

**Table 1.3.1.2:** Cross cutting issues relevant to Gender, Environment and Sustainability, Human Values and Professional Ethics included in curriculum of Savitribai Phule Pune University

S. no.	Year and Semester (B. Pharmacy/ M. Pharmacy)	Name of curriculum and curriculum code	Cross cutting issues related to topics in the curriculum			
			Gender	Environment and Sustainability	Human Values	Professional Ethics
1.	F.Y.B. Pharmacy (Semester-I)	Pharmaceutics-I ( 1.1.1)	-	-	-	Pharmacy code of ethics and pharmacy as career
2.		Modern Dispensing Practices (1.1.2)	Posology-factors affecting dose	-	Community Pharmacy	Community Pharmacy
3.		Human Anatomy and Physiology (1.1.5)	-	-	Health Education	-
4.		Communication and Soft Skill Development (1.1.6)	-	-	Communication and Soft Skill	-
5.	F.Y.B. Pharmacy (Semester II)	Pharmaceutics-II (1.2.1)	-	-	-	Introduction to good manufacturing practices
6.		Dosage form design (1.2.2)	-	Radiopharmaceutical dosage forms-manufacturing and quality control aspects of radiopharmaceutical dosage forms	-	-

7.		Human Anatomy and Physiology – II (1.2.4)	Reproductive system	-	-	-
8.		Pharmacognosy (1.2.5)	-	Ecology and Environment, Application of genetics to crop improvements	-	-
9.	S.Y. Pharmacy (Semester III)	Pharmaceutical microbiology and immunology (2.3.2)	-	Microbial Limit tests, Sterilization, Preservation and Disinfection	-	-
10.		Pharmacology-I (2.3.5)	Clinical Pharmacology - Rational drug treatment during pregnancy and lactation	-	Rational use of medicine Principles of Therapeutics - Adverse drug reactions; Clinical Pharmacology - Rational drug treatment during pregnancy and lactation, pediatric and geriatric patients	-
11.		Environmental Science (2.3.7)	-	Ecology and ecosystem; Biodiversity and its conservation; Natural Resources and their conservation; Environmental	The Multi-disciplinary Nature of Environmental Studies- Need for public awareness.	-

				Pollution; Human Population and the Environment; Field Work; Environmental issues related to the specific discipline for Pharmacy Course		
12.	S.Y. Pharmacy (Semester IV)	Pathophysiology and Clinical Biochemistry (2.4.2)	Reproductive System: Endometriosis, Dysmenorrhoea Infertility; Infection & Parasitic diseases: Sexual Transmitted Diseases	-	Infection & Parasitic diseases: Malaria, Leprosy, Tuberculosis, Sexual Transmitted Diseases (Syphilis, Gonorrhea, AIDS)	-
13.		Pharmaceutical Organic Chemistry –IV (2.4.3)	-	Microwave Assisted Synthesis	-	-
14.		Industrial Pharmacy-I (3.5.1)	-	-	-	Tablets formulation and technology; coating technology; Capsules -IPQC & QC of tablets as per IP, BP, USP. Plant layout for capsule manufacture
15.		Pharmacology-II (3.5.4)	Estrogens, Progestins, contraceptives	Care and handling of common laboratory	Care and handling of common laboratory animals, animal welfare	Guidelines of Committee for the Purpose of Control and Supervision of Experimental

			and Specific Estrogen Receptor Modulators, antiprogestin	animals, animal welfare		Animals, Organisation for Economic Co-operation and Development (OECD) guidelines (Practical)
16.	T.Y. Pharmacy (Semester V)	Analytical Pharmacognosy and Extraction Technology (3.5.5)	-	Microwave-assisted extraction, Ultrasound extraction	-	Quality control (efficacy and safety) parameters of herbal drugs as per WHO; Overview of 'Good practices for pharmaceutical quality control laboratories' (as per WHO)
17.		Pharmaceutical Business Management and Disaster Management (3.5.6)	-	Disaster Management; Geological and mountain area disasters, Wind, water, Manmade disasters; Preparedness and Mitigation	Human Resource and Development	Fundamentals of management; Planning, Objectives, Organizing, Decision making, Controlling, Material management, Pharmaceutical Marketing, Sales promotions, Marketing research, Product management, Price.
18.		Active Pharmaceutical Ingredient Technology (3.5.7)	-	Design of environment friendly processes, effluent minimization and control, types of health hazards in API manufacturing unit, their prevention using	-	APIs: QA/QC, GMP guidelines in API manufacturing (ICH Q7, Q7A and Q11)

