



CAYM Education Trusts

## **Siddhant College of Pharmacy**

A/P Sudumbare, Talegaon –Chakan Road, Tal: Maval, Dist: Pune -412109  
Phone: 02114-661947, Email: [siddhantcollegeofpharmacy@yahoo.in](mailto:siddhantcollegeofpharmacy@yahoo.in), Website:  
[www.siddhantcop.in](http://www.siddhantcop.in)

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**2.6.1: PROGRAMME OUTCOMES (POS)  
AND COURSE OUTCOMES (COS) FOR  
ALL PROGRAMMES OFFERED BY THE  
INSTITUTION ARE STATED AND  
DISPLAYED ON WEBSITE**

**A) Upload Additional information**



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**2.6.1: PROGRAMME OUTCOMES (POS) AND COURSE OUTCOMES (COS) FOR ALL PROGRAMMES OFFERED BY THE INSTITUTION ARE STATED AND DISPLAYED ON WEBSITE**

**LIST OF DOCUMENTS**

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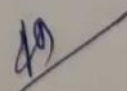
**2.6.1 Programme outcomes (POs) and Course outcomes (COs) for all Programmes offered by the institution are stated and displayed on website.**

**Response:**

The institution follows the curriculum designed by the Savitribai Phule Pune University which is affiliating university. The curriculum has well defined Programme Outcomes (POs), Program Specific Outcomes (PSOs) and Course Outcomes (COs) for Under graduate (B Pharm.) and Post graduate (M Pharm.) programs. Subjects are allotted by Academic in charge, HOD and Principal of the institution. Subject's orientation session is held for the staff at college level prior to commencement of academic term wherein the academic committee evaluates the academic presentation given by the respective staff member. The course file is prepared by staff member who highlights the CO's and PO's. All Course outcomes of each subject and Programme outcomes are mapped with each other by respective faculty. The stakeholders are exposed to PO's, CO's and PSO's through orientation programme held at the commencement of every academic year for Under graduate (B Pharm.) and Post graduate (M Pharm.) programs. The prospectus and website also showcases the vision and mission of the institution.

Effective pedagogical techniques facilitates the faculty to articulate the learning outcomes. The lesson plan maps the learning outcomes and the students are made aware of the same prior to and upon completion of each topic. The students acceptance of topic is more when they are abreast with the learning outcome thereby facilitating them to perform well. Staff have taken part in syllabus framing and orientation workshops wherein they have contributed to upgradation of syllabi and incorporation of CO's, PO's and PSO's



  
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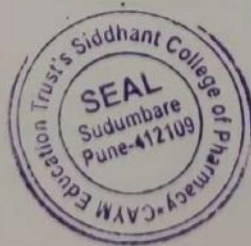
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### Vision:

Siddhant College of Pharmacy will lead the way toward effective global health care by developing innovative teaching practices, advancing research, practice and merging true entrepreneurial spirit with care and compassion

### Mission:

- Siddhant College of Pharmacy fosters a learning-centered, research-oriented educational environment that encourages individuals to make positive lifelong contributions to global health.
- We prepare professional students to provide compassionate pharmacist to society.
- We inspire our students through innovative problem-based learning; rich experiential program, and inter- professional collaboration.
- We foster a community of scholars who will further the body of knowledge in pharmaceutical, biomedical, and clinical sciences.
- We strive to improve quality of life locally, nationally, and globally



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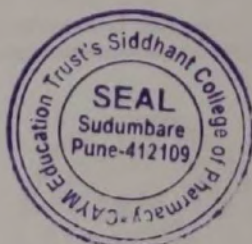
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### DEFINITIONS

Sr. No.	Definition
1	<b>COURSE OUTCOME</b> They are the resultant knowledge skills the student acquires at the end of a course. It defines the cognitive processes a course provides.
2	<b>PROGRAM OUTCOME</b> Program outcomes describe what students are expected to know and would be able to do by the time of graduation. These relate to the skills, knowledge, and behaviours that students acquire as they progress through the program.
3	<b>PROGRAM EDUCATIONAL OBJECTIVES</b> Program educational objectives are broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve.
4	<b>PROGRAM SPECIFIC OUTCOMES</b> Program Specific Outcomes are statements that describe what the Pharmacy graduates should be able to do.

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### Programme Outcomes

PO1	Pharmacy Knowledge: Possess knowledge and comprehension of the core and basic associated with the profession of pharmacy, including biomedical sciences; pharmaceutical sciences; behavioral, social, and administrative pharmacy sciences; and manufacturing practices.
PO2	Planning Abilities: Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines.
PO3	Problem analysis: Utilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Find, analyze, evaluate and apply information systematically and shall make defensible decisions.
PO4	Modern tool usage: Learn, select, and apply appropriate methods and procedures resources, and modern pharmacy-related computing tools with an understanding of the limitations.
PO5	Leadership skills: Understand and consider the human reaction to change, motivation issues, leadership and team-building when planning changes required for fulfillment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizens or leadership roles when appropriate to facilitate improvement in health and well-being.
PO6	Professional Identity: Understand, analyze and communicate the value of their professional roles in society (e.g. health care professionals, promoters of health, educators, managers, employers, employees).
PO7	Pharmaceutical Ethics: Honour personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.
PO8	Communication: Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and write effective reports, make effective presentations and documentation, and give and receive clear instructions.
PO9	The Pharmacist and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice.



  
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PO10	Environment and sustainability: Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO11	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self-assess and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis.



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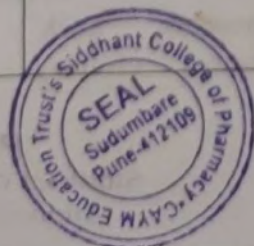


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**Academic Year 2022-23**

**Course Outcomes**

**M Pharm.: Pharmaceutical Quality Assurance**

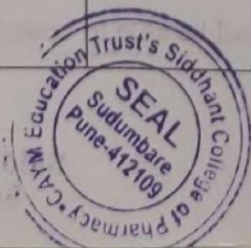
Sr. No.	Name of the Program	Name of the Course	Course Outcome
1	M Pharm	Modern Pharmaceutical Analytical Techniques	<ul style="list-style-type: none"><li>➤ Develops clear insight about theoretical and practical skills of the instruments used in pharmaceutical industry</li><li>➤ The students will understand principle and instrumentation</li></ul>
2		Quality Management System	<ul style="list-style-type: none"><li>➤ The student will understand the quality parameters and quality attribute in Pharmaceutical industry sectors</li><li>➤ By studying and practicing the guidelines iso, NABL and other regulatory agencies student will predicts the current need of changes.</li><li>➤ It provide the idea in the customers expectations in the quality pharmaceutical product.</li><li>➤ student will know the importance of the quality of medicines in the public.</li><li>➤ The subject will afford methodology in the regulatory body requirements for the import and export pharmaceutical products.</li></ul>
3		Quality control and Quality Assurance	<ul style="list-style-type: none"><li>➤ Student shall be able to understand the cGMP aspects in a pharmaceutical industry</li><li>➤ Student shall be able to understand the importance of documentation</li><li>➤ Student shall be able to understand the scope of quality certifications applicable to Pharmaceutical industries</li><li>➤ Student shall be able to understand the responsibilities of QA department</li><li>➤ Student shall be able to understand the</li></ul>



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			<p>responsibilities of QC department</p> <ul style="list-style-type: none"> <li>➤ Student shall be able to understand GLP and regulatory Affairs</li> </ul>
4		Product development and Technology Transfer	<ul style="list-style-type: none"> <li>➤ To apply the knowledge to develop new procedures of their own design of Pilot layouts</li> <li>➤ Student shall be able to understand the Quality by design practices of sterile and non sterile dosage forms</li> <li>➤ Student shall be understand the Regulatory requirements in drug development stages</li> <li>➤ Students shall understand the phase of technology transfer</li> </ul>
5		Hazards and Safety Management	<ul style="list-style-type: none"> <li>➤ To understand the energy resources in the to make eco-friendly industry environment</li> <li>➤ The course knowledge useful to Find hazards in work atmosphere</li> <li>➤ It creates the passage to understand, Determine and to take control measures to eliminate or minimize the level of the risks</li> <li>➤ It support the student to recognize the control measures to eliminate or minimize the level of the risks</li> <li>➤ It provides platform for formal process for hazard identification, risk assessment and control to effectively manage workplace and safety hazards</li> <li>➤ It develop proper understanding in the stages of risk assesment</li> </ul>
6		Pharmaceutical Validation	<ul style="list-style-type: none"> <li>➤ The Students learn on the importance of validation.</li> <li>➤ The student learns on the importance of patent and intellectual property rights.</li> <li>➤ The students are trained on the qualification aspects of instruments.</li> <li>➤ The importance of calibration to be performed for the instruments.</li> <li>➤ The various validation aspects to be carried out in the industry.</li> <li>➤ The students gain knowledge on how validation are carried for various components. Such as instrument validation, cleaning validation and</li> </ul>

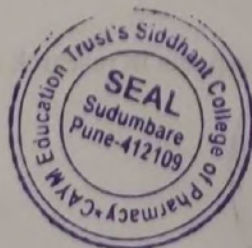


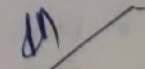
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			process validation
7		Audit and Regulatory Compliance	<ul style="list-style-type: none"> <li>➤ The student gain knowledge on the importance of auditing in pharmaceutical preparation.</li> <li>➤ The various forms of auditing are and how an audit process happens are briefed to the students.</li> <li>➤ Preparation of various audit checklist for the auditing.</li> <li>➤ when and what are the areas the auditing to be carried is taught to the student.</li> <li>➤ The Reporting form of the auditing process is taught to the student.</li> <li>➤ The student practices the auditing process and reporting process</li> </ul>
8		Pharmaceutical Manufacturing Technology	<ul style="list-style-type: none"> <li>➤ Student shall be able to understand the common practice in the pharmaceutical industry developments</li> <li>➤ Student shall be able to understand the practices of aseptic process technology</li> <li>➤ Student shall be able to understand the practices of non-sterile manufacturing technology</li> <li>➤ Student shall be able to understand the practices of packaging technology</li> <li>➤ Student shall be able to understand understanding of principles and implementation of Quality by design (QbD)</li> </ul>

### Programme Specific outcomes (PSOs)

1. To Understand the applications of Quality assurance and Quality control throughout product life cycle.
2. To Analyze the Application Based Importance of Emerging Quality Building Concepts in Product Manufacturing.
3. To Perform Procedures like Method Validation, Process Validation, Equipment /Facilities/Utilities
4. Validation, Documents and Records Designing as per the Regulatory Standards Leading to compliance of cGMP.
5. To Understand the Regulatory requirements of Pharmaceuticals.



  
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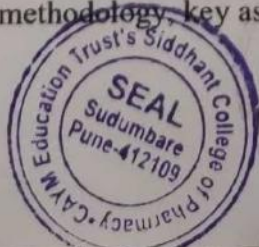
**COURSE OUTCOME (CO)**  
**M.PHARM(PHARMACEUTICS)**

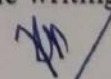
S.no	Name of the program	Name of the course	Course outcome
1	<b>M.Pharm</b>	<b>Modern Pharmaceutical Analytical Techniques</b>	Develops clear insight about theoretical and practical skills of the instruments used in pharmaceutical industry.
2		<b>Drug Delivery system</b>	Categorizes new drug delivery systems and formulations.
3		<b>Modern Pharmaceutics</b>	Establishes process of development of ethical and quality considerations of medical devices.
4		<b>Regulatory Affairs</b>	Develops Pharmacovigilance and process monitoring in clinical trials
5		<b>Molecular Pharmaceutics (NanoTech and Targeted DDS)</b>	Establishes knowledge of Novel drug delivery systems.
6		<b>Advanced Biopharmaceutics and pharmacokinetics</b>	Develops the student for designing and evaluation of dosage regimens of the drugs using pharmacokinetic and biopharmaceutic parameters.
7		<b>Computer Aided drug delivery System</b>	Develops Computer skills for Preclinical Development and Optimization Techniques in Pharmaceutical Formulation.
8		<b>Cosmetics and Cosmeceuticals</b>	Establishes skills of new combinations and formulations.

**Program Specific Outcome (PSO)**

**M. Pharm(Pharmaceutics)**

- Locates on patients and products, accordingly the curriculum has been framed. The theoretical concepts are specifically taught in theory and further the concepts are strengthened and measured during practical's.
- Develops knowledge regarding dosage forms, drug delivery systems, biopharmaceutics and pharmacokinetic study, computer aided drug development during the program and to understand dosage form design, optimization, *in-vitro* parameters and relevant techniques for drug development.
- Describes research methodology, key aspects in research and scientific writing to present the research work.



  
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- Establishes knowledge regarding newer technology and skills in technology development and achieve maximum output.

### Program Outcome (PO)

#### M. Pharm(Pharmaceutics) and M Pharm.: Pharmaceutical Quality Assurance

**PO1: Pharmaceutical Knowledge:-** Students achieve a deep knowledge regarding human body, its related diseases, analytical skills, drug molecules (Active Pharmaceutical Ingredients) along with excipients, natural drug resources, chemistry involved in API including synthesis of commonly used drugs, effect of drug on human body, toxicity and impurity profile, ADME studies of drugs (behavior of drug in human body), dosage form studies including novel approaches, designing and development of formulation stability studies, analysis etc

**PO2: Research Analysis:** Develops knowledge in research field to make new relevant discoveries and to identify new entities.

**PO3: Design & Development of dosage forms:** Describes preparation of various dosage forms that could be prepared by the pharmacy students in the pharmaceutical companies for the ease of patients and to optimize formulations.

**PO4: Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.

**PO5: Modern methods usage:** Create, select, and apply appropriate techniques, resources and modern methods with an understanding of the limitations and its usage. The student also learns to handle many instruments related to their studies which would help them work in a Pharmaceutical Industry, pharmacovigilance, regulatory requirements, legal processes etc.

**PO6: Pharmacy and society:** Pharmacist provide complete health care data and practices to the people of the society and guide them to be healthy. The student also learns drug distribution system, patient counseling, industrial laws etc. Students achieve expertise in storage and distribution of drugs with all precautions and in-depth knowledge of dose, adverse effect and other health related issues to deal with ambulatory and IPD patients in hospitals and also in public and achieve responsibility of computing profession and society.

**PO7: Environment and sustainability:** Locate the impact of the professional pharmacist in



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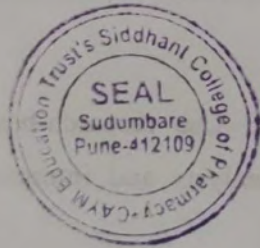
society and environment and make an impact of it on the people of the society.

**PO8: Ethics:** Justify & apply ethical principle and commit to professional ethics and responsibilities and norms of the pharmacy practice. Student is also trained in ethical behavior with physician, nurses and other paramedical staff for protecting patient's health.

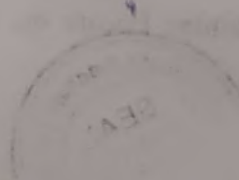
**PO9: Individual and team work:** Function effectively as an individual and as a member or leader in diverse teams acts as a multidisciplinary person in every context. Students will be able to demonstrate rigorous and independent thinking and encourage participatory decision making in teams.

**PO10: Communication:** Develops Communication effectively on pharmaceutical activities with the community and with society.

**PO11: Life-long learning:** Recognize the need and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change and implement those technology by gaining experience.



