Ashok Jain, sheth Publishers Pvt. Ltd., Mumbai
- 8) Foundation Course- Dr. G.V. Kayande Patil, Prof. M.S. Nagbhide, Dr. K.R. Shimpi, Prof. S. D. Gite, Chaitnya publication, Nashik
- 9) Modern India – Gathal, K'sagar Publication, Pune
- 10) Local Self Government in India – Dr. Shantaram Bhogale Nirali Publication

SEMESTER -I**CC-IV (Part-B)****Course code - RE-E-NSS-102****Paper Title: National Service Scheme-I, (Paper -1)****('E' Component: Personality Development Course.) (Credit.02)**

Theory

Credit-1:

Chaper-1: Evaluation of N.S.S.- Brief history, aims, objectives, growth, organizational structure and present state. 04L

Chaper-2: Need of social work in human life:- Introduction to the work of social reformists like Mahatma Phule, Savitribai Phule, D.K. Karve, Bhauroo Patil, Mahatma Gandhi. An introduction to the life of saints like Tukaram, Dnyaneshwar, Eknath, Saint Gadagebaba etc. 07L

Chaper-3: Superstitions and modern Youth Emergence of superstitions, Factors responsible to superstitions & remedies to every can this problem. 04L

Field Work & Project Work

Credit-1

A) Field Work :- (10 Hours)

1) Sanitation

i) Cleaning of the slumps.

ii) Disposal of sewage in villages.

iii) Cleaning of the campus/area.

2) Repairs & Construction of roads.

3) Tree plantation.

4) Village survey referring Socio-economic / educating & religious aspects.

5) Eradication of Carrot Grass (Gajar grass) / Weeds.

B) Project Work:- (Any two Survey out of following) (05 Hours)

i) Cattle / as per local needs -Survey

ii) Survey of Child health nursing

iii) Survey of Public health.

iv) Survey of nutrition.

SEMESTER –II**CC-VIII (Part-B)****Course code - RE-E-NSS-112****Paper Title: National Service Scheme-II, (Paper -II)**
(‘E’ Component: Personality Development Course) (Credit.02)

Credit-1

Chapter- 1:- Haemoglobin, Normal Range, Symptom of high and low level, Diet for maintaining of Normal range of Haemoglobin. 04L

Chapter-2:- Blood groups, Blood donation, its importance and benefits, impact on health of blood donation. 06L

Chapter-3:- Cleanliness, need and importance of personal Hygiene 05L

Field Work & Project Work

Credit-1

Field Work:- (10 Hours)

- i) Preparation of school ground.
- ii) Enhancement of School ,College , Complex by organizing activities Like cultural, educational, sports, debating etc.
- iii) Enhancement of Hospital work by organizing camp of Blood (Donating service to the patients /spoons.)
- iv) Tree plantation (follow up programmes)
- v) Survey of marginal farmers / workers.

Project Work:- (Any two Survey out of following) (05 Hours)

- i) Survey of Hb level in community
- ii) Survey of energy resources.
- iii) Survey of population regards the family planning.
- iv) Survey of backward/ Tribal /minority people.

Books

1. National Service Scheme, The Youth Volunteers program. For Under Graduate Students by D.S.Panwar , Amit Kumar , J.N. Brijesh Kumar Rathi.Semester I & II. Astral Publication.

SEMESTER -I**CC-IV (Part-B)****Course code - RE-E-NCC-103****Paper Title: National Cadet Corps-I (Paper -I)****(‘E’ Component: Personality Development Course) (Credit.02)**

Credit : 1

- 1. Introduction of NCC and Drill** **15 L**
- i. History of National Cadet Corps
 - ii. Aims and Motto of National Cadet Corps
 - iii. NCC Organization
 - iv. NCC Song
 - v. Introduction and Aims of drill
 - vi. Advantages of drill

Credit : 1

- 2. Civil and Self Defense** **08L**
- i. Civil defense measures
 - ii. Various civil defense services
 - iii. Unarmed combat and its principles
 - iv. Stroke on Enemy
 - v. Vulnerable parts of the body
 - vi. Attacking
- 3. Map Reading** **07L**
- i. Definition
 - ii. Conventional sign
 - iii. Grid time
 - iv. Prismatic compass/ Service protector
 - v. Setting of maps
 - vi. Finding north and own position

SEMESTER -II**CC-VIII (Part-B)****Course code - RE-E-NCC-113****Paper Title: National Cadet Corps-II, (Paper -II)****(‘E’ Component: Personality Development Course) (Credit.02)****Credit 01****1. First Aid****15 L**

- a. Definition and Aims of first aid
- b. Necessary material for first aid
- c. Artificial respiration and pressure points
- d. First aid for wounds and bleeding
- e. First aid for snake bite and dog bite.

Credit 01**15 L****2. Hygiene and Sanitation**

- a. Definition and introduction
- b. Personal hygiene
- c. Harmful causes of impure water
- d. Purified water supply
- e. Malaria-Causes and Prevention
- f. Leadership Traits and Man Management
- g. Leadership and styles
- h. Principles of leadership
- i. Traits
- j. Man management (Suggested ways)

Books:

- NCC National Cadet Corps (Including Model Papers & Solved Questions) by R. Gupta's
- Handbook NCC: Kanti Publication, Itawa (U.P.)
- NCC Cadets Military Training by Vishnu Kant Sharma & Meena Sharma

SEMESTER -I
CC-IV (Part-B)
Course code - RE-E-PE-104
Paper Title: Population Education-I, (Paper-I)
(‘E’ Component: Personality Development Course) (Credit.02)

Objectives:

1. To develop awareness on the population Dynamics.
2. Provide necessary skill to evaluate the impact and consequence of population growth.
3. Inculcating in them rational attitude and responsible behavior towards population and development issues.
4. Making learners aware of interrelationships between population and sustainable Development.