				green chemistry approaches. Basic knowledge about Material Safety Data Sheet for safety and handling of chemicals without health hazards.		
19.	T.Y. Pharmacy (Semester VI)	Industrial Pharmacy-II (3.6.1)	-	-	-	Manufacturing equipments: Layout and designing of manufacturing facility as per schedule M.
20.		Pharmaceutical Analysis-IV (3.6.2 )	-	-	-	Validation - Analytical Methods Validation as per ICH/ USP guidelines.
21.		Pharmacology-III (3.6.4 )	-	-	Management of chronic alcoholism	-
22.	Final year Pharmacy (Semester VII)	Sterile Products (4.7.1)	-	-	-	GMP-Design of Parenteral Production Facility
23.		Pharmacology – IV (4.7.4)	-	-	Tuberculosis and leprosy including National TB programmes (DOTS); Antiviral drugs including treatment of HIV; Safety Pharmacology; Critical appraisal of fixed dose drug combinations of	-

					marketed preparations; Prescription auditing and standard treatment protocol (Practicals)	
24.		Natural Drug Technology (4.7.5 )	-	Natural pesticides: Methods, classification, pesticides and environment; Biofuels	-	Standardization of herbal drugs; Authentication of plant material; WHO guidelines on ‘Good Agricultural and Collection Practices’; WHO Guide to good storage practices for Pharmaceuticals
25.		BioPharmaceutics and Pharmacokinetics (4.7.6)	-	-	Bioavailability and Bioequivalence	Regulatory requirements for conducting bioequivalence study
26.		Pharmaceutical Jurisprudence (4.7.7)	-	-	Narcotic Drugs & Psychotropic substances act 1985; The prevention of cruelty to Animals Act, 1960; Food Safety and Standards Act 2011; Consumer Protection Act1986; Consumer Protection Act1986	History of Pharmaceutical Legislation in India-Code of Pharmaceutical Ethics; Pharmacy Act 1948; The Drugs Price Control Order with latest amendments; Narcotic Drugs & Psychotropic substances act 1985: The prevention of cruelty to Animals Act, 1960; Food Safety and Standards Act 2011; Consumer Protection Act1986, Industrial Development & Regulation Act 1951.;Drugs and Magic Remedies Act; Intellectual Property Rights (IPR); Indian Patents Act 1970;

						Salient features of US patents. Hatch Waxman Act with reference to Generic Drugs, The Orange book, The contents of ANDA and bioequivalence. Patent Certification ( Para-I, Para-II, Para-III and Para-IV); Standard Institutions and Regulatory Authorities such as ICH, WHO, USFDA, MHRA, TGA, BIS, ASTM, ISO.
27.	Final year Pharmacy (Semester VIII)	Advanced Drug Delivery System (4.8.1)	-	Polymers-biodegradable /nonbiodegradable polymers	-	-
28.		Pharmacology-V (4.8.5 )	-	Clinical Trials and its Ethical issues, Good Clinical Practice-Concept, importance, GCP guidelines, ICH guidelines and schedule Y	Drug interactions; Adverse Drug reactions ; Bioavailability, bioequivalence and Therapeutic Drug Monitoring; Drug abuse and misuse; Hospital Pharmacy:	-
29.		Natural Products: Commerce, Industry and Regulations (4.8.6)	-	Issues related to export of natural products (such as CITES Certificate, Negative list of herbs, TRAFFIC)	Toxicity in herbals and their interaction	Herbal drug regulation in India, licensing requirements for production and sale of herbal drugs in India; ethical issues, WHO guidelines, The International Conference on Harmonization (ICH) guidelines, Quality by Design, GMP; Issues