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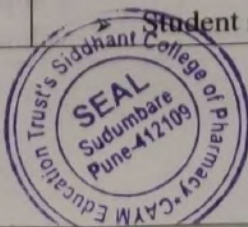
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**Academic Year 2021-22**

**Course Outcomes**

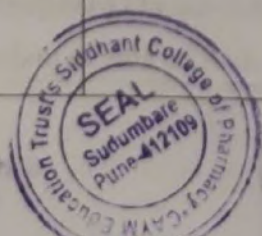
**M Pharm.: Pharmaceutical Quality Assurance**

Sr. No.	Name of the Program	Name of the Course	Course Outcome
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4		Product development and Technology Transfer	<ul style="list-style-type: none"> <li>➤ To apply the knowledge to develop new procedures of their own design of Pilot layouts</li> <li>➤ Student shall be able to understand the Quality by design practices of sterile and non sterile dosage forms</li> <li>➤ Student shall be understand the Regulatory requirements in drug development stages</li> <li>➤ Students shall understand the phase of technology transfer</li> </ul>
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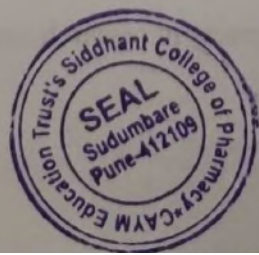



**Principal**  
**Siddhant College of Pharmacy**  
**Sudumbare, Tal. Talasari, Dist. Solapur**

			process validation
7		Audit and Regulatory Compliance	<ul style="list-style-type: none"> <li>➤ The student gain knowledge on the importance of auditing in pharmaceutical preparation.</li> <li>➤ The various forms of auditing are and how an audit process happens are briefed to the students.</li> <li>➤ Preparation of various audit checklist for the auditing.</li> <li>➤ when and what are the areas the auditing to be carried is taught to the student.</li> <li>➤ The Reporting form of the auditing process is taught to the student.</li> <li>➤ The student practices the auditing process and reporting process</li> </ul>
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### Programme Specific outcomes (PSOs)

1. To Understand the applications of Quality assurance and Quality control throughout product life cycle.
2. To Analyze the Application Based Importance of Emerging Quality Building Concepts in Product Manufacturing.
3. To Perform Procedures like Method Validation, Process Validation, Equipment /Facilities/Utilities
4. Validation, Documents and Records Designing as per the Regulatory Standards Leading to compliance of cGMP.
5. To Understand the Regulatory requirements of Pharmaceuticals.



  
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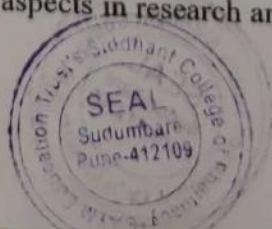
**COURSE OUTCOME (CO)**  
**M.PHARM(PHARMACEUTICS)**

S.no	Name of the program	Name of the course	Course outcome
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3		Modern Pharmaceutics	Establishes process of development of ethical and quality considerations of medical devices.
4		Regulatory Affairs	Develops Pharmacovigilance and process of monitoring in clinical trials
5		Molecular Pharmaceutics (NanoTech and Targeted DDS)	Establishes knowledge of Novel drug delivery systems.
6		Advanced Biopharmaceutics and pharmacokinetics	Develops the student for designing and evaluation of dosage regimens of the drugs using pharmacokinetic and biopharmaceutic parameters.
7		Computer Aided drug delivery System	Develops Computer skills for Preclinical Development and Optimization Techniques in Pharmaceutical Formulation.
8		Cosmetics and Cosmeceuticals	Establishes skills of new combinations and formulations.

**Program Specific Outcome (PSO)**

**M. Pharm(Pharmaceutics)**

- Locates on patients and products, accordingly the curriculum has been framed. The theoretical concepts are specifically taught in theory and further the concepts are strengthened and measured during practical's.
- Develops knowledge regarding dosage forms, drug delivery systems, biopharmaceutics and pharmacokinetic study, computer aided drug development during the program and to understand dosage form design, optimization, *in-vitro* parameters and relevant techniques for drug development.
- Describes research methodology, key aspects in research and scientific writing to present the research work.



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- Establishes knowledge regarding newer technology and skills in technology development and achieve maximum output.

### Program Outcome (PO)

#### M. Pharm(Pharmaceutics) and M Pharm.: Pharmaceutical Quality Assurance

**PO1: Pharmaceutical Knowledge:-** Students achieve a deep knowledge regarding human body, its related diseases, analytical skills, drug molecules (Active Pharmaceutical Ingredients) along with excipients, natural drug resources, chemistry involved in API including synthesis of commonly used drugs, effect of drug on human body, toxicity and impurity profile, ADME studies of drugs (behavior of drug in human body), dosage form studies including novel approaches, designing and development of formulation stability studies, analysis etc

**PO2: Research Analysis:** Develops knowledge in research field to make new relevant discoveries and to identify new entities.

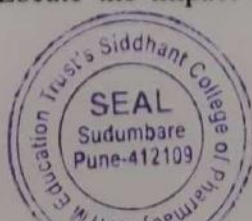
**PO3: Design & Development of dosage forms:** Describes preparation of various dosage forms that could be prepared by the pharmacy students in the pharmaceutical companies for the ease of patients and to optimize formulations.

**PO4: Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.

**PO5: Modern methods usage:** Create, select, and apply appropriate techniques, resources and modern methods with an understanding of the limitations and its usage. The student also learns to handle many instruments related to their studies which would help them work in a Pharmaceutical Industry, pharmacovigilance, regulatory requirements, legal processes etc.

**PO6: Pharmacy and society:** Pharmacist provide complete health care data and practices to the people of the society and guide them to be healthy. The student also learns drug distribution system, patient counseling, industrial laws etc. Students achieve expertise in storage and distribution of drugs with all precautions and in-depth knowledge of dose, adverse effect and other health related issues to deal with ambulatory and IPD patients in hospitals and also in public and achieve responsibility of computing profession and society.

**PO7: Environment and sustainability:** Locate the impact of the professional pharmacist in



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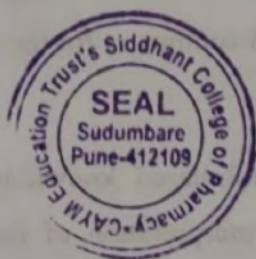
society and environment and make an impact of it on the people of the society.


**PO8: Ethics:** Justify & apply ethical principle and commit to professional ethics and responsibilities and norms of the pharmacy practice. Student is also trained in ethical behavior with physician, nurses and other paramedical staff for protecting patient's health.

**PO9: Individual and team work:** Function effectively as an individual and as a member or leader in diverse teams acts as a multidisciplinary person in every context. Students will be able to demonstrate rigorous and independent thinking and encourage participatory decision making in teams.

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**Academic Year 2020-21**

**Course Outcomes**

**M Pharm.: Pharmaceutical Quality Assurance**

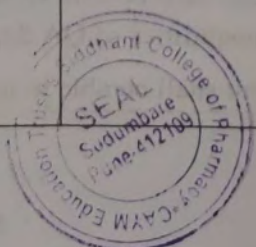
Sr. No.	Name of the Program	Name of the Course	Course Outcome
1	M Pharm	Modern Pharmaceutical Analytical Techniques	<ul style="list-style-type: none"><li>➤ Develops clear insight about theoretical and practical skills of the instruments used in pharmaceutical industry</li><li>➤ The students will understand principle and instrumentation</li></ul>
2		Quality Management System	<ul style="list-style-type: none"><li>➤ The student will understand the quality parameters and quality attribute in Pharmaceutical industry sectors</li><li>➤ By studying and practicing the guidelines iso, NABL and other regulatory agencies student will predicts the current need of changes.</li><li>➤ It provide the idea in the customers expectations in the quality pharmaceutical product.</li><li>➤ student will know the importance of the quality of medicines in the public.</li><li>➤ The subject will afford methodology in the regulatory body requirements for the import and export pharmaceutical products.</li></ul>
3		Quality control and Quality Assurance	<ul style="list-style-type: none"><li>➤ Student shall be able to understand the cGMP aspects in a pharmaceutical industry</li><li>➤ Student shall be able to understand the importance of documentation</li><li>➤ Student shall be able to understand the scope of quality certifications applicable to Pharmaceutical industries</li><li>➤ Student shall be able to understand the responsibilities of QA department</li><li>➤ Student shall be able to understand the</li></ul>



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			<p>responsibilities of QC department</p> <ul style="list-style-type: none"> <li>➤ Student shall be able to understand GLP and regulatory Affairs</li> </ul>
4		Product development and Technology Transfer	<ul style="list-style-type: none"> <li>➤ To apply the knowledge to develop new procedures of their own design of Pilot layouts</li> <li>➤ Student shall be able to understand the Quality by design practices of sterile and non sterile dosage forms</li> <li>➤ Student shall be understand the Regulatory requirements in drug development stages</li> <li>➤ Students shall understand the phase of technology transfer</li> </ul>
5		Hazards and Safety Management	<ul style="list-style-type: none"> <li>➤ To understand the energy resources in the to make eco-friendly industry environment</li> <li>➤ The course knowledge useful to Find hazards in work atmosphere</li> <li>➤ It creates the passage to understand, Determine and to take control measures to eliminate or minimize the level of the risks</li> <li>➤ It support the student to recognize the control measures to eliminate or minimize the level of the risks</li> <li>➤ It provides platform for formal process for hazard identification, risk assessment and control to effectively manage workplace and safety hazards</li> <li>➤ It develop proper understanding in the stages of risk assesment</li> </ul>
6		Pharmaceutical Validation	<ul style="list-style-type: none"> <li>➤ The Students learn on the importance of validation.</li> <li>➤ The student learns on the importance of patent and intellectual property rights.</li> <li>➤ The students are trained on the qualification aspects of instruments.</li> <li>➤ The importance of calibration to be performed for the instruments.</li> <li>➤ The various validation aspects to be carried out in the industry.</li> <li>➤ The students gain knowledge on how validation are carried for various components. Such as instrument validation, cleaning validation and</li> </ul>



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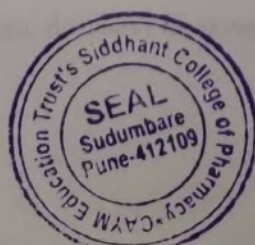
			process validation
7		Audit and Regulatory Compliance	<ul style="list-style-type: none"> <li>➤ The student gain knowledge on the importance of auditing in pharmaceutical preparation.</li> <li>➤ The various forms of auditing are and how an audit process happens are briefed to the students.</li> <li>➤ Preparation of various audit checklist for the auditing.</li> <li>➤ when and what are the areas the auditing to be carried is taught to the student.</li> <li>➤ The Reporting form of the auditing process is taught to the student.</li> <li>➤ The student practices the auditing process and reporting process</li> </ul>
8		Pharmaceutical Manufacturing Technology	<ul style="list-style-type: none"> <li>➤ Student shall be able to understand the common practice in the pharmaceutical industry developments</li> <li>➤ Student shall be able to understand the practices of aseptic process technology</li> <li>➤ Student shall be able to understand the practices of non-sterile manufacturing technology</li> <li>➤ Student shall be able to understand the practices of packaging technology</li> <li>➤ Student shall be able to understand understanding of principles and implementation of Quality by design (QbD)</li> </ul>

### Programme Specific outcomes (PSOs)

1. To Understand the applications of Quality assurance and Quality control throughout product life cycle.
2. To Analyze the Application Based Importance of Emerging Quality Building Concepts in Product Manufacturing.
3. To Perform Procedures like Method Validation, Process Validation, Equipment /Facilities/Utilities
4. Validation, Documents and Records Designing as per the Regulatory Standards Leading to compliance of cGMP.
5. To Understand the Regulatory requirements of Pharmaceuticals.

*(Signature)*

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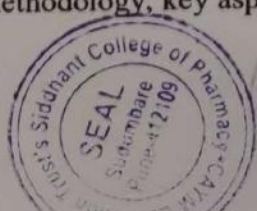
**COURSE OUTCOME (CO)**  
**M.PHARM(PHARMACEUTICS)**

S.no	Name of the program	Name of the course	Course outcome
1	M.Pharm	Modern Pharmaceutical Analytical Techniques	Develops clear insight about theoretical and practical skills of the instruments used in pharmaceutical industry.
2		Drug Delivery system	Categorizes new drug delivery systems and formulations.
3		Modern Pharmaceutics	Establishes process of development of ethical and quality considerations of medical devices.
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5		Molecular Pharmaceutics (NanoTech and Targeted DDS)	Establishes knowledge of Novel drug delivery systems.
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#### M. Pharm(Pharmaceutics) and M Pharm.: Pharmaceutical Quality Assurance

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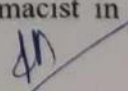
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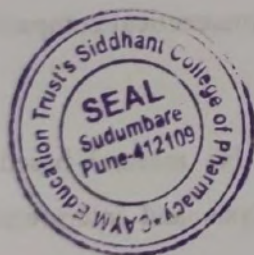
society and environment and make an impact of it on the people of the society.


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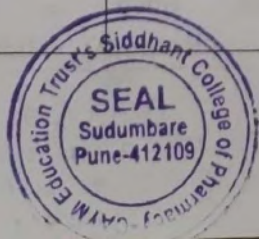
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**Academic Year 2019-20**

**Course Outcomes**

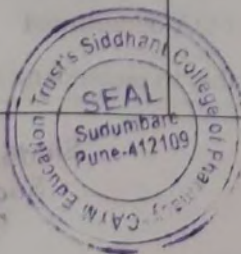
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Sr. No.	Name of the Program	Name of the Course	Course Outcome
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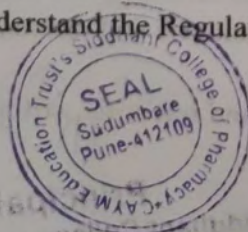



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			process validation
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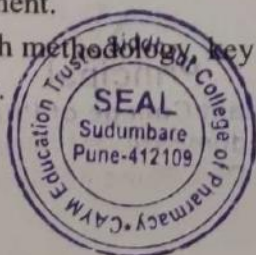
**COURSE OUTCOME (CO)**  
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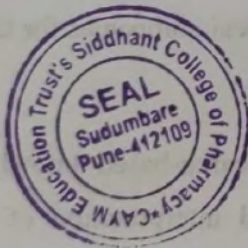
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*[Signature]*  
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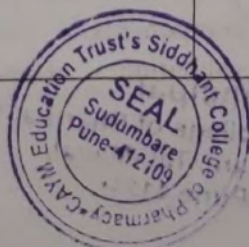
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**Academic Year 2018-19**

**Course Outcomes**

**M Pharm.: Pharmaceutical Quality Assurance**

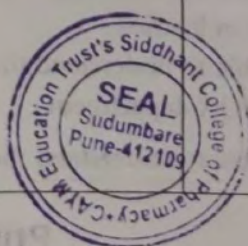
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1	M Pharm	Modern Pharmaceutical Analytical Techniques	<ul style="list-style-type: none"><li>➤ Develops clear insight about theoretical and practical skills of the instruments used in pharmaceutical industry</li><li>➤ The students will understand principle and instrumentation</li></ul>
2		Quality Management System	<ul style="list-style-type: none"><li>➤ The student will understand the quality parameters and quality attribute in Pharmaceutical industry sectors</li><li>➤ By studying and practicing the guidelines iso, NABL and other regulatory agencies student will predicts the current need of changes.</li><li>➤ It provide the idea in the customers expectations in the quality pharmaceutical product.</li><li>➤ student will know the importance of the quality of medicines in the public.</li><li>➤ The subject will afford methodology in the regulatory body requirements for the import and export pharmaceutical products.</li></ul>
3		Quality control and Quality Assurance	<ul style="list-style-type: none"><li>➤ Student shall be able to understand the cGMP aspects in a pharmaceutical industry</li><li>➤ Student shall be able to understand the importance of documentation</li><li>➤ Student shall be able to understand the scope of quality certifications applicable to Pharmaceutical industries</li><li>➤ Student shall be able to understand the responsibilities of QA department</li><li>➤ Student shall be able to understand the</li></ul>