Credit: 02

Sr.no	Topic	Subtopic	Credits
1	<i>Concept of population Education</i>	a. Definition, Nature and Scope of population Education b. Objective of population Education c. History of population Education d. Population Education in India e. Need and Importance of Population Education	01
2	<i>Population Structure And Composition</i>	a. Sex and Age Structure b. Factor affecting on sex Ratio c. Sex ratio in India d. Age Structure of Indian Population e. Aging of Population-Concept	0.5
3	<i>Population Explosion</i>	a. Definition of Population Explosion b. Concept –Optimum Over and Under population c. Over population in India-Cases and Consequence d. Population Distribution in India	0.5

SEMESTER -II
CC-VIII (Part-B),
Course code – RE-E-PE-114
Paper Title: Population Education-II, (Paper-II)
 ('E' Component: Personality Development Course) (Credit.02)

Sr.no	Topic	Subtopic	Credits
1	Population Policies	a. Population of India b. population Policies o f India c..Population education in India d.Family welfare and Programme in India	0.5
2	Population Development	a. Urbanization –Cases and Consequences b. Population and Economic development c. Population and Health d. Population and Quality of Life e. Population and Sustainable Development	01
3	Population and Environment	a. Population and Global Warming b. Population and Air Pollution c. Population and Water Pollution d. Population and Soil Pollution e .Population and deforestation	0.5

Reference books-

1. Population Education-M.V.Lakshmi Reddy
2. Population Education-V,, Pandey
3. *Population and Environment*-J.C.Aggarwal
4. Population Studies and Population Education.Dr.S.N.Kulkarni
5. Population Studies-Ahirrao

SEMESTER -I**CC-IV (Part-B)****Course code - RE-E-FPHE-105****Paper Title: Family planning and health education-I,(Paper-I)****(‘E’ Component: Personality Development Course) (Credit.02)****Course Objectives:**

- i. To bring the health conciseness.
- ii. To control the population.
- iii. To generate awareness of health education.
- iv. To highlight importance of family planning in nation building

Credit : 02

- 1) Importance of health in life and its need.
- 2) Pesticide and food.
- 3) Food value in balance diet.
- 4) Types of exercise and their need.
- 5) Personal hygienic.
- 6) Bad habits and their drawbacks.
- 7) Pollution effect on health.
- 8) Study of following disease with ref to their symptoms and control measures
 - a. Viral disease -Aids , swine flue
 - b. Bacterial -T.B, Pneumonia
 - c. Parasitic disease- Ascarisis Taeniasis
 - d. Fungal disease- lamprey
 - e. Blood disorder- Hemophilia, Anemia

SEMESTER -II**CC-VIII (Part-B)****Course code – RE-E-FPHE-115****Paper Title: Family planning and health education-II,(Paper-II)**
(‘E’ Component: Personality Development Course) (Credit.02)

(Credit 02)

- 1) Eyes, Skin, Hairs and Nails care.
- 2) Population control.
- 3) Family planning.
- 4) Contraceptives devices.
- 5) Human reproductive system.
- 6) Diet in pregnancy.
- 7) Parturition and child care.

References:

- Text book of Medical Physiology, Guyton and Hall.
- Text book of Parasitology, K.D. Chatterjee.
- Text book of Gynecology, D.C. Datta.
- Text book of Microbiology Ananthanarayan and Paniker
- Text book of Nutrition, Viday & D.B. Rao.

SEMESTER -I**CC-IV (Part-B)****Course code – RE-E-SP-106****Paper Title: Sports-I. (Paper-I)****(‘E’ Component: Personality Development Course) (Credit.02)****THEORY (Credit: 1)**

- A) Introduction to physical Education and Sports.
- B) Introduction to Asian Games and Olympic Games.
- C) Introduction to Health Education and Hygiene
- D) Brief study of the Game. (Any Two)

(With reference to History of the Game, Equipment of the Game, Dimensions of the ground, Rules and Regulations of the Game, Basic Skills of the game, Techniques and Tactics of the Game)

- 1. Cricket
- 2. Football
- 3. Table Tennis
- 4. Volley Ball

Practicals. Activity (Participation in Sports) Credit :01**A) Exercises :-**

- a) General and specific warming up exercises of the Game
- b) Skill development exercises

B) General Introduction to Track and Field Events :-

- a) Throwing events
- b) Jumping
- c) Running events

SEMESTER -II**CC-VIII (Part-B)****Course code-** RE-E-SP-116**Paper Title: Sports-II. (Paper-II)**

('E' Component: Personality Development Course) (Credit.02)

Theory Credit-01

- A) Concept of Physical Education and Scope.
- B) Concept of Physical fitness.
- C) Intramural Organization.
- D) Brief study of the Game (Any Two)

(With reference to History of the Game, Equipment of the Game, Dimensions of the ground, Rules and Regulations of the Game, Basic Skills of the game, Techniques and Tactics of the Game)

- i. Basketball
- ii. Kho-Kho
- iii. Kabaddi
- iv. Badminton

Practicals . Activity (Participation in Sports) Credit :01

1. Sports Activity on Ground related to theory syllabus.
Basketball
 - i. Kho-Kho
 - ii. Kabaddi
 - iii. Badminton.

2. Yoga Practicals.

Books:

1. Fundamental Elements of Physical Education. By Kamlesh M.L.
2. Principal & History of Physical Education and Sports By Singh D.K.
3. A Text Book of Applied measurement Evaluation & Sport Selection by Kansal D.K.
4. A Pioneer of Scientific and Physical Education by Swami Kuvalayananda
5. Patanjali Yog Darshan by Swami Anandrushi
6. Asanas by Swami Kuvalayananda.