						related to export of natural products (such as CITES Certificate, DGFT Notification, Negative list of herbs, TRAFFIC)
30.	Final Year B. Pharmacy (2008 Annual pattern)	Biopharmaceutics and Pharmacokinetics (4.2)	-	-	Clinical Pharmacokinetics with respect to design of dosage regimens	-
31.		Pharmaceutical Analysis-III (4.4)	-	-	Validation of Analytical Methods as per ICH or USP guidelines	
32.		Pharmacology-III (4.5)	-	-	Signs, Symptoms, treatment of acute and chronic poisoning; Patient compliance and counseling; Adverse Drug reactions; Drug interactions; Bioavailability, bioequivalence, Therapeutic Drug Monitoring	Hospital Pharmacy; Hospital drug Policy; Hospital Documentation; Drug distribution in Hospitals; Introduction to Clinical Trials; Ethical issues in clinical trials; Good Clinical Practice-Concept, importance, and GCP guidelines including ICH guidelines
33.		Pharmacognosy III (4.6)	-	-	-	Regulatory requirements of herbal medicines- Infrastructure, Quality control and evaluation parameters; Import and Export
34.		Pharmaceutical Jurisprudence (4.7)			The Drugs and Magic Remedies Act & Rules 1976; Narcotic Drugs & Psychotropic substances	Laws and amendments of Pharmacy Laws



					act 1985; Prevention of Food Adulteration Act 1954; Consumer Protection Act; Industrial Safety and Health; Cyber Law;	
35.	F.Y. M. Pharmacy (Semester I)	Advanced Analytical Techniques (M.1.1)	-	-	-	Pharmaceutical Validation: Government regulation
36.		Research Methodology (M.1.3)	-	-	-	Research, Literature survey and documentation, Technical writing, Presentation
37.		Advanced Pharmaceutics (M.1.4)	-	Introduction to Biodegradable polymers	Optimization	Quality Assurance
38.		Advanced Quality Assurance Techniques (M.1.12)	-	Surrounding, Building and Facilities- Sewage, Refuge and Disposal of Water, Sanitation; Waste Materials; Safety and Environmental Protection	-	Good manufacturing practices in Pharmaceutical Industry; Quality Management-Quality Assurance, Components of Q.A., Quality Control
39.		Sterile Product Formulation and Technology (E.1.4)	-	Environmental control: Temperature and humidity control, air handing systems and their	-	Overview of Good Manufacturing Practices and regulatory guidelines

				validation		
40.	S.Y. M. Pharmacy (Semester II)	Drug Regulatory Affairs (M.2.1)	-	-	-	Laws related to Pharmacy
41.		Formulation and Development (M.2.2)	-	Nutraceuticals: Food as medicine, classification, effectiveness, safety	-	Details study of ICH Q8 (R2 ) Guidelines for pharmaceutical development; Introduction to QBD (Quality by Design)
42.		Novel Drug Delivery Systems (M.2.4)	Mucosal drug delivery models-vaginal drug delivery	Regulatory consideration in controlled release	Bioavailability and bioequivalence	Protein & peptide drug delivery system-regulatory perspective; Regulatory consideration in controlled release: safety, efficacy and controlled release nature
43.		Pharmaceutical Validation (M. 2.14)				Pharmaceutical Validation- Government regulation
44.		Quality Planning and Analysis (M.2.16)	-	-	Quality Assurance General Concepts-	Development of quality culture in manufacturing service industries
45.		Pharmaceutical Administration (E.1.19)	-	-	Human motivation theories of, Abraham Maslow McClelland's needs theory	Administration, Planning and decision making, Organizing, Staffing, Leading, and operations management,

Table: **1.3.1.3** Institute integrates cross cutting issues relevant to gender, environment and sustainability, human values and professional ethics into the curriculum by conducting following programs:

<b>Cross cutting issues</b>	<b>Supporting co-curricular and extra-curricular activities conducted to address cross cutting issues by the institute</b>
<b>Gender</b>	<p>1. Institute follows <b>admission rules</b> of Directorate of Technical education (DTE) for admission of reservation of male and female students.</p> <p>2. Participation of female students and women teachers in <b>decision-making</b>, implementation and monitoring of policies</p> <p>3. Ms. Neha Bankar and Ms. Kajal Kabra of final year are selected as '<b>Peace Ambassador 2016</b>' and '<b>Peace Ambassador 2017</b>', respectively, by Lila Poonawalla Foundation. Both these female students represented India as an ambassador and successfully completed three week wholesome Leadership Development Programme at ASHA Centre Gloucestershire-U.K. for betterment of the world, bringing about harmony and resolution of conflict in and around the community.</p> <p>4. Ms. Snehal Ravindra Patil, a final year B. Pharm student, was invited to witness the Republic Day Parade, from Prime Minister Box at Rajpath, New Delhi on 26<sup>th</sup> January 2011, as one of the hundred meritorious students from all over the India. She received an official letter to witness the Republic Day Parade from Government of India, Ministry of Human Resource Development, Department of Higher Education, New Delhi. She was honored with trophy and certificate of appreciation. She also received '<b>Merit Award</b>' by 'Indian Pharmaceutical Association'.</p> <p>5. Ms. Srishti Rawat, a final Year B. Pharm student, has been awarded <b>Two Gold Medals</b> by Savitribai Phule Pune University. She has been awarded 'Rupchand Bora Pharmacy Gold Medal' and 'Smt. Kashibai Navale Pharmacy Gold Medal' for ranking first among all the successful candidates at the final year B. Pharmacy examination, held in April/May 2015.</p> <p>6. Activities such as <b>female foeticide</b> 'Save girl child activity' through posters and rangoli competition are conducted to create awareness about female child in the community.</p> <p>7. <b>Counseling</b> regarding 'safe use of drug dose to pregnant women and lactating mother' is conducted at pharmacy shops by students.</p> <p>8. Institute provides guidance to avail <b>scholarships</b> of 'Non-Government Organizations' like 'Sahara India', 'RMD Foundation', 'Sitaram Jindal Foundation' (for girls and boys) and 'Lila Poonawalla Foundation' (girls).</p> <p>9. Institution has Grievance Cell to handle the various issues like women's right and security. The cell consists of female faculty members. <b>Women grievance committee</b> ('Vishakha Committee') functions to prevent any sexual abuse towards the female students and teachers.</p>
<b>Environment and Sustainability</b>	<p>1. As prescribed in the curriculum of the Savitribai Phule Pune University, students of S.Y.B. Pharmacy have '<b>Environmental sciences</b>' course in the curriculum, which helps to create awareness about the ecosystem,</p>