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			<p>responsibilities of QC department</p> <ul style="list-style-type: none"> <li>➤ Student shall be able to understand GLP and regulatory Affairs</li> </ul>
4		Product development and Technology Transfer	<ul style="list-style-type: none"> <li>➤ To apply the knowledge to develop new procedures of their own design of Pilot layouts</li> <li>➤ Student shall be able to understand the Quality by design practices of sterile and non sterile dosage forms</li> <li>➤ Student shall be understand the Regulatory requirements in drug development stages</li> <li>➤ Students shall understand the phase of technology transfer</li> </ul>
5		Hazards and Safety Management	<ul style="list-style-type: none"> <li>➤ To understand the energy resources in the to make eco-friendly industry environment</li> <li>➤ The course knowledge useful to Find hazards in work atmosphere</li> <li>➤ It creates the passage to understand, Determine and to take control measures to eliminate or minimize the level of the risks</li> <li>➤ It support the student to recognize the control measures to eliminate or minimize the level of the risks</li> <li>➤ It provides platform for formal process for hazard identification, risk assessment and control to effectively manage workplace and safety hazards</li> <li>➤ It develop proper understanding in the stages of risk assesment</li> </ul>
6		Pharmaceutical Validation	<ul style="list-style-type: none"> <li>➤ The Students learn on the importance of validation.</li> <li>➤ The student learns on the importance of patent and intellectual property rights.</li> <li>➤ The students are trained on the qualification aspects of instruments.</li> <li>➤ The importance of calibration to be performed for the instruments.</li> <li>➤ The various validation aspects to be carried out in the industry.</li> <li>➤ The students gain knowledge on how validation are carried for various components. Such as instrument validation, cleaning validation and</li> </ul>



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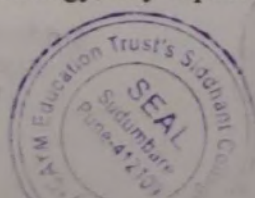
**COURSE OUTCOME (CO)**  
**M.PHARM(PHARMACEUTICS)**

S.no	Name of the program	Name of the course	Course outcome
1	<b>M.Pharm</b>	<b>Modern Pharmaceutical Analytical Techniques</b>	Develops clear insight about theoretical and practical skills of the instruments used in pharmaceutical industry.
2		<b>Drug Delivery system</b>	Categorizes new drug delivery systems and formulations.
3		<b>Modern Pharmaceutics</b>	Establishes process of development of ethical and quality considerations of medical devices.
4		<b>Regulatory Affairs</b>	Develops Pharmacovigilance and process of monitoring in clinical trials
5		<b>Molecular Pharmaceutics (NanoTech and Targeted DDS)</b>	Establishes knowledge of Novel drug delivery systems.
6		<b>Advanced Biopharmaceutics and pharmacokinetics</b>	Develops the student for designing and evaluation of dosage regimens of the drugs using pharmacokinetic and biopharmaceutic parameters.
7		<b>Computer Aided drug delivery System</b>	Develops Computer skills for Preclinical Development and Optimization Techniques in Pharmaceutical Formulation.
8		<b>Cosmetics and Cosmeceuticals</b>	Establishes skills of new combinations and formulations.

**Program Specific Outcome (PSO)**

**M. Pharm(Pharmaceutics)**

- Locates on patients and products, accordingly the curriculum has been framed. The theoretical concepts are specifically taught in theory and further the concepts are strengthened and measured during practical's.
- Develops knowledge regarding dosage forms, drug delivery systems, biopharmaceutics and pharmacokinetic study, computer aided drug development during the program and to understand dosage form design, optimization, *in-vitro* parameters and relevant techniques for drug development.
- Describes research methodology, key aspects in research and scientific writing to present the research work.

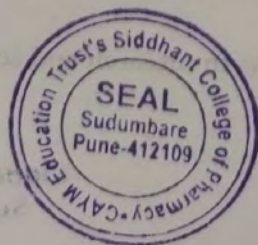


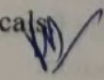
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7		Audit and Regulatory Compliance	<p>process validation</p> <ul style="list-style-type: none"> <li>➤ The student gain knowledge on the importance of auditing in pharmaceutical preparation.</li> <li>➤ The various forms of auditing are and how an audit process happens are briefed to the students.</li> <li>➤ Preparation of various audit checklist for the auditing.</li> <li>➤ when and what are the areas the auditing to be carried is taught to the student.</li> <li>➤ The Reporting form of the auditing process is taught to the student.</li> <li>➤ The student practices the auditing process and reporting process</li> </ul>
8		Pharmaceutical Manufacturing Technology	<ul style="list-style-type: none"> <li>➤ Student shall be able to understand the common practice in the pharmaceutical industry developments</li> <li>➤ Student shall be able to understand the practices of aseptic process technology</li> <li>➤ Student shall be able to understand the practices of non-sterile manufacturing technology</li> <li>➤ Student shall be able to understand the practices of packaging technology</li> <li>➤ Student shall be able to understand understanding of principles and implementation of Quality by design (QbD)</li> </ul>

**Programme Specific outcomes (PSOs)**

1. To Understand the applications of Quality assurance and Quality control throughout product life cycle.
2. To Analyze the Application Based Importance of Emerging Quality Building Concepts in Product Manufacturing.
3. To Perform Procedures like Method Validation, Process Validation, Equipment /Facilities/Utilities
4. Validation, Documents and Records Designing as per the Regulatory Standards Leading to compliance of cGMP.
5. To Understand the Regulatory requirements of Pharmaceuticals



  
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- Establishes knowledge regarding newer technology and skills in technology development and achieve maximum output.

### Program Outcome (PO)

#### M. Pharm(Pharmaceutics) and M Pharm.: Pharmaceutical Quality Assurance

**PO1: Pharmaceutical Knowledge:-** Students achieve a deep knowledge regarding human body, its related diseases, analytical skills, drug molecules (Active Pharmaceutical Ingredients) along with excipients, natural drug resources, chemistry involved in API including synthesis of commonly used drugs, effect of drug on human body, toxicity and impurity profile, ADME studies of drugs (behavior of drug in human body), dosage form studies including novel approaches, designing and development of formulation stability studies, analysis etc

**PO2: Research Analysis:** Develops knowledge in research field to make new relevant discoveries and to identify new entities.

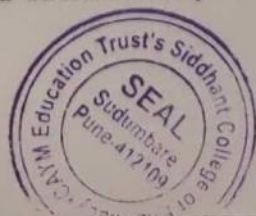
**PO3: Design & Development of dosage forms:** Describes preparation of various dosage forms that could be prepared by the pharmacy students in the pharmaceutical companies for the ease of patients and to optimize formulations.

**PO4: Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.

**PO5: Modern methods usage:** Create, select, and apply appropriate techniques, resources and modern methods with an understanding of the limitations and its usage. The student also learns to handle many instruments related to their studies which would help them work in a Pharmaceutical Industry, pharmacovigilance, regulatory requirements, legal processes etc.

**PO6: Pharmacy and society:** Pharmacist provide complete health care data and practices to the people of the society and guide them to be healthy. The student also learns drug distribution system, patient counseling, industrial laws etc. Students achieve expertise in storage and distribution of drugs with all precautions and in-depth knowledge of dose, adverse effect and other health related issues to deal with ambulatory and IPD patients in hospitals and also in public and achieve responsibility of computing profession and society.

**PO7: Environment and sustainability:** Locate the impact of the professional pharmacist in



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society and environment and make an impact of it on the people of the society.

**PO8: Ethics:** Justify & apply ethical principle and commit to professional ethics and responsibilities and norms of the pharmacy practice. Student is also trained in ethical behavior with physician, nurses and other paramedical staff for protecting patient's health.

**PO9: Individual and team work:** Function effectively as an individual and as a member or leader in diverse teams acts as a multidisciplinary person in every context. Students will be able to demonstrate rigorous and independent thinking and encourage participatory decision making in teams.

**PO10: Communication:** Develops Communication effectively on pharmaceutical activities with the community and with society.

**PO11: Life-long learning:** Recognize the need and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change and implement those technology by gaining experience.



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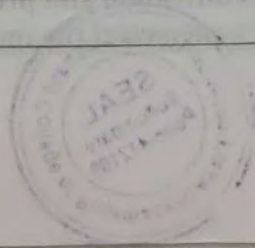
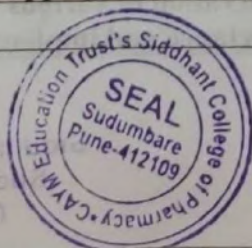



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Course outcomes 2022-23

B Pharmacy

<b>First Year B. Pharm (Semester I)</b>	
<b>BP101T-Human Anatomy and Physiology I</b>	The students should be able to: CO 1. Explain the gross morphology, structure and functions of various organs of the human body. CO 2. Describe the various homeostatic mechanisms and their imbalances. CO3. Identify the various tissues and organs of different systems of human body. CO4. Perform the various experiments related to special senses and nervous system. CO5. Appreciate coordinated working pattern of different organs of each system
<b>BP102T-Pharmaceutical Analysis I</b>	The students should be able to: CO 1. Understand and explain the methods assuring the quality and safety of pharmaceuticals. CO 2. Explain about accuracy, precision, and significant figure error concepts. CO 3. Understand the principles of volumetric and electro chemical analysis CO 4. Carryout various volumetric and electrochemical titrations
<b>BP103T-Pharmaceutics-I</b>	The student should be able to CO1. Know the history of profession of pharmacy CO2, Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations CO3. Understand the professional way of handling the prescription CO4. Preparation of various conventional dosage forms
<b>BP104T-Pharmaceutical Inorganic Chemistry</b>	The students should be able to: CO 1. know the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals CO 2. Understand the medicinal and pharmaceutical importance of inorganic compounds CO3. To perform the identification of inorganic compounds
<b>BP105T-Communication skills</b>	The students should be able to: CO 1. Understand the behavioural needs for a pharmacist to function effectively in the areas of pharmaceutical operation CO 2. Communicate effectively (Verbal and Non-Verbal) CO 3. Effectively manage the team as a team player
<b>BP106RBT- Remedial Biology</b>	The students should be able to: CO 1. know the classification and salient features of five kingdoms of life CO 2. understand the basic components of anatomy & physiology of plant CO 3. know understand the basic components of anatomy & physiology animal with special reference to human
<b>BP106RMT- Remedial Mathematics</b>	The students should be able to: CO1: Know the theory and their application in Pharmacy CO2: Solve the different types of problems by applying theory CO3: Appreciate the important application of mathematics in Pharmacy
<b>First Year II Sem</b>	



  
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BP201T- Human Anatomy and Physiology II	The students should be able to: CO1: Explain the gross morphology, structure and functions of various organs of the human body. CO2: Describe the various homeostatic mechanisms and their imbalances CO3: Identify the various tissues and organs of different systems of human body. CO4. Perform the hematological tests like blood cell counts, haemoglobin estimation, bleeding/clotting time etc and also record blood pressure, heart rate, pulse and respiratory volume.
BP202T- Pharmaceutical Organic Chemistry I	The students should be able to: CO 1. Understand and explain the concepts of hybridization, electronic and steric effects of organic molecules and to appreciate the chemistry of hydrocarbons CO 2. Acquire knowledge about preparation and reactivity of compounds with functional groups, such as aldehydes and ketones, carboxylic acids, amino and azo compounds CO 3. Explain the mechanism involved in the substitution, addition, nucleophilic and elimination reactions.
BP203T Biochemistry	The students should be able to: CO 1. Understand the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzymes. CO 2. Understand the metabolism of nutrient molecules in physiological and pathological conditions CO 3. Understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins
BP204T Pathophysiology	CO1: Describe the etiology and pathogenesis of the selected disease states. CO2: Name the signs and symptoms of the diseases; and CO3: Mention the complications of the diseases.
BP205T Computer Applications in Pharmacy	CO1. know the various types of application of computers in pharmacy CO2. know the various types of databases CO3. know the various applications of databases in pharmacy
BP206T Environmental sciences	The students should be able to: CO 1. Create the awareness about environmental problems among learners CO 2. Impart basic knowledge about the environment and its allied problems. CO 3. Develop an attitude of concern for the environment. CO 4. Motivate learner to participate in environment protection and environment improvement.
<b>Second Year B.Pharm (III sem)</b>	
BP301T Pharmaceutical Organic Chemistry II	The students should be able to: CO 1. Acquire knowledge on Nucleophilic and Electrophilic reactions and chemistry of carbohydrate, protein and hetero aromatic compounds. CO 2. write the structure, name and the type of isomerism of the organic compound CO 3. Understand and explain the pharmaceutical applications of synthetic reagents and reactions. CO 4. account for reactivity/stability of compounds
BP302T Physical Pharmaceutics I	The students should be able to: CO 1. Understand various physicochemical properties of drug molecules in the designing the dosage forms CO2. Know the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations CO 3. Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.
BP303T Pharmaceutical Microbiology	The students should be able to: CO1: Understand methods of identification, cultivation and preservation of various microorganisms CO2: To understand the importance and implementation of sterilization in



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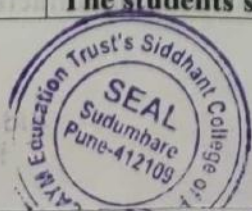
	pharmaceutical processing and industry CO3: Learn sterility testing of pharmaceutical products CO4: Carried out microbiological standardization of Pharmaceuticals
BP304T Pharmaceutical Engineering	The students should be able to: CO 1. To know various unit operations used in pharmaceutical industries CO 2. To understand the material handling techniques CO 3. To perform various processes involved in pharmaceutical manufacturing process. CO 4. To carry out various test to prevent environmental pollution CO5. To appreciate and comprehend significance of plant lay out design for optimum use of resources.
<b>Second Year IV sem</b>	
BP401T Pharmaceutical Organic Chemistry III	CO1. understand the methods of preparation and properties of organic compounds CO2. explain the stereo chemical aspects of organic compounds and stereo chemical reactions CO3. know the medicinal uses and other applications of organic compounds.
BP402T Medicinal Chemistry I	The students should be able to: CO 1. understand the chemistry of drugs with respect to their pharmacological activity CO 2. understand the drug metabolic pathways, adverse effect and therapeutic value of drugs CO 3. know the Structural Activity Relationship (SAR) of different class of drugs CO 4. write the chemical synthesis of some drugs
BP403T Physical Pharmaceutics II	The students should be able to: CO 1. Understand various physicochemical properties of drug molecules in the designing the dosage forms CO 2. Know the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations CO 3. Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.
BP404T Pharmacology I	The students should be able to: CO 1. To understand basic concepts in Pharmacology CO2: To Explain Role of Pharmacologists in drug development and drug use CO3: To impart knowledge regarding mechanisms of drug action, ADR, drug interactions CO4: To inform them regarding the steps involved in drug discovery.
BP405T Pharmacognosy and Phytochemistry I	The student should be able to CO1: understand sources of drugs from various natural sources CO2: Understand about Plant taxonomy & Cultivation, Collection, Processing, and storage of crude drugs CO3: Understand about active constituents of drugs, their isolation & different properties CO4: carry out the microscopic and morphological evaluation of crude drugs
<b>T.Y. Year B.Pharm V sem</b>	
BP501T Medicinal Chemistry II	The students should be able to: CO 1. Explain the influence of the metabolic profile of drugs and their impact on biological system. CO 2. Outline the synthetic route for the selective medicinal compounds of each category and acquire knowledge on the mechanism of action of pharmacodynamics agents. CO 3. Classify the therapeutic agents and based on the chemical nature. CO 4. Acquire knowledge about the relationship between the biological activity and structure of therapeutic agents.
BP502T Industrial Pharmacy-I	The students should be able to: CO1: Explain the properties and selection of excipients used in different dosage forms. CO2: Know the various pharmaceutical dosage forms and their manufacturing techniques. CO3:



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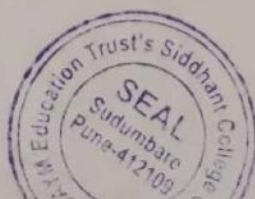



	Explain the quality control and quality analysis of dosage forms. CO4: Formulate solid, liquid and semisolid dosage forms and evaluate them for their quality
BP503T Pharmacology II	The students should be able to CO 1. Demonstrate isolation of different organs/tissues from the laboratory animals by simulated experiments CO 2. Describe the bioassay and its role in drug discovery CO 3. To Explain Pharmacology of drugs acting on respiratory system CO 4. Appreciate correlation of pharmacology with related medical sciences
BP504T Pharmacognosy and Phytochemistry II	The students should be able to: CO 1. to know the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents CO 2. to understand the preparation and development of herbal formulation CO 3. understand the herbal drug interactions CO 4. to carryout isolation and identification of phytoconstituents
BP505T Pharmaceutical Jurisprudence	The students should be able to: CO 1. Acquire knowledge on schedule rules, laws and regulations related to drugs and cosmetics. CO 2. Explain pharmaceutical legislation, history, evolution and growth of pharmaceutical industry. CO 3. Describe the pharmaceutical education and its regulatory bodies, pharmacy profession in concern to code of ethics. CO 4. Explain other acts and rules associated with food and factories CO 5. Explain the intellectual property rights and regulatory guidelines
<b>T.Y. B.Pharm VI sem</b>	
BP601T Medicinal Chemistry III	The students should be able to: CO 1. Understand the importance of drug design and different techniques of drug design. CO 2. Understand the chemistry of drugs with respect to their biological activity CO 3. Know the metabolism, adverse effects and therapeutic value of drugs. CO 4. Know the importance of SAR of drugs CO 5. Write the synthetic route
BP602T Pharmacology III	The students should be able to CO 1. Understand the mechanism of drug action and its relevance in the treatment of different infectious diseases CO 2. Comprehend the principles of toxicology and treatment of various poisonings CO 3. Appreciate correlation of pharmacology with related medical sciences
BP603T Herbal Drug Technology	The students should be able to: CO 1. understand raw material as source of herbal drugs from cultivation to herbal drug product CO 2. know the WHO and ICH guidelines for evaluation of herbal drugs CO 3. know the herbal cosmetics, natural sweeteners, nutraceuticals CO 4. appreciate patenting of herbal drugs, GMP
BP604T- Biopharmaceutics and Pharmacokinetics	The students should be able to: CO 1. Able to understand the concepts of biopharmaceutics & pharmacokinetics. CO 2. Determine factors affecting drug absorption, bioavailability and bioequivalence. CO 3. Describe disposition kinetic models, first order and second order. CO 4. Understand various pharmacokinetic parameters, their significance & applications.
BP605T Pharmaceutical Biotechnology	The students should be able to: CO 1. Understanding the importance of Immobilized enzymes in Pharmaceutical Industries CO 2. Genetic engineering applications in relation to production of pharmaceuticals CO 3. Importance of Monoclonal antibodies in Industries CO4: Appreciate the use of microorganisms in fermentation technology
BP606T Quality	The students should be able to: CO 1. Understand the cGMP aspects in a



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Assurance	pharmaceutical industry appreciate the importance of documentation CO2. Understand the scope of quality certifications applicable to pharmaceutical industries CO3. Understand the responsibilities of QA & QC departments
<b>B.Pharm Final Year VII sem</b>	
BP701T Instrumental Methods of Analysis	The students should be able to: CO 1. Understand the interaction of matter with electromagnetic radiations and its applications in drug analysis CO 2. Understand the chromatographic separation and analysis of drugs. CO 3. Perform quantitative & qualitative analysis of drugs using various analytical instruments.
BP702T Industrial Pharmacy-II	The students should be able to: CO 1. Know the process of pilot plant and scale up of pharmaceutical dosage forms CO 2. Understand the process of technology transfer from lab scale to commercial batch CO3. Know different Laws and Acts that regulate pharmaceutical industry CO4. Understand the approval process and regulatory requirements for drug products
BP703T Pharmacy Practice	The students should be able to: CO 1 knows various drug distribution methods in a hospital CO 2 appreciates the pharmacy stores management and inventory control CO 3 monitor drug therapy of patient through medication chart review and clinical review CO 4 obtains medication history interview and counsel the patients CO 5 identifies drug related
BP704T Novel Drug Delivery System	The students should be able to: CO1. To understand various approaches for development of novel drug delivery systems CO2. To understand the criteria for selection of drugs and polymers for the development of Novel drug delivery systems, their formulation and evaluation
<b>B.Pharm Final Year VIII sem</b>	
BP801T Biostatistics and Research Methodology	The students should be able to: CO1 Know the operation of M.S. Excel, SPSS, R and MINITAB®, DoE (Design of Experiment) CO2 Know the various statistical techniques to solve statistical problems CO3. Appreciate statistical techniques in solving the problems
BP802T Social and Preventive Pharmacy	The students should be able to: CO1. Acquire high consciousness/realization of current issues related to health and pharmaceutical problems within the country and worldwide CO2. Have a critical way of thinking based on current healthcare development CO3. Evaluate alternative ways of solving problems related to health and pharmaceutical issues
BP804ET Cosmetic Science	The students should be able to: CO1 Understand the concepts of cosmetics; anatomy of skin v/s hair, general excipients used in cosmetics. CO2 Explain the concept of cosmeceuticals, history, difference between cosmetics & cosmeceuticals & cosmeceuticals agents CO3. Know different Laws and Acts that regulate pharmaceutical industry. CO4. Understand the approval process and regulatory requirements for drug products.
BP805 ET Pharmacovigilance	The students should be able to: CO1 History and development of pharmacovigilance CO2 National and international scenario of pharmacovigilance CO3 Dictionaries, coding and terminologies used in pharmacovigilance CO4 Detection of new adverse drug reactions and their assessment CO5 International standards for classification of diseases and drugs CO6 Adverse drug reaction reporting systems and communication in pharmacovigilance



  
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Academic Year 2022-23

B Pharmacy

Program Outcome

**PO1: Pharmaceutical Knowledge:-** Students achieve a deep knowledge regarding human body, its related diseases, analytical skills, drug molecules (Active Pharmaceutical Ingredients) along with excipients, natural drug resources, chemistry involved in API including synthesis of commonly used drugs, effect of drug on human body, toxicity and impurity profile, ADME studies of drugs (behavior of drug in human body), dosage form studies including novel approaches, designing and development of formulation stability studies, analysis etc

**PO2: Research Analysis:** Develops knowledge in research field to make new relevant discoveries and to identify new entities.

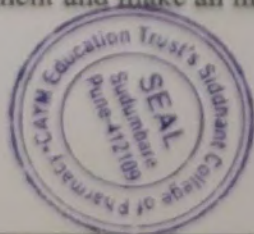
**PO3: Design & Development of dosage forms:** Describes preparation of various dosage forms that could be prepared by the pharmacy students in the pharmaceutical companies for the ease of patients and to optimize formulations.

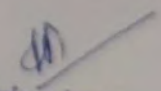
**PO4: Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.

**PO5: Modern methods usage:** Create, select, and apply appropriate techniques, resources and modern methods with an understanding of the limitations and its usage. The student also learns to handle many instruments related to their studies which would help them work in a Pharmaceutical Industry, pharmacovigilance, regulatory requirements, legal processes etc.

**PO6: Pharmacy and society:** Pharmacist provide complete health care data and practices to the people of the society and guide them to be healthy. The student also learns drug distribution system, patient counseling, industrial laws etc. Students achieve expertise in storage and distribution of drugs with all precautions and in-depth knowledge of dose, adverse effect and other health related issues to deal with ambulatory and IPD patients in hospitals and also in public and achieve responsibility of computing profession and society.

**PO7: Environment and sustainability:** Locate the impact of the professional pharmacist in society and environment and make an impact of it on the people of the society.



  
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**PO8: Ethics:** Justify & apply ethical principle and commit to professional ethics and responsibilities and norms of the pharmacy practice. Student is also trained in ethical behavior with physician, nurses and other paramedical staff for protecting patient's health.

**PO9: Individual and team work:** Function effectively as an individual and as a member or leader in diverse teams acts as a multidisciplinary person in every context. Students will be able to demonstrate rigorous and independent thinking and encourage participatory decision making in teams.

**PO10: Communication:** Develops Communication effectively on pharmaceutical activities with the community and with society.

**PO11: Life-long learning:** Recognize the need and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change and implement those technology by gaining experience.

**PO12: Social Interaction:** Being a public welfare job, a pharmacist would be able to interact with the people in a better way to cure them and make them feel healthy also investigate and evaluate the general state of public health conditions and concerns and develop and apply appropriate programs of action within program content area



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### Program Specific Outcome

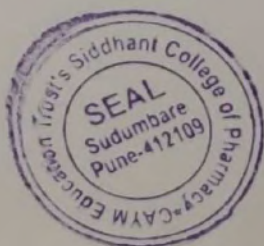
Some of the program specific outcomes are mentioned below:

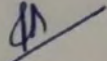
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**PSO 3:** Achieve multidisciplinary jobs in the pharmaceutical industries in various branches and would be able to write relevant and effective project reports in multidisciplinary environment in the context of changing technologies.

**PSO4** Prepares to communicate easily and effectively. Would be able to perform multitasks in multifeilds including pharmaceuticals & cosmetic in timebound manner. Research area would be the key element.

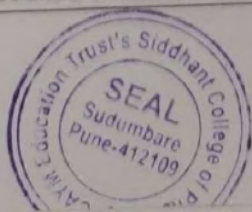


  
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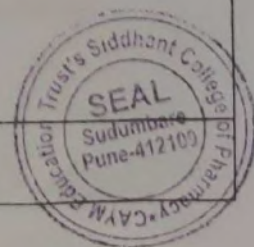
Course outcomes 2021-22

B Pharmacy

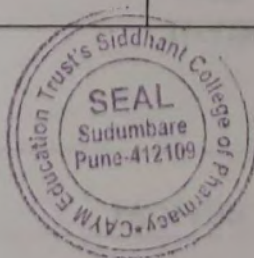
Year	Subject	Outcome
I year	BP101T. HUMAN ANATOMY AND PHYSIOLOGY-I CO1	It establishes an insight related to human body and apply pharmaceutical science to it.
	BP102T. PHARMACEUTICAL ANALYSIS CO2	Students construct fundamentals of preparing different strength solutions and interpretations and may execute in its discipline.
	BP103T. PHARMACEUTICS-I CO3	Students establish techniques and ideas of new dosage forms and combination.
	BP104T. PHARMACEUTICAL INORGANIC CHEMISTRY CO4	It develops the monographs of inorganic drugs and pharmaceuticals.
	BP105T.COMMUNICATION SKILLS CO5	Constructs soft skills set to work cohesively with the team & develops leadership quality.
	BP 106RBT.REMEDIAL BIOLOGY CO6	Establishes knowledge of cell biology, classification system, theory of evolution, tissue system etc.
	BP 106RMT.REMEDIAL MATHEMATICS CO7	Constructs calculation techniques
	BP 201T. HUMAN ANATOMY AND PHYSIOLOGY-II CO8	It establishes an insight related to human body and apply pharmaceutical science to it.
	BP202T. PHARMACEUTICAL	Builds laboratory techniques

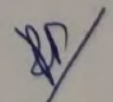


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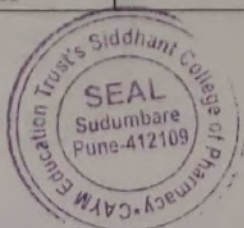


<b>ORGANIC CHEMISTRY -I</b> CO9	
<b>BP203 T. BIOCHEMISTRY</b> CO10	Constructs biochemical facts
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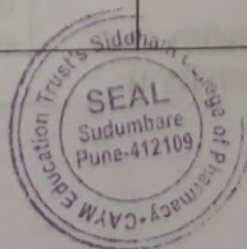
II year	CO17	
	BP401T. PHARMACEUTICAL ORGANIC CHEMISTRY -III CO18	Develops knowledge on medicinal and other uses of organic compounds.
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


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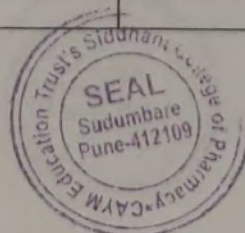


	<b>CO26</b>	
	<b>BP 505 T. PHARMACEUTICAL JURISPRUDENCE</b>	Establishes knowledge about important legislations related to the profession of pharmacy in India.
	<b>CO27</b>	
	<b>BP601T. MEDICINAL CHEMISTRY – III</b>	Develops fundamental knowledge on the structure, chemistry and therapeutic value of drugs.
	<b>CO28</b>	
	<b>BP602 T. PHARMACOLOGY-III</b>	Establishes diagnostic and classification technique.
	<b>CO29</b>	
	<b>BP 603 T. HERBAL DRUGTECHNOLOGY</b>	This subject gives the student the knowledge of basic understanding of herbal drug industry.
	<b>CO30</b>	
	<b>BP 604 T. BIOPHARMACEUTICS AND PHARMACOKINETICS</b>	Employs techniques of dosage forms and regimen.
	<b>CO31</b>	
	<b>BP 605 T. PHARMACEUTICAL BIOTECHNOLOGY</b>	This course would lead to new biological revolutions in diagnosis, prevention and cure of diseases.
	<b>CO32</b>	
	<b>BP606TPHARMACEUTICAL QUALITY ASSURANCE</b>	Builds various aspects of quality control and quality assurance of pharmaceutical industries.
	<b>CO33</b>	
	<b>BP701T. INSTRUMENTAL METHODS OF ANALYSIS</b>	Imparts fundamental knowledge on the principles and instrumentation of spectroscopic and chromatographic technique.
	<b>CO34</b>	



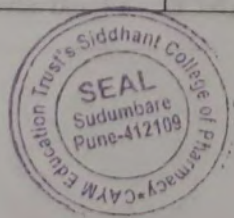
  
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IV year		
	<b>BP 702 T. INDUSTRIAL PHARMACYII</b> <b>CO35</b>	Builds new ideas related to production of pharmaceutical products.
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	<b>BP803ET. PHARMA MARKETING MANAGEMENT</b> <b>CO40</b>	Develops the student for taking a challenging role in Sales and Product management.
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CO42	
<b>BP 806 ET. QUALITY CONTROL AND STANDARDIZATION OF HERBALS</b>	Develops standardization of herbal drugs
CO43	
<b>BP 807 ET. COMPUTER AIDED DRUG DESIGN</b>	Develops rational drug design process.
CO44	
<b>BP808ET: CELL AND MOLECULAR BIOLOGY (Elective subject)</b>	Theorize complete cell biology
CO45	
<b>BP809ET. COSMETIC SCIENCE(Theory)</b>	Develops ideas of new formulations with different combinations.
CO46	
<b>BP810 ET. PHARMACOLOGICAL SCREENINGMETHODS</b>	Creates hand in preclinical animal handling
CO47	
<b>BP 811 ET. ADVANCED INSTRUMENTATION TECHNIQUES</b>	Develops knowledge about the principles and instrumentation of spectroscopic and chromatographic techniques.
CO48	
<b>BP 812 ET. DIETARY SUPPLEMENTS AND NUTRACEUTICALS</b>	Constructs ideas regarding need and requirements of dietary supplements among different groups in the population.
CO49	



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## Program Outcome

**PO1: Pharmaceutical Knowledge:-** Students achieve a deep knowledge regarding human body, its related diseases, analytical skills, drug molecules (Active Pharmaceutical Ingredients) along with excipients, natural drug resources, chemistry involved in API including synthesis of commonly used drugs, effect of drug on human body, toxicity and impurity profile, ADME studies of drugs (behavior of drug in human body), dosage form studies including novel approaches, designing and development of formulation stability studies, analysis etc

**PO2: Research Analysis:** Develops knowledge in research field to make new relevant discoveries and to identify new entities.

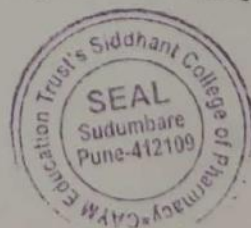
**PO3: Design & Development of dosage forms:** Describes preparation of various dosage forms that could be prepared by the pharmacy students in the pharmaceutical companies for the ease of patients and to optimize formulations.

**PO4: Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.

**PO5: Modern methods usage:** Create, select, and apply appropriate techniques, resources and modern methods with an understanding of the limitations and its usage. The student also learns to handle many instruments related to their studies which would help them work in a Pharmaceutical Industry, pharmacovigilance, regulatory requirements, legal processes etc.

**PO6: Pharmacy and society:** Pharmacist provide complete health care data and practices to the people of the society and guide them to be healthy. The student also learns drug distribution system, patient counseling, industrial laws etc. Students achieve expertise in storage and distribution of drugs with all precautions and in-depth knowledge of dose, adverse effect and other health related issues to deal with ambulatory and IPD patients in hospitals and also in public and achieve responsibility of computing profession and society.