	<p>biodiversity, natural resource conservation, waste management and pollution. This curriculum is supported by field visit and project work. T.Y. B. Pharmacy has one of the curriculum entitled, <b>‘Pharmaceutical Business Management and Disaster Management’</b> which includes ‘causes and effects of geological and mountain area disasters; wind and water related natural disaster; manmade disasters and its preparedness and mitigation’.</p> <p>2. The institute has cultivated and maintained various species of plants in <b>‘medicinal plant garden’</b> having botanical and medicinal significance. These plants are labeled with their biological source, important chemical constituents and medicinal uses which help to correlate while studying Pharmacognosy and Phytochemistry course in curriculum. The institute has cultivated and maintained various species of plants in medicinal plant garden having botanical and medicinal significance. Every year on <b>‘Parent’s meet’ tree plantation</b> drive is carried out at the hands of parents at medicinal plant garden. Institute has lush green campus with large number of trees to prevent pollution.</p> <p>3. <b>Drip irrigation system</b> is used in the campus to save water.</p> <p>4. <b>‘Swachh Bharat Abhiyan’</b> is conducted to make students and society aware towards their responsibility to community.</p> <p>5. Prohibition of burning of plastic in the campus is strictly followed. Campus is trying to be <b>‘plastic free-zone’</b> to reduce hazards of plastic materials.</p> <p>6. Institute promotes for <b>eco-friendly Ganesh Idols at ‘Ganesh festival’</b> organized by the institute to minimize water pollution. Institute adopts the concept of traditional music by replacing harsh sound system to avoid noise pollution.</p> <p>7. To reduce the effects of waste on human health and environment, our institute has well functioning <b>‘Waste Management System’</b> where proper dispose of waste are taken care of.</p> <p>8. Institute has ‘transportation facility’ for students and staff to minimize the use of vehicles, thus putting a step forward to avoid air pollution. Vehicles for transportation are <b>‘Pollution Under Control (PUC)’ certified vehicles</b>. Students are motivated to create awareness of use PUC certified vehicles.</p> <p>9. We have installed <b>solar lamps</b> in the campus to provide illumination.</p> <p>10. <b>LEDs and CFLs are used to save energy</b>. Electrical devices are switched off when not in use. Computer monitors are replaced by LCD monitors to save energy.</p> <p>11. <b>Rain water harvesting, e-waste disposal, saving energy, proper ventilation</b>, optimal use of energy are few of the highlights about environment consciousness at the institute.</p> <p>12. <b>Program Educational Objectives (PEO)</b> of institute has one of the PEO related to environment and sustainability: Graduate shall possess an ability to address healthcare, safety and environmental issues by applying ethical principles.</p>
<b>Human Values</b>	<p>1. <b>Anti-ragging and ‘Women’s Grievance Committee’</b> monitors the matters of conduct and discipline. The institute has formed an anti-ragging</p>

	<p>committee chaired by senior faculty of the institute comprising of faculty representatives and student representatives to avoid an undue incidences of ragging either in college or in hostel.</p> <p>2. Students Participate in various <b>social activities</b> like</p> <ol style="list-style-type: none"> <li>Blood Donation Camps</li> <li>Health Check Up</li> <li>Pulse-polio program</li> <li>Save girl child activity</li> <li>Tree plantation</li> <li>Traffic Rules and Road Safety</li> <li>Swachh Bharat Abhiyan</li> <li>Rallies for awareness regarding infectious diseases like swine flu and dengue</li> <li>Street plays</li> </ol> <p>Such activities inculcate students' awareness which instills human values and their responsibility towards society.</p> <p>4. <b>Shiva Jayanti</b>, the birth anniversary of Chhatrapati Shivaji Maharaj is celebrated in his remembrance.</p> <p>5. <b>Teachers Day</b> on 5<sup>th</sup> September is celebrated as a mark of tribute to Dr. Sarvepalli Radhakrishnan, who was a strong believer of education.</p> <p>6. <b>Guru Purnima</b> is celebrated on the full moon day (Purnima) in the Hindu month of Ashadha to pay respect to their teachers and express their gratitude towards teachers' contribution of to the society.</p> <p>7. <b>Traditional day</b> is celebrated where students come in attire belonging to their home state, or specific culture of their choice representing Indian culture and heritage.</p> <p>8. If any of the stakeholders is affected by tragic incident, faculty members and students of the institute voluntarily come forward to <b>help the concerned</b>.</p>
<b>Professional Ethics</b>	<p>1. <b>Pharmacist oath</b> as per of Pharmacy Council of India (PCI), is displayed to make student aware of their duties as Pharmacist. Role and responsibilities of pharmacist make them aware towards their responsibility to community</p>
	<p>2. Faculty members, qualified students of Diploma in Pharmacy and Bachelor of Pharmacy of the institutes have given a legal undertaking to PCI for not lending the <b>Pharmacists registration certificate</b> to anybody for commercial purpose.</p>
	<p>3. Students attend various competitions at '<b>National Pharmacy Week</b>' which motivate the young budding pharmacists to develop their confidence, knowledge, leadership qualities, organizational capacity and make them understand about the importance of the profession to excel in the field.</p>
	<p>4. Students participate in Indian Pharmaceutical Congress Association (IPCA) organized <b>Indian Pharmaceutical Congress (IPC)</b> every year at various places throughout the country in which professional and academic representatives aims to project the image of a pharmacist as a health care</p>