**PO7: Environment and sustainability:** Locate the impact of the professional pharmacist in society and environment and make an impact of it on the people of the society.



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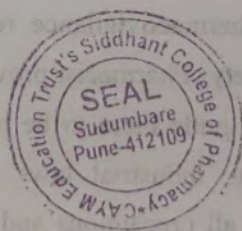
**PO8: Ethics:** Justify & apply ethical principle and commit to professional ethics and responsibilities and norms of the pharmacy practice. Student is also trained in ethical behavior with physician, nurses and other paramedical staff for protecting patient's health.

**PO9: Individual and team work:** Function effectively as an individual and as a member or leader in diverse teams acts as a multidisciplinary person in every context. Students will be able to demonstrate rigorous and independent thinking and encourage participatory decision making in teams.

**PO10: Communication:** Develops Communication effectively on pharmaceutical activities with the community and with society.

**PO11: Life-long learning:** Recognize the need and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change and implement those technology by gaining experience.

**PO12: Social Interaction:** Being a public welfare job, a pharmacist would be able to interact with the people in a better way to cure them and make them feel healthy also investigate and evaluate the general state of public health conditions and concerns and develop and apply appropriate programs of action within program content area.



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### Program Specific Outcome

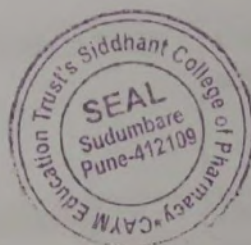
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*Stogdand*

Dr. Swati Jogdand

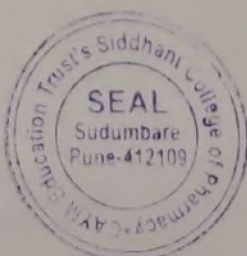
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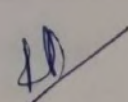
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Course outcomes 2020 - 21

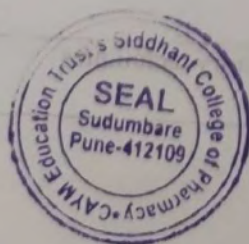
B Pharmacy

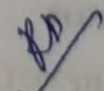
Year	Subject	Outcome
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	<b>BP 201T. HUMAN ANATOMY AND PHYSIOLOGY-II</b>  CO8	It establishes an insight related to human body and apply pharmaceutical science to it.
	<b>BP202T. PHARMACEUTICAL</b>	Builds laboratory techniques



  
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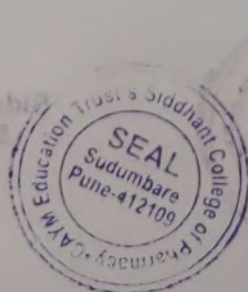
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<b>BP203 T. BIOCHEMISTRY</b> CO10	Constructs biochemical facts
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


  
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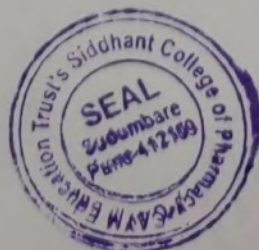


II year	CO17	
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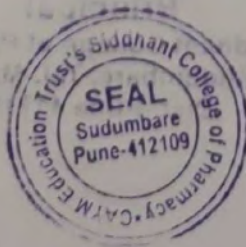
<b>CO26</b>	
<b>BP 505 T. PHARMACEUTICAL JURISPRUDENCE</b>	Establishes knowledge about important legislations related to the profession of pharmacy in India.
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<b>BP602 T. PHARMACOLOGY-III</b>	Establishes diagnostic and classification technique.
<b>CO29</b>	
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<b>CO34</b>	



**Principal**

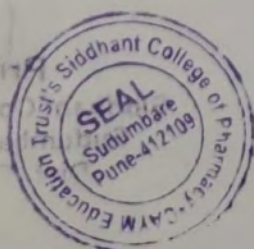
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
IV year		
BP 702 T. INDUSTRIAL PHARMACYII CO35	Builds new ideas related to production of pharmaceutical products.	
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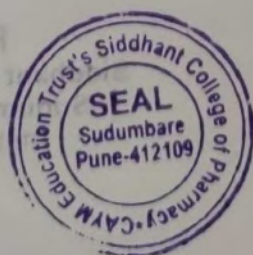
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CO42	
BP 806 ET. QUALITY CONTROL AND STANDARDIZATION OF HERBALS CO43	Develops standardization of herbal drugs
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## Program Outcome

**PO1: Pharmaceutical Knowledge:-** Students achieve a deep knowledge regarding human body, its related diseases, analytical skills, drug molecules (Active Pharmaceutical Ingredients) along with excipients, natural drug resources, chemistry involved in API including synthesis of commonly used drugs, effect of drug on human body, toxicity and impurity profile, ADME studies of drugs (behavior of drug in human body), dosage form studies including novel approaches, designing and development of formulation stability studies, analysis etc

**PO2: Research Analysis:** Develops knowledge in research field to make new relevant discoveries and to identify new entities.

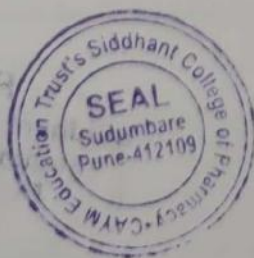
**PO3: Design & Development of dosage forms:** Describes preparation of various dosage forms that could be prepared by the pharmacy students in the pharmaceutical companies for the ease of patients and to optimize formulations.


**PO4: Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.

**PO5: Modern methods usage:** Create, select, and apply appropriate techniques, resources and modern methods with an understanding of the limitations and its usage. The student also learns to handle many instruments related to their studies which would help them work in a Pharmaceutical Industry, pharmacovigilance, regulatory requirements, legal processes etc.

**PO6: Pharmacy and society:** Pharmacist provide complete health care data and practices to the people of the society and guide them to be healthy. The student also learns drug distribution system, patient counseling, industrial laws etc. Students achieve expertise in storage and distribution of drugs with all precautions and in-depth knowledge of dose, adverse effect and other health related issues to deal with ambulatory and IPD patients in hospitals and also in public and achieve responsibility of computing profession and society.

**PO7: Environment and sustainability:** Locate the impact of the professional pharmacist in society and environment and make an impact of it on the people of the society.



  
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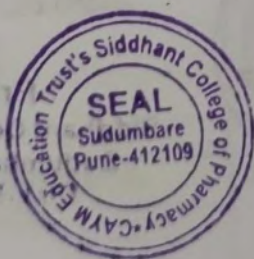
**PO8: Ethics:** Justify & apply ethical principle and commit to professional ethics and responsibilities and norms of the pharmacy practice. Student is also trained in ethical behavior with physician, nurses and other paramedical staff for protecting patient's health.

**PO9: Individual and team work:** Function effectively as an individual and as a member or leader in diverse teams acts as a multidisciplinary person in every context. Students will be able to demonstrate rigorous and independent thinking and encourage participatory decision making in teams.

**PO10: Communication:** Develops Communication effectively on pharmaceutical activities with the community and with society.

**PO11: Life-long learning:** Recognize the need and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change and implement those technology by gaining experience.

**PO12: Social Interaction:** Being a public welfare job, a pharmacist would be able to interact with the people in a better way to cure them and make them feel healthy also investigate and evaluate the general state of public health conditions and concerns and develop and apply appropriate programs of action within program content area



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### Program Specific Outcome

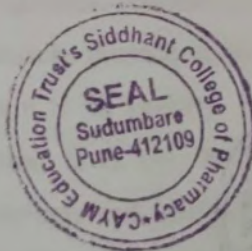
Some of the program specific outcomes are mentioned below:

**PSO 1:** Prepared to implement the knowledge gained during the course of the program from pharmacology, pharmaceutics, medicinal chemistry, pharmacognosy, APHE, communication skills, pharmaceutical analysis, biotechnology, biochemistry, cosmetology and environmental studies.

**PSO 2:** Develops knowledge of ethical and management principle required to work in a team as well as to lead a team.

**PSO 3:** Achieve multidisciplinary jobs in the pharmaceutical industries in various branches and would be able to write relevant and effective project reports in multidisciplinary environment in the context of changing technologies.

**PSO4** Prepares to communicate easily and effectively. Would be able to perform multitasks in multifiends including pharmaceuticals & cosmetic in timebound manner. Research area would be the key element.



*Jogland*

Mrs. Swati Jogland

Principal

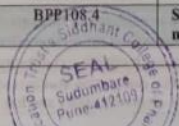
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




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B.Pharm I Year 2019-20			
Semester I			
Course Code	Course Name	Course Outcome No.	Course Outcome Description (as per New Syllabus introduced from Session 2019-20)
BPT101	Human Anatomy & Physiology I (Theory)	BPT101.1	After completion students should be able to understand basic terminologies used in Anatomy and Physiology, structure of and function of cell parts, transport across plasma membrane and types of tissue
		BPT101.2	To understand anatomy and physiology of Integumentary system, Skeletal system with joints
		BPT101.3	After completion students should be able to describe physiology of lymphatic system and blood with its disorders.
		BPT101.4	To understand structure and function of special sense organ and peripheral nervous system
		BPT101.5	The students should be able to understand anatomy and physiology of cardiovascular system and associated disorders.
BPP107	Human Anatomy & Physiology I (Practical)	BPP107.1	Upon the completion students should be able to identify different types of tissue and bones
		BPP107.2	Upon the completion students should be able to determine different haematological and cardiovascular parameters
BPT102	Pharmaceutical Analysis (Theory)	BPT102.1	Students should be able to explain concept and types of pharmaceutical Analysis along with methods of expressions, methods of preparations and standardisations of different Molar and Normal solutions.
		BPT102.2	Student should be able to explain concepts of Errors, Accuracy, Precision and sources of Impurities in Pharmaceutical Analysis. Also should be able to explain methods and purpose of limit tests.
		BPT102.3	Students should be able to explain theories of Acid Base Indicators, classify types of Acid Based titrations, interpret and identify neutralization curves and explain non- aqueous titrations.
		BPT102.4	Students should be able to explain techniques and applications of precipitation, complexometric, Gravimetric, Redox and Analytical techniques.
		BPT102.5	Students should be able to understand and explain Electrochemical Methods of Analysis like Conductometry, Potentiometry, and Polarography.
BPP108	Pharmaceutical Analysis (Practical)	BPP108.1	Student should be able to understand, explain and perform concepts of limit test.
		BPP108.2	Student should be able to understand and perform methods of preparations and standardisations of different solutions.
		BPP108.3	Students should be able to perform Assays of different chemicals.
		BPP108.4	Student should be able to understand and perform Electrochemical Analytical methods like Conductometry & Potentiometry.



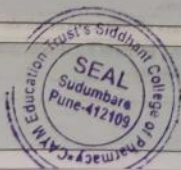
  
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BPT103	Pharmaceutics I (Theory)	BPT103.1	After completion students should be able to understand the history of profession of pharmacy, basic of different dosage forms, way of handling prescription and calculate dose calculations.
		BPT103.2	To understand pharmaceutical calculations, classification of powders, liquid dosage forms.
		BPT103.3	After completion students should be able to understand preparation of monophasic liquid dosage forms, suspension and emulsions.
		BPT103.4	To understand formulation and evaluation of suppositories, basics of pharmaceutical incompatibilities.
		BPT103.5	The students should be able to prepare and evaluate semisolid dosage forms.
BPP109	Pharmaceutics I (Practical)	BPP109.1	After completion students should be able to Understand and Carry out the formulation of dosage forms like syrups,elixirs,linctuses,solutions,powders,Gargles and Mouthwashes.
		BPP109.2	To understand and Carry out the formulation and evaluation of dosage forms like suspensions, emulsions, suppositories and semisolids.
BPT104	Pharma Inorganic Chemistry I (Theory)	BPT104.1	Student shall be able to know the sources of impurities and methods to determine the impurities
		BPT104.2	Students shall well acquaint with principles and procedures of limit test of different impurities.
		BPT104.3	Student shall familiar with different classes of inorganic pharmaceuticals and their functions
		BPT104.4	Student shall understand medicinal and pharmaceutical importance of inorganic compounds.
		BPT104.5	Student shall be identify different anions, cations and know their role in physiologicalacid base balance and also familiar with uses of different inorganic compounds.
BPP110	Pharma Inorganic Chemistry I (Practical)	BPP110.1	Student should able to know principles of limit tests and perform limit test and detect impurities of various ions like chloride, sulfate, iron, lead and arsenic.
		BPP110.2	Student will able to identify various inorganic substances by performing various identification tests.
		BPP110.3	Students will be able to perform various tests for purity of inorganic substances.
		BPP110.4	Student will able to prepare inorganic pharmaceuticals by different preparation reactions.
		BPP110.5	Student will able to know advantages of inorganic substances as pharmaceuticals.
BPT105		BPT105.1	Upon completion students should understand the behavioral needs of Pharmacist to function effectively in the areas of pharmaceutical operation through effective communication (Verbal and Non Verbal)
		BPT105.2	After completion students should manage the team as a team player & Know the elements, styles and barriers of communication.



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<b>BPT105</b>	Communication Skill (Theory)	BPT105.3	Upon completion student should Know the importance of good listening skills, and be a good listener.
		BPT105.4	After completion students should know the essentials of good writing skills and know the dos and don'ts of formal written communication.
		BPT105.5	Upon Completion student should develop interview skills, Leadership qualities and essentials of group discussions.
<b>BPP111</b>	Communication Skill (Practical)	BPP111.1	To become a good communicator in real life situations, and have a command over ones languages through forming grammatically correct sentences and perfect pronunciations.
		BPP111.2	To have good and effective writing skills, know the proper communication etiquettes and excellent presentation skills.
<b>BPRBT106</b>	Remedial Biology (Theory)	BPRBT106.1	Upon completion of subject students will be able to know the classification and salient features of five kingdoms of life.
		BPRBT106.2	Upon completion of subject students will be able to understand the basic components of anatomy & physiology of plant.
		BPRBT106.3	Upon completion of subject students will be able to know understand the basic components of anatomy & physiology of animal with special reference to human.
<b>BPRBP112</b>	Remedial Biology (Practical)	BPMP112.1	Upon completion of subject students will be able to understand microscopic study and identification of tissues of plant, cell and its inclusions, detailed study of frog by using computer models.
		BPMP112.2	Upon completion students will be able to identify different types of bones and determine different haematological and cardiovascular parameters.
<b>BPRMT106</b>	Remedial Math (Theory)	BPRMT106.1	Student should understand the theory and applications of partial fraction, logarithms, function, limits and continuity in pharmacy.
		BPRMT106.2	Student should be able to solve the problems related to matrices and determinants.
		BPRMT106.3	Student should be able to solve the problems related to derivative and it's functions.
		BPRMT106.4	Student should be able to apply concepts of analytical geometry.
		BPRMT106.5	Student should be able to solve the problems related to differential equations and laplace transform.
<b>B.Pharm I Year</b>			
<b>Semester II</b>			
<b>Course Code</b>	<b>Course Name</b>	<b>Course Outcome No.</b>	<b>Course Outcome Description (as per New Syllabus introduced from Session 2019-20)</b>
<b>BPT201</b>	Human Anatomy & Physiology II (Theory)	BPT201.1	After completion students should be able to understand the gross morphology of endocrine, digestive, nervous, respiratory, urinary and reproductive system.
		BPT201.2	Upon completion students should understand physiology of endocrine, digestive, respiratory, urinary and reproductive system.
		BPT201.3	Upon completion students should be able to explain basics of Energetics.



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		BPT201.4	Upon completion students should be able to explain basics of genetics.
BPP207	Human Anatomy & Physiology II (Practical)	BPP207.1	Upon the completion students should be able to determine vital capacity, tidal volume, body temperature and basal mass index.
		BPP207.2	Upon the completion students should be able to demonstrate general neurological examinations and feedback mechanisms
BPT202	Pharmaceutical Organic Chemistry I (Theory)	BPT202.1	understand the nomenclature, classification and isomerism.
		BPT202.2	write the methods of preparation of alkane, alkene, dienes, alkyl halides, alcohol, carbonyl compounds, carboxylic acids and aliphatic amines
		BPT202.3	Will be able to explain the reactions, name the reactions orientation and reactivity shown by alkane, alkene, dienes, alkyl halides, alcohol, carbonyl compounds, carboxylic acids and aliphatic amines.
		BPT202.4	write the structure and uses of important reagents from the following categories of organic compounds like alkane, alkene, dienes, alkyl halides, alcohol, carbonyl compounds, carboxylic acids and aliphatic amines
		BPT202.5	will be able to understand qualitative tests for alcohol and amines
BPP208	Pharmaceutical Organic Chemistry I (Practical)	BPP208.1	perform systematic qualitative analysis of unknown organic compounds
		BPP208.2	Will be able to prepare the solid derivatives from organic compounds
		BPP208.3	Do the construction of molecular models.
BPT203	Biochemistry II (Theory)	BPT203.1	Students should be able to understand chemical nature and biological roles of Biomolecules and concepts of Bioenergetics.
		BPT203.2	Students should be able to understand and explain Carbohydrate Metabolism and Biological Oxidation.
		BPT203.3	Students should be able to understand and explain Lipid Metabolism and Amino Acid Metabolism.
		BPT203.4	Students should be able to understand and explain Concepts of Nucleic Acid Metabolism and Genetics Information Transfer.
		BPT203.5	Students should be able to understand and explain Concepts of Enzymes.
BPP209	Biochemistry II (Practical)	BPP209.1	Students should be able to understand and perform Qualitative Analysis of Carbohydrates, Identifications of proteins and Quantitative analysis of reducing sugars and proteins.
		BPP209.2	Students should be able to understand and perform Qualitative analysis of abnormal urine constituents and determination of blood components like creatinine, sugar, cholesterol etc.
		BPP209.3	Students should be able to understand and perform preparation of buffer solution, enzymatic hydrolysis of starch.
		BPP209.4	Students should be able to understand and perform study of salivary amylase activity.



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BPT204	Pathophysiology (Theory)	BPT204.1	Upon completion of subject students will be able to explain mechanisms involved in the process of inflammation and infectious diseases.
		BPT204.2	Upon completion of subject students will be able to explain basic principal of cell injury and adaptation.
		BPT204.3	Upon the completion of subject students will be able to explain pathophysiology of diseases of cardiovascular, respiratory, renal, endocrine, nervous and gastrointestinal system.
		BPT204.4	Upon the completion of subject students will be able to explain principal of cancer, pathophysiology of hematological diseases, sexually transmitted diseases and diseases of bones and joints, Inflammatory bowel diseases, jaundice and liver disease.
BPT205	Computer Application in Pharmacy (Theory)	BPT205.1	To know the number systems, its conversion, calculations and the concept of the information systems and software's used in different field and its processes.
		BPT205.2	To know the various types of application of computers in pharmacy
		BPT205.3	To understand the various web technologies and the different databases and various applications of databases in pharmacy.
		BPT205.4	To know the Bioinformatics Databases, Concept and Impact of Bioinformatics in Vaccine Discovery and know the Computers as data analysis in Preclinical development like CDS, LIMS, TMS etc.
BPP210	Computer Application in Pharmacy (Practical)	BPP210.1	To Design questionnaires, invoice tables, drug information storage and its retrieval and its side effects, using word process
		BPP210.2	To Create a personal HTML webpage, create invoice tables, Generate reports from patients database, and Exporting Tables, Queries, Forms and Reports to web pages and to XML pages.
BPT206	Environmental Studies (Theory)	BPT206.1	After completion students should be able to understand our environment, renewable and non-renewable natural resources and the multidisciplinary nature of studies.
		BPT206.2	The students should be able to know, understand and explain about the natural resources like forest, water, minerals, food, energy and land, the problems associated with them and role of an individual in their conservation.
		BPT206.3	The students should be able to understand and explain the concept of an ecosystem, different types of ecosystems like forest, grassland, desert and aquatic, their structure, functions and characteristics.
		BPT206.4	The students should be able to know, understand and explain about various environmental pollutions like soil, water and air and preventive measures for them.
<b>B.Pharm II Year</b>			
<b>Semester III</b>			
Course Code	Course Name	Course Outcome No.	Course Outcome Description (as per New Syllabus introduced from Session 2019-20)



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BPT301	Pharma. Organic Chemistry II (Theory)	BPT301.1	write the structures ,names and types of isomerism of benzene ,phenols ,aromatic amines ,aromatic acids ,fats and oils polynuclear hydrocarbons and cycloalkanes
		BPT301.2	write the methods of preparation of benzene ,phenols ,aromatic amines ,aromatic acids ,fats and oils polynuclear hydrocarbons and cycloalkanes
		BPT301.3	Will be able to explain reactivity ,orientation and theories regarding stability of thereactions shown by benzene ,phenols ,aromatic amines ,aromatic acids ,fats and oils poly nuclear hydrocarbons and cycloalkanes.
		BPT301.4	write the structure and uses of DDT,Saccharine ,BHC,Chloramine ,phenols,cresols,resorcinol,naphthols,aryl diazonium salts ,diphenylmethane, triphenylmethane.
		BPT301.5	will be able to understand analytical tests for phenols and fats and oils
BPP305	Pharma. Organic Chemistry II (Theory)	BPP305.1	do the experiments on recrystallization and steam distillation
		BPP305.2	determine the oil values and perform standardization of reagents
		BPP305.3	Will be able to do the synthesis of various organic compounds
BPT302	Physical Pharmaceutics I (Theory)	BPT302.1	Upon completion of syllabus students will be able to Understand various physicochemical properties of drug molecule, able to identify state and all basic phenomenon related to drug.
		BPT302.2	Upon completion of syllabus students will be able to Apply their knowledge related to basics of drug by simple methods and demonstration.
		BPT302.3	Upon completion of syllabus students will be able to Understand different principles and laws related to basic characteristics of drugs.
		BPT302.4	Upon completion of syllabus students will be able to Understand different phenomenon's and structure and nature of drugs.
		BPT302.5	Upon completion of syllabus students will be able to Get better insight in to various areas of formulations, research and development.
BPP306	Physical Pharmaceutics I (Practical)	BPP306.1	Upon completion of syllabus students will be able to demonstrate the concept of Ph, Pka, solubility density, viscosity, etc
		BPP306.2	Upon completion of syllabus students will be able to demonstrate miscible, partially miscible liquid and all practical aspect regarding solubility of liquid.
		BPP306.3	Upon completion of syllabus students will be able to demonstrate different equations regarding Ph, Pka and solubility.
		BPP306.4	Upon completion of syllabus students will be able to demonstrate CMC of various surfactants.
		BPT303.1	Explain classification, identification, nutritional requirement, isolation and preservation methods for pure culture of bacteria including quantitative measurement of bacterial growth. Summarize various types of microscope.
		BPT303.2	Explain methods, evaluation, equipment required and testing of pharmaceutical products for sterilization.

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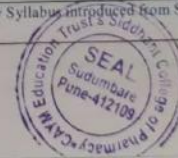


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BPT303	Pharmaceutical Microbiology (Theory)	BPT303.3	Understand morphology, classification, reproduction/replication and cultivation of fungi and virus.
		BPT303.4	Explain classification, mode of action, factors influencing and evaluation of Disinfection.
		BPT303.5	Understand laminar flow equipment, sources, methods and classification of aseptic area including general aspects related environment cleanliness. Explain principles and methods of various microbiological assays also Assessment and testing of new antibiotics.
		BPT303.6	To Know types, factors, sources and assessment of microbial contamination and spoilage. Preservation and evaluation of formulation containing antimicrobial agents. To study growth and procedure for cell culture and its applications.
BPP307	Pharmaceutical Microbiology (Practical)	BPP307.1	Study and describe equipment's, sterilization of glassware, preparation and Culture media, sub culturing, nutrient stabs and slants, multiple streak plate and other techniques also microbiological assay.
		BPP307.2	Identify the bacterial morphology using staining techniques and acquire knowledge on the principles of biochemical tests.
BPT304	Pharmaceutical Engineering (Theory)	BPT304.1	Understand importance of various unit operations used in pharmaceutical industries, importance of size reduction, powder size and size separation, principle, construction and working of equipment's used in size reduction and size separations.
		BPT304.2	Understand the various processes involved in pharmaceutical manufacturing processes like evaporation, distillation and drying
		BPT304.3	Develop knowledge of unit operations, mixing, mass transfer and flow of fluids and theories as well as basic mechanisms; understand principle, construction and working of equipments used in mixing, mass transfer and flow of fluids.
		BPT304.4	Comprehend significance of various equipments used in manufacturing processes like filtration and centrifugation
		BPT304.5	Appreciate the various preventive methods used for corrosion control in pharmaceutical Industries. Also factors affecting material selection.
BPP308	Pharmaceutical Engineering (Practical)	BPP308.1	Build up skill and ability to analyze; particle size distribution, effect of filter aid on filtration rate.
		BPP308.2	Determination of radiation constant of brass, iron, unpainted and painted glass, heat transfer coefficient, moisture content and loss on drying, humidity of air.
		BPP308.3	Demonstration of various mills.
		BPP308.4	Construction of drying curves.
B.Pharm II Year			
Semester IV			
Course Code	Course Name	Course Outcome No.	Course Outcome Description (as per New Syllabus introduced from Session 2019-20)



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BPT401	Pharma. Organic Chemistry III (Theory)	BPT401.1	write the stereo chemical aspects of organic compounds and write stereo chemical reactions including optical and geometric isomerism
		BPT401.2	write the structures, names and classifications of heterocyclic compounds
		BPT401.3	Will be able to explain reactivity, orientation and theories regarding stability of the reactions shown by heterocyclic compounds
		BPT401.4	write the methods of preparation of heterocyclic compounds
		BPT401.5	understand the and uses of heterocyclic compounds
		BPT401.6	will be able to understand reactions of synthetic importance
BPT402	Medicinal Chemistry I (Theory)	BPT402.1	Students should be able to explain the effects of physicochemical properties on drug actions
		BPT402.2	Students should be able to explain the process of metabolism, influence of metabolic profile of drug and their impact on biological system.
		BPT402.3	Students Should be able to explain synthetic procedure for selective compounds of different categories.
		BPT402.4	Students should be able to classify different categories of agents based on their chemical natures.
		BPT402.5	Students should be able to explain Physicochemical properties, SAR, Metabolism and Mechanism of Action of Adrenergic, Cholinergic, and CNS agents.
BPP406	Medicinal Chemistry I (Practical)	BPP406.1	Students should be able to understand and explain methods of synthesis for intermediates and drugs.
		BPP406.2	Students should be able to explain physicochemical characterisation and recrystallization methods for intermediates and drugs.
		BPP406.3	Students should be able to understand and perform the principle and procedure of quantitative determination of drugs in different dosage forms.
		BPP406.4	Students should be able to understand the principle and procedure of determination of partition co-efficient of drugs.
BPT403	Physical Pharmaceutics II (Theory)	BPT403.1	Upon completion of syllabus students will be able to deal with the concept of various physical, physicochemical properties and principal involved in dosage form formulation.
		BPT403.2	Upon completion of syllabus students will be able to get better insight in to various areas of formulation research and development.
		BPT403.3	Upon completion of syllabus students will be able to demonstrate use of formulation of various dosage form.
		BPT403.4	Upon completion of syllabus students will be able to describe the fundamental and derived properties of various dosage form.
		BPT403.5	Upon completion of syllabus students will be able to understand stability and shelflife, calculate expiry of various dosage form.
		BPP407.1	Upon completion of syllabus students will be able to demonstrate concept of particle, size, and its use in formulation of various dosage form.



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BPP407	Physical Pharmaceutics II (Practical)	BPP407.2	Upon completion of syllabus students will be able to demonstrate microscopic and micromeritic characteristic of dosage form.
		BPP407.3	Upon completion of syllabus students will be able to demonstrate stability testing of various dosage form.
		BPP407.4	Upon completion of syllabus students will be able to demonstrate HLB value, order of reaction and Handel various equipment like Brookfield viscometer, stability chamber etc.
BPT404	Pharmacology I (Theory)	BPT404.1	Upon completion students will be able to Describe the scope of pharmacology and signify routes of drug administration.
		BPT404.2	Upon completion students will be able to Explain the Principles of absorption, distribution, metabolism and excretion of a drug, enzyme induction, enzyme inhibition and kinetics of elimination and the relationship between drug and its receptors, mechanism of action, therapeutic effect, drug interaction and adverse drug reaction.
		BPT404.3	Upon completion students will be able to explain Drug discovery and clinical evaluation of new drugs, preclinical evaluation phase, phases of clinical trials and pharmacovigilance.
		BPT404.4	Upon completion students will be able to Understand organization and function of ANS Parasympathomimetics, parasympatholytics, Sympathomimetics, sympatholytics, Neuromuscular blocking agents and skeletal muscle relaxants, Local anesthetic agents and Drugs used in myasthenia gravis and glaucoma.
		BPT404.5	Upon completion students will be able to explain Neurohumoral transmission in the C.N.S. and various neurotransmitters like with GABA, Glutamate, Glycine, serotonin, dopamine. Pharmacology of anesthetics, Sedatives, hypnotics and centrally acting muscle relaxants, Anti-epileptics, Alcohols and disulfiram
		BPT404.6	Upon completion students will be able to explain Psychopharmacological knowledge in prevention and treatment of various diseases like antipsychotic, antidepressant, anti-anxiety, anti-manics and hallucinogens, drugs used in Parkinsons and Alzheimer's disease, CNS stimulants and nootropics, Opioid analgesics and antagonists, drug addiction, drug abuse, tolerance and dependence.
BPP408	Pharmacology I (Practical)	BPP408.1	Introduction to experimental pharmacological instruments, laboratory animals as per CPCSEA guidelines. Demonstration of different routes of drug administration in rats and mice and techniques of blood withdrawal, serum and plasma separation, anesthetics and euthanasia used for animal studies
		BPP408.2	Demonstration of stereotype and anti-cataleptic activity, anxiolytic activity of drugs using rats/mice, local anesthetics by different methods and effect of hepatic microsomal enzyme inducers on the phenobarbitone sleeping time in mice.
		BPP408.3	Demonstration of Effect of drugs on ciliary motility of frog oesophagus, rabbit eye, skeletal muscle relaxants using rota-rod apparatus, locomotor activity using actophotometer, Anticonvulsant effect by MES and PTZ method



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<b>BPT405</b>	Pharmacognosy & Phytochemistry-I (Theory)	BPT405.1	My student should understand definition, history, development and scope of pharmacognosy along with the sources, classification and quality control of drugs obtained from natural sources.
		BPT405.2	My student should be able to explain cultivation, collection, processing and storage of crude drugs along with methods of improving crop variety and the conservation of medicinal plants.
		BPT405.3	My student should understand different aspects of plant tissue culture along with application of plant tissue culture in pharmacognosy.
		BPT405.4	My student should be able to describe role of pharmacognosy in allopathic as well as traditional systems of medicine and able to explain different aspects of secondary metabolites along with its classification and examples.
		BPT405.5	My student should know some of the specialized plant products like allergens, fibres, hallucinogens and teratogens, along with different aspects of primary metabolites, its classification and examples.

<b>BPP409</b>	Pharmacognosy & Phytochemistry-I (Practical)	BPP409.1	My student should be able to analyse and identify unorganised crude drugs of natural origin by means of chemical tests.
		BPP409.2	My student should be able to determine different types of leaf constants.
		BPP409.3	My student should be able to evaluate quantitative microscopical characteristics of crude drugs.
		BPP409.4	My student should be able to determine different physical constants of crude drugs.
		BPP409.5	My student should be able to evaluate crude drugs by official methods.