	professional and to create the awareness about the pharmacy and pharmacy profession amongst students.
	5. Students follow ' <b>Standard Operating Procedures (SOPs)</b> ' while working with instruments in laboratory which inculcate them to follow professional ethics.
	6. M. Pharmacy students work according to ethical guidelines while <b>performing experimentation on animals</b> which follow guidelines of 'Committee for the Purpose of Control and Supervision of Experimental Animals' (CPCSEA).
	7. Students get knowledge about legal issues, regulatory system and pharmaceutical laws related to drugs by conducting <b>guest lectures</b> by expertise: Pharmacy Profession Awareness Campaign (PPAC) delivered by Mr. Niraj Bafna (President, Indian Pharmaceutical Association-Student Forum) Pune Branch; opportunities in Pharmacovigilance conducted by Mrs. Manjiri Joshi, Director Learning and Development, Sciformix, Pune.
	8. <b>Industrial visits</b> to Pharmaceutical industries, to name a few, like Serum Institute of India Ltd., Hadapsar, Pune; Maharashtra Ayurved Center Pvt. Ltd. (AYUSH Industry) Pune; Preclinical Research and Development Organization (PRADO) Pvt. Ltd., Pune; National Institute of Post Harvest Technology, Pune. Students closely observe production of various pharmaceuticals products, large-scale pharmaceutical manufacturing equipments and its applications. This makes students to correlate their theoretical knowledge with practical applications.

Apart from all these activities, value added courses for holistic development of students are introduced by the institute. Those are listed below-

Sr. no.	Course	Benefits for students
1	<b>'Certificate Course in Clinical Research'</b>	Transferable skills are skills and abilities that are relevant and helpful for social and professional areas of life. Course aims to develop multi-dimensional insights of students such as teamwork, leadership, time management and communication skills to reveal their potential along with professional knowledge of Clinical Trials, Clinical Data Management, Pharmacovigilance.
2	<b>'Journal Club Program'</b>	Journal club helps students to keep up with the literature produced by others who work in their field and inculcate research attitude in them. The course help to improve thinking ability, group discussions, creativity, innovation, personality and soft skills, leadership, teamwork, presentation and communication skills of the students.
3	<b>'Certificate course in Personality and Soft Skill Development'</b>	Student will develop a multi-dimensional insights such as teamwork, leadership, administration, time management, communication skills and interview skills, dynamic personality and with a good set of attitude and transferable and life skills to meet the global standards.

## GENDER



Ms. Srishti Rawat, awarded Two Gold Medals by Savitribai Phule Pune University for ranking first at final year B. Pharmacy examination, held in April/May 2015



Ms. Neha Bankar and Ms. Kajal Kabra selected as 'Peace Ambassador 2016' and 'Peace Ambassador 2017' respectively by Lila Poonawalla Foundation, Leadership Development Programme at ASHA Centre Gloucestershire-U.K



Rangoli competition: Female foeticide- 'Save girl child activity'



## ENVIRONMENT AND SUSTAINABILITY



### Tree Plantation by parents



Swachha Bharat Abhiyan



## Eco- friendly Ganesh Utsav



### Drip irrigation system



## Rally



## Clean campus



## HUMAN VALUES



Blood donation Camp



Pulse polio activity



Save a girl child activity- Rangoli competition



Traffic Rules and Road Safety



Shiva Jayanti Celebration



Traditional Day Celebration



Teacher's Day celebration



Street Play

## PROFESSIONAL ETHICS



Associated Capsules Pvt. Ltd.



National Institute of Virology, Pune



Maharashtra Ayurved Centre Pvt. Ltd., Pune







A field visit for M. Pharm Students was organized at Indian Council of Agriculture Research - National Research Centre for Grapes (ICAR- NRCG), Manjari, Pune



Guest lectures



Seminars