**B.Pharm III Year**

**Semester V**

Course Code	Course Name	Course Outcome No.	Course Outcome Description (as per New Syllabus introduced from Session 2019-20)
<b>BPT501</b>	Medicinal Chemistry II (Theory)	BPT501.1	Students should be able to understand and explain Development, Classification, Mechanism of Action, Uses and SAR of Anti-histaminic, Proton Pump Inhibitors, Anti-neoplastic agents and anti metabolites.
		BPT501.2	Students should be able to understand and explain Development, Classification, Mechanism of Action, Uses and SAR of Anti-Anginals, Diuretics and Anti-hypertensive.
		BPT501.3	Students should be able to understand and explain Development, Classification, Mechanism of Action, Uses and SAR of Anti-Arrhythmic, Anti-hyper lipidemics, Co-agulants and Anti-coagulants, Drugs used in CHF.
		BPT501.4	Students should be able to understand and explain Development, Classification, Mechanism of Action, Uses and SAR of Drugs Acting on Endocrine System.
		BPT501.5	Students should be able to understand and explain Development, Classification, Mechanism of Action, Uses and SAR of Anti-diabetics and local anaesthetics.




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<b>BPT502</b>	Industrial Pharmacy I (Theory)	BPT502.1	Explain and demonstrate various preformulation parameters including Physical and Chemical properties of drug substance required for formulation
		BPT502.2	Describe classification, formulation, processing problems, Equipment, required for tablets and tablet coating and their evaluation
		BPT502.3	Explain formulation, manufacturing considerations, Filling, packaging, and evaluation of syrups, elixiers, suspensions, emulsions
		BPT502.4	Explain and summarize, formulation, Filling, packaging, storage and Evaluation of hard and Soft capsules
		BPT502.5	Understand and describe types, formulation, filling, sealing, evaluation of various types of parenterals and Ophthalmic dosage forms
		BPT502.6	Understand formulation of various types of cosmetic preparations
		BPT502.7	Explain and understand formulation, containers, evaluation, stability study, and Quality control of aerosols
		BPT502.8	Understand materials for containers, study of factors, legal and official requirements, stability aspects and quality control of packaging material
<b>BPP506</b>	Industrial Pharmacy I (Practical)	BPP506.1	To carry out preformulation study various drugs
			To prepare and evaluate Paracetamol/ Aspirin tablet/ Tetracycline capsules/Calcium Gluconate injection/ Ascorbic acid injection
			To formulate and evaluate Eye drop/ Eye ointment
			To formulate cold cream/ vanishing cream
			To carry out evaluation of glass containers
			To evaluate marketed tablets / capsules
<b>BPT503</b>	Pharmacology II (Theory)	BPT503.1	Classification of drugs along with their mechanism of action, receptor, adverse effect, drug interaction, contraindication and therapeutic uses for the treatment of cardiovascular diseases and haemopoietic system/disorders.
		BPT503.2	Classification of drugs along with their mechanism of action, receptor, adverse effect, drug interaction, contraindication and therapeutic uses of drugs acting on renalsystem.
		BPT503.3	Classification of drugs along with their mechanism of action, receptor, adverse effect, drug interaction, contraindication and therapeutic uses of hormones/drugs acting on endocrine system/disorders.
		BPT503.4	Classification of drugs along with their mechanism of action, receptor, adverse effect, drug interaction, contraindication and therapeutic uses of autacoids, its analogue and blockers.
		BPT503.5	Definition of bioassay, its principle, applications, types and standard bioassay methods for some pharmacological agents
<b>BPP507</b>		BPP507.1	Describe the composition of physiological salt solutions used in experimental pharmacology.
		BPP507.2	Understand basic principles of bioassay, bioassay of various drugs.



  
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		BPP507.3	Understand performance of isolated experiments using various isolated preparation and the effect of different drugs on the concentration response curves.
		BPP507.4	Study the preclinical screening of various drugs.
BPT504	Pharmacognosy & Phytochemistry II (Theory)	BPT504.1	My student should understand basics of metabolic pathways and formation of Secondary metabolites through those pathways.
		BPT504.2	My student should be able to describe different aspects of secondary metabolites along with pharmacognostic details of crude drugs from which they obtained.
		BPT504.3	My student should be able to explain isolation, identification and analysis of secondary metabolites obtained from crude drugs.
		BPT504.4	My student should understand industrial production, estimation and utilization of phytoconstituents.
		BPT504.5	My student should know modern methods for extraction of crude drugs along with latest techniques for its isolation, purification and identification.
BPP508	Pharmacognosy & Phytochemistry II (Practical)	BPP508.1	My student should be able to examine morphological, histological and powder characteristics of organized crude drugs.
		BPP508.2	My student should be able to carry out extraction, isolation and detection of active constituents from crude drugs.
		BPP508.3	My student should be able to apply thin layer and paper chromatographic technique in separation and evaluation of phytoconstituents.
		BPP508.4	My student should be able to carry out distillation of volatile oil from crude drugs and its evaluation by thin layer chromatographic technique.
		BPP508.5	My student should be able to evaluate and identify unorganized crude drugs by chemical tests.
BPT505	Pharmaceutical Jurisprudence (Theory)	BPT505.1	To know and understand pharmaceutical legislations and their implicatius in development and marketting along with code of ethics during pharmaceutical practice.
		BPT505.2	To know and understand the rules and regulations framed and amendments made under drugs and cosmetics act 1940
		BPT505.3	To know and understand the rules and regulations framed and amendments made under pharmacy act 1948.
		BPT505.4	To know and understand the rules and regulations framed and amendments made under medicinal and toilet preparations (excise duties) act 1955, rules 1976, narcoticdrugs and psychotropic substances act, and rules there under, drugs and magic remedies (objectionable advertisements) act 1954, prevention of cruelty to animals act1960, drug price control order, medical termination of pregnancy act 1970 and rules 1975 and right to inforation act along with intellectual property rights (IPR)

B.Pharm III Year

Semester VI



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Course Code	Course Name	Course Outcome No.	Course Outcome Description (as per New Syllabus introduced from Session 2019-20)
<b>BPT601</b>	Medicinal Chemistry-III (Theory)	BPT601.1	Students should be able to understand chemical aspects (Nomenclature, Stereochemistry, SAR, Classification etc.) and Biological Activities of $\beta$ -Lactams and Tetracyclins.
		BPT601.2	Students should be able to understand chemical aspects and Biological Activities of Different Macrolide, Miscellaneous Antibiotics and of different categories of drugs like Antimalarial, Quinolones, Biguanides along with the aspect of Pro-Drug Designing.
		BPT601.3	Students should be able to understand chemical aspects and Biological Activities of Anti T. B. and Anti-Viral Agents.
		BPT601.4	Students should be able to understand chemical aspects and Biological Activities of Anti Fungal, Anti-Protozoal, Anthelmintic and Sulphonamides.
		BPT601.5	Students should be able to understand different techniques of drug designing like QSAR, Docking and Combinatorial chemistry.
<b>BPP607</b>	Medicinal Chemistry-III (Practical)	BPP607.1	Students should be able to understand and perform synthesis of intermediates like Sulphonamides, Chlorobutanol, Tolbutamide etc.
		BPP607.2	Students should be able to understand and perform assay of drugs like, Isonicotinic acid hydrazide, Chloroquine, Metronidazole, Depsone, Chlopheniramine Maleate, Benzyl Penicilline etc.
		BPP607.3	Students should be able to understand aspects of Microwave Irradiation Techniques.
		BPP607.4	Students should be able to understand how to draw structures and reactions using Chem Draw and to find out physicochemical Properties using Drug Designing Softwares.
<b>BPT602</b>	Pharmacology III (Theory)	BPT602.1	Classification, mechanism of action, therapeutic uses, adverse effects and contraindications of various agents used in the treatment of respiratory and gastrointestinal tract diseases.
		BPT602.2	Classification, mechanism of action, antimicrobial spectrum, resistance, therapeutic uses, adverse effects and contraindications of various antimicrobial agents used in the treatment of infectious diseases.
		BPT602.3	Knowledge of immunopharmacology, including Immunostimulants, immunosuppressants, their uses/applications
		BPT602.4	Definition, principle of toxicology, types of toxicity, clinical symptoms, general principles of treatment and management of poisoning by different chemicals.
		BPT602.5	Definition of rhythm and cycles, knowledge of biological and their significance treatment of various diseases
<b>BPP608</b>	Pharmacology III (Practical)	BPP608.1	Calculation of dose for pharmacological experiment
		BPP608.2	Study the preclinical screening of various drugs.
		BPP608.3	Determination of LD50; Toxicity testing by using different methods



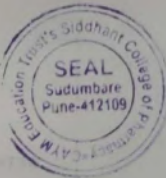
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		BPP608.4	Calculation of pharmacokinetic parameters
		BPP608.5	Knowledge of Biostatistics methods used in experimental pharmacology
BPT603	Herbal Drug Technology (Theory)	BPT603.1	My student should understand basics of Indian systems of medicine, biodynamic agriculture of medicinal plants and different aspects of herbs as raw material for herbal medicine.
		BPT603.2	My student should be able to explain different aspects of nutraceuticals and health food and its utilization; along with herb-drug and herb-food interactions.
		BPT603.3	My student should be able to describe herbal cosmetics and its related aspects, herbal excipients and herbal formulations.
		BPT603.4	My student should understand guidelines for evaluation of herbal drugs as per international authorities like WHO and ICH along with intellectual property rights and regulatory issues with respect to herbal drugs.
		BPT603.5	My student should know general aspects related to herbal industry and institutions involved in work on medicinal plants along with GMP requirements under schedule-T for herbal industry involved in production of formulations belonging to Indian systems of medicine.
BPP609	Herbal Drug Technology (Practical)	BPP609.1	My student should be able to perform preliminary phytochemical screening of crude drugs.
		BPP609.2	My student should be able to determine alcohol content of asava and arista.
		BPP609.3	My student should be able to carry out evaluation of excipients of natural origin along with incorporation of prepared and standardized extracts in cosmetic formulations and their evaluation.
		BPP609.4	My student should be able to carry out monograph analysis of herbal drugs along with incorporation of prepared and standardized extracts in pharmaceutical formulations and their evaluation as per pharmacopoeial requirements.
		BPP609.5	My student should be able to determine physical constants like aldehyde content, phenol content, total alkaloids content etc. of crude drugs.
BPT604	Biopharmaceutics and P'cokinetics (Theory)	BPT604.1	Explain various mechanism, factors influencing drug absorption and Distribution, and protein binding of drugs
		BPT604.2	Discuss and understand basics of drug metabolizing pathways, factors affecting renal and non-renal excretion of drugs
		BPT604.3	Understand concept of bioavailability and bioequivalence of drug product and their significance
		BPT604.4	Explain use of plasma drug concentration-time data to calculate the p'cokinetic parameters to describe the kinetics of drug absorption, distribution, metabolism, Excretion, Elimination, significance, and study of various models.
		BPT604.5	Understand various P'cokinetic parameters, their significance and applications



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		BPT604.6	Understand the concept of non-linear Pharmacokinetics, factors, and kinetics.
<b>BPT605</b>	Pharmaceutical Biotechnology (Theory)	BPT605.1	Student should understand the importance of immobilized enzymes in Pharmaceutical industries
		BPT605.2	Student should be able to explain Genetic engineering applications in relation to production of Pharmaceuticals
		BPT605.3	Student should understand the types of immunity and its related technology
		BPT605.4	Student should understand importance of Monoclonal antibodies in industries
		BPT605.5	Student should appreciate the use of microorganisms in fermentation technology
<b>BPT606</b>	Pharmaceutical Quality Assurance (Theory)	BPT606.1	Student should understand the cGMP aspects in a pharmaceutical industry
		BPT606.2	Student should appreciate the importance of documentation
		BPT606.3	Student should understand the scope of quality certifications applicable to pharmaceutical industries
		BPT606.4	Student should understand the responsibilities of QA & QC departments



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**Academic Year 2019-20**

**B Pharmacy**

**Program Outcome**

**PO1: Pharmaceutical Knowledge:-** Students achieve a deep knowledge regarding human body, its related diseases, analytical skills, drug molecules (Active Pharmaceutical Ingredients) along with excipients, natural drug resources, chemistry involved in API including synthesis of commonly used drugs, effect of drug on human body, toxicity and impurity profile, ADME studies of drugs (behavior of drug in human body), dosage form studies including novel approaches, designing and development of formulation stability studies, analysis etc

**PO2: Research Analysis:** Develops knowledge in research field to make new relevant discoveries and to identify new entities.

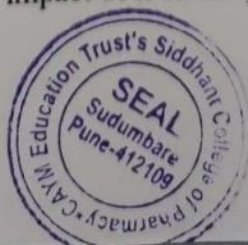
**PO3: Design & Development of dosage forms:** Describes preparation of various dosage forms that could be prepared by the pharmacy students in the pharmaceutical companies for the ease of patients and to optimize formulations.

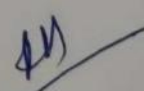
**PO4: Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.

**PO5: Modern methods usage:** Create, select, and apply appropriate techniques, resources and modern methods with an understanding of the limitations and its usage. The student also learns to handle many instruments related to their studies which would help them work in a Pharmaceutical Industry, pharmacovigilance, regulatory requirements, legal processes etc.

**PO6: Pharmacy and society:** Pharmacist provide complete health care data and practices to the people of the society and guide them to be healthy. The student also learns drug distribution system, patient counseling, industrial laws etc. Students achieve expertise in storage and distribution of drugs with all precautions and in-depth knowledge of dose, adverse effect and other health related issues to deal with ambulatory and IPD patients in hospitals and also in public and achieve responsibility of computing profession and society.

**PO7: Environment and sustainability:** Locate the impact of the professional pharmacist in society and environment and make an impact of it on the people of the society.



  
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**PO8: Ethics:** Justify & apply ethical principle and commit to professional ethics and responsibilities and norms of the pharmacy practice. Student is also trained in ethical behavior with physician, nurses and other paramedical staff for protecting patient's health.

**PO9: Individual and team work:** Function effectively as an individual and as a member or leader in diverse teams acts as a multidisciplinary person in every context. Students will be able to demonstrate rigorous and independent thinking and encourage participatory decision making in teams.

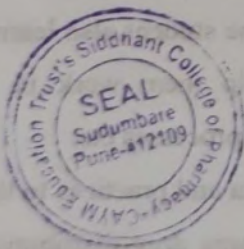
**PO10: Communication:** Develops Communication effectively on pharmaceutical activities with the community and with society.

**PO11: Life-long learning:** Recognize the need and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change and implement those technology by gaining experience.

**PO12: Social Interaction:** Being a public welfare job, a pharmacist would be able to interact with the people in a better way to cure them and make them feel healthy also investigate and evaluate the general state of public health conditions and concerns and develop and apply appropriate programs of action within program content area



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### Program Specific Outcome

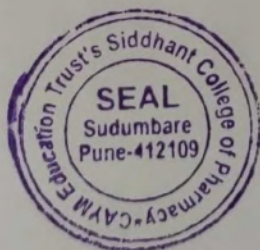
Some of the program specific outcomes are mentioned below:

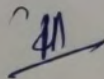
**PSO 1:** Prepared to implement the knowledge gained during the course of the program from pharmacology, pharmaceuticals, medicinal chemistry, pharmacognosy, APHE, communication skills, pharmaceutical analysis, biotechnology, biochemistry, cosmetology and environmental studies.

**PSO 2:** Develops knowledge of ethical and management principle required to work in a team as well as to lead a team.

**PSO 3:** Achieve multidisciplinary jobs in the pharmaceutical industries in various branches and would be able to write relevant and effective project reports in multidisciplinary environment in the context of changing technologies.

**PSO4** Prepares to communicate easily and effectively. Would be able to perform multitasks in multifields including pharmaceuticals & cosmetic in timebound manner. Research area would be the key element.



  
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B.Pharm I Year 2018-19

Semester I

Course Code	Course Name	Course Outcome No.	Course Outcome Description (as per New Syllabus introduced from Session 2019-20)
BPT101	Human Anatomy & Physiology I (Theory)	BPT101.1	After completion students should be able to understand basic terminologies used in Anatomy and Physiology, structure of and function of cell parts, transport across plasma membrane and types of tissue
		BPT101.2	To understand anatomy and physiology of Integumentary system, Skeletal system with joints
		BPT101.3	After completion students should be able to describe physiology of lymphatic system and blood with its disorders.
		BPT101.4	To understand structure and function of special sense organ and peripheral nervous system
		BPT101.5	The students should be able to understand anatomy and physiology of cardiovascular system and associated disorders.
BPP107	Human Anatomy & Physiology I (Practical)	BPP107.1	Upon the completion students should be able to identify different types of tissue and bones
		BPP107.2	Upon the completion students should be able to determine different haematological and cardiovascular parameters
BPT102	Pharmaceutical Analysis (Theory)	BPT102.1	Students should be able to explain concept and types of pharmaceutical Analysis along with methods of expressions, methods of preparations and standardisations of different Molar and Normal solutions.
		BPT102.2	Student should be able to explain concepts of Errors, Accuracy, Precision and sources of Impurities in Pharmaceutical Analysis. Also should be able to explain methods and purpose of limit tests.
		BPT102.3	Students should be able to explain theories of Acid Base Indicators, classify types of Acid Based titrations, interpret and identify neutralization curves and explain non-aqueous titrations.
		BPT102.4	Students should be able to explain techniques and applications of precipitation, complexometric, Gravimetric, Redox and Analytical techniques.
		BPT102.5	Students should be able to understand and explain Electrochemical Methods of Analysis like Conductometry, Potentiometry, and Polarography.
BPP108	Pharmaceutical Analysis (Practical)	BPP108.1	Student should be able to understand, explain and perform concepts of limit test.
		BPP108.2	Student should be able to understand and perform methods of preparations and standardisations of different solutions.
		BPP108.3	Students should be able to perform Assays of different chemicals.
		BPP108.4	Student should be able to understand and perform Electrochemical Analytical methods like Conductometry & Potentiometry.



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<b>BPT103</b>	<b>Pharmaceutics I (Theory)</b>	<b>BPT103.1</b>	After completion students should be able to understand the history of profession of pharmacy, basic of different dosage forms, way of handling prescription and calculate dose calculations.
		<b>BPT103.2</b>	To understand pharmaceutical calculations, classification of powders, liquid dosage forms.
		<b>BPT103.3</b>	After completion students should be able to understand preparation of monophasic liquid dosage forms, suspension and emulsions.
		<b>BPT103.4</b>	To understand formulation and evaluation of suppositories, basics of pharmaceutical incompatibilities.
		<b>BPT103.5</b>	The students should be able to prepare and evaluate semisolid dosage forms.
<b>BPP109</b>	<b>Pharmaceutics I (Practical)</b>	<b>BPP109.1</b>	After completion students should be able to Understand and Carry out the formulation of dosage forms like syrups,elixirs,linctuses,solutions,powders,Gargles and Mouthwashes.
		<b>BPP109.2</b>	To understand and Carry out the formulation and evaluation of dosage forms like suspensions, emulsions, suppositories and semisolids.
<b>BPT104</b>	<b>Pharma Inorganic Chemistry I (Theory)</b>	<b>BPT104.1</b>	Student shall be able to know the sources of impurities and methods to determine the impurities
		<b>BPT104.2</b>	Students shall well acquaint with principles and procedures of limit test of different impurities.
		<b>BPT104.3</b>	Student shall familiar with different classes of inorganic pharmaceuticals and their functions
		<b>BPT104.4</b>	Student shall understand medicinal and pharmaceutical importance of inorganic compounds.
		<b>BPT104.5</b>	Student shall be identify different anions, cations and know their role in physiologicalacid base balance and also familiar with uses of different inorganic compounds.
<b>BPP110</b>	<b>Pharma Inorganic Chemistry I (Practical)</b>	<b>BPP110.1</b>	Student should able to know principles of limit tests and perform limit test and detect impurities of various ions like chloride, sulfate, iron, lead and arsenic.
		<b>BPP110.2</b>	Student will able to identify various inorganic substances by performing various identification tests.
		<b>BPP110.3</b>	Students will be able to perform various tests for purity of inorganic substances.
		<b>BPP110.4</b>	Student will able to prepare inorganic pharmaceuticals by different preparation reactions.
		<b>BPP110.5</b>	Student will able to know advantages of inorganic substances as pharmaceuticals.
		<b>BPT105.1</b>	Upon completion students should understand the behavioral needs for a Pharmacist tofunction effectively in the areas of pharmaceutical operation through effective communication (Verbal and Non Verbal)



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BPT105	Communication Skill (Theory)	BPT105.2	After completion students should manage the team as a team player & Know the elements, styles and barriers of communication.
		BPT105.3	Upon completion student should Know the importance of good listening skills, and be a good listener.
		BPT105.4	After completion students should know the essentials of good writing skills and know the dos and don'ts of formal written communication.
		BPT105.5	Upon Completion student should develop interview skills, Leadership qualities and essentials of group discussions.
BPP111	Communication Skill (Practical)	BPP111.1	To become a good communicator in real life situations, and have a command over ones languages through forming grammatically correct sentences and perfect pronunciations.
		BPP111.2	To have good and effective writing skills, know the proper communication etiquettes and excellent presentation skills.
BPRBT106	Remedial Biology (Theory)	BPRBT106.1	Upon completion of subject students will be able to know the classification and salient features of five kingdoms of life.
		BPRBT106.2	Upon completion of subject students will be able to understand the basic components of anatomy & physiology of plant.
		BPRBT106.3	Upon completion of subject students will be able to know understand the basic components of anatomy & physiology of animal with special reference to human.
BPRBP112	Remedial Biology (Practical)	BPMTP112.1	Upon completion of subject students will be able to understand microscopic study and identification of tissues of plant, cell and its inclusions, detailed study of frog by using computer models.
		BPMTP112.2	Upon completion students will be able to identify different types of bones and determine different haematological and cardiovascular parameters.
BPRMT106	Remedial Math (Theory)	BPRMT106.1	Student should understand the theory and applications of partial fraction, logarithms, function, limits and continuity in pharmacy.
		BPRMT106.2	Student should be able to solve the problems related to matrices and determinants.
		BPRMT106.3	Student should be able to solve the problems related to derivative and it's functions.
		BPRMT106.4	Student should be able to apply concepts of analytical geometry.
		BPRMT106.5	Student should be able to solve the problems related to differential equations and laplace transform.
<b>B.Pharm I Year</b>			
<b>Semester II</b>			
Course Code	Course Name	Course Outcome No.	Course Outcome Description (as per New Syllabus introduced from Session 2019-20)
		BPT201.1	After completion students should be able to understand the gross morphology of endocrine, digestive, nervous, respiratory, urinary and reproductive system.



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<b>BPT201</b>	<b>Human Anatomy &amp; Physiology II (Theory)</b>	<b>BPT201.2</b>	<b>Upon completion students should understand physiology of endocrine, nervous, digestive, respiratory, urinary and reproductive system.</b>
		<b>BPT201.3</b>	<b>Upon completion students should be able to explain basics of Energetics.</b>



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BPT204	Pathophysiology (Theory)	BPT204.1	Upon completion of subject students will be able to explain mechanisms involved in the process of inflammation and infectious diseases.
		BPT204.2	Upon completion of subject students will be able to explain basic principal of cell injury and adaptation.
		BPT204.3	Upon the completion of subject students will be able to explain pathophysiology of diseases of cardiovascular, respiratory, renal, endocrine, nervous and gastrointestinal system.
		BPT204.4	Upon the completion of subject students will be able to explain principal of cancer, pathophysiology of hematological diseases, sexually transmitted diseases and diseases of bones and joints, Inflammatory bowel diseases, jaundice and liver disease.
BPT205	Computer Application in Pharmacy (Theory)	BPT205.1	To know the number systems, its conversion, calculations and the concept of the information systems and software's used in different field and its processes.
		BPT205.2	To know the various types of application of computers in pharmacy
		BPT205.3	To understand the various web technologies and the different databases and various applications of databases in pharmacy.
		BPT205.4	To know the Bioinformatics Databases, Concept and Impact of Bioinformatics in Vaccine Discovery and know the Computers as data analysis in Preclinical development like CDS, LIMS, TIMS etc.
BPP210	Computer Application in Pharmacy (Practical)	BPP210.1	To Design questionnaires, invoice tables, drug information storage and its retrieval and its side effects. using word process
		BPP210.2	To Create a personal HTML webpage, create invoice tables, Generate reports from patients database, and Exporting Tables, Queries, Forms and Reports to web pages and to XML pages.
BPT206	Environmental Studies (Theory)	BPT206.1	After completion students should be able to understand our environment, renewable and non-renewable natural resources and the multidisciplinary nature of studies.
		BPT206.2	The students should be able to know, understand and explain about the natural resources like forest, water, minerals, food, energy and land, the problems associated with them and role of an individual in their conservation.
		BPT206.3	The students should be able to understand and explain the concept of an ecosystem, different types of ecosystems like forest, grassland, desert and aquatic, their structure, functions and characteristics.
		BPT206.4	The students should be able to know, understand and explain about various environmental pollutions like soil, water and air and preventive measures for them.
<b>B.Pharm II Year</b>			
<b>Semester III</b>			
Course Code	Course Name	Course Outcome No.	Course Outcome Description (as per New Syllabus introduced from Session 2019-20)



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		<b>BPT201.4</b>	Upon completion students should be able to explain basics of genetics.
<b>BPP207</b>	Human Anatomy & Physiology II (Practical)	BPP207.1	Upon the completion students should be able to determine vital capacity, tidal volume, body temperature and basal mass index.
		BPP207.2	Upon the completion students should be able to demonstrate general neurological examinations and feedback mechanisms
<b>BPT202</b>	Pharmaceutical Organic Chemistry I (Theory)	BPT202.1	understand the nomenclature, classification and isomerism.
		BPT202.2	write the methods of preparation of alkane, alkene, dienes, alkyl halides, alcohol, carbonyl compounds, carboxylic acids and aliphatic amines
		BPT202.3	Will be able to explain the reactions, name the reactions orientation and reactivity shown by alkane, alkene, dienes, alkyl halides, alcohol, carbonyl compounds, carboxylic acids and aliphatic amines.
		BPT202.4	write the structure and uses of important reagents from the following categories of organic compounds like alkane, alkene, dienes, alkyl halides, alcohol, carbonyl compounds, carboxylic acids and aliphatic amines
		BPT202.5	will be able to understand qualitative tests for alcohol and amines
<b>BPP208</b>	Pharmaceutical Organic Chemistry I (Practical)	BPP208.1	perform systematic qualitative analysis of unknown organic compounds
		BPP208.2	Will be able to prepare the solid derivatives from organic compounds
		BPP208.3	Do the construction of molecular models.
<b>BPT203</b>	Biochemistry II (Theory)	BPT203.1	Students should be able to understand chemical nature and biological roles of Biomolecules and concepts of Bioenergetics.
		BPT203.2	Students should be able to understand and explain Carbohydrate Metabolism and Biological Oxidation.
		BPT203.3	Students should be able to understand and explain Lipid Metabolism and Amino Acid Metabolism.
		BPT203.4	Students should be able to understand and explain Concepts of Nucleic Acid Metabolism and Genetics Information Transfer.
		BPT203.5	Students should be able to understand and explain Concepts of Enzymes.
<b>BPP209</b>	Biochemistry II (Practical)	BPP209.1	Students should be able to understand and perform Qualitative Analysis of Carbohydrates, Identifications of proteins and Quantitative analysis of reducing sugars and proteins.
		BPP209.2	Students should be able to understand and perform Qualitative analysis of abnormal urine constituents and determination of blood components like creatinine, sugar, cholesterol etc.
		BPP209.3	Students should be able to understand and perform preparation of buffer solution, enzymatic hydrolysis of starch.
		BPP209.4	Students should be able to understand and perform study of salivary amylase activity.



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<b>BPT301</b>	Pharma. Organic Chemistry II (Theory)	<b>BPT301.1</b>	write the structures ,names and types of isomerism of benzene ,phenols ,aromatic amines ,aromatic acids ,fats and oils polynuclear hydrocarbons and cycloalkanes
		<b>BPT301.2</b>	write the methods of preparation of benzene ,phenols ,aromatic amines ,aromatic acids ,fats and oils polynuclear hydrocarbons and cycloalkanes
		<b>BPT301.3</b>	Will be able to explain reactivity ,orientation and theories regarding stability of thereactions shown by benzene ,phenols ,aromatic amines ,aromatic acids ,fats and oils poly nuclear hydrocarbons and cycloalkanes.
		<b>BPT301.4</b>	write the structure and uses of DDT,Saccharine ,BHC,Chloramine ,phenols,cresols,resorcinol,naphthols,aryl diazonium salts ,diphenylmethane, triphenylmethane.
		<b>BPT301.5</b>	will be able to understand analytical tests for phenols and fats and oils
<b>BPP305</b>	Pharma. Organic Chemistry II (Theory)	<b>BPP305.1</b>	do the experiments on recrystallization and steam distillation
		<b>BPP305.2</b>	determine the oil values and perform standardization of reagents
		<b>BPP305.3</b>	Will be able to do the synthesis of various organic compounds
<b>BPT302</b>	Physical Pharmaceutics I (Theory)	<b>BPT302.1</b>	Upon completion of syllabusstudents will be able toUnderstand various physicochemical properties of drug molecule, able to identify state and all basic phenomenon related to drug.
		<b>BPT302.2</b>	Upon completion of syllabus students will be able to Apply their knowledge related to basics of drug by simple methods and demonstration.
		<b>BPT302.3</b>	Upon completion of syllabusstudents will be able to Understand different principles and laws related to basic characteristics of drugs.
		<b>BPT302.4</b>	Upon completion of syllabus students will be able to Understand different phenomenon's and structure and nature of drugs.
		<b>BPT302.5</b>	Upon completion of syllabus students will be able to Get better insight in to various areas of formulations, research and development.
<b>BPP306</b>	Physical Pharmaceutics I (Practical)	<b>BPP306.1</b>	Upon completion of syllabus students will be able to demonstrate the concept of Ph, Pka, solubility density, viscosity, etc
		<b>BPP306.2</b>	Upon completion of syllabus students will be able to demonstrate miscible, partially miscible liquid and all practical aspect regarding solubility of liquid.
		<b>BPP306.3</b>	Upon completion of syllabus students will be able to demonstrate different equations regarding Ph, Pka and solubility.
		<b>BPP306.4</b>	Upon completion of syllabus students will be able to demonstrate CMC of various surfactants.
		<b>BPT303.1</b>	Explain classification, identification, nutritional requirement, isolation and preservation methods for pure culture of bacteria including quantitative measurement of bacterial growth. Summarize various types of microscope.
		<b>BPT303.2</b>	Explain methods, evaluation, equipment required and testing of pharmaceutical products for sterilization.



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BPT303	Pharmaceutical Microbiology (Theory)	BPT303.3	Understand morphology, classification, reproduction/replication and cultivation of fungi and virus.
		BPT303.4	Explain classification, mode of action, factors influencing and evaluation of Disinfection.
		BPT303.5	Understand laminar flow equipment, sources, methods and classification of aseptic area including general aspects related environment cleanliness. Explain principles and methods of various microbiological assays also Assessment and testing of new antibiotics.
		BPT303.6	To Know types, factors, sources and assessment of microbial contamination and spoilage. Preservation and evaluation of formulation containing antimicrobial agents. To study growth and procedure for cell culture and its applications.
BPP307	Pharmaceutical Microbiology (Practical)	BPP307.1	Study and describe equipment's, sterilization of glassware, preparation and Culture media, sub culturing, nutrient stabs and slants, multiple streak plate and other techniques also microbiological assay.
		BPP307.2	Identify the bacterial morphology using staining techniques and acquire knowledge on the principles of biochemical tests.
BPT304	Pharmaceutical Engineering (Theory)	BPT304.1	Understand importance of various unit operations used in pharmaceutical industries, importance of size reduction, powder size and size separation, principle, construction and working of equipment's used in size reduction and size separations.
		BPT304.2	Understand the various processes involved in pharmaceutical manufacturing processes like evaporation, distillation and drying
		BPT304.3	Develop knowledge of unit operations, mixing, mass transfer and flow of fluids and theories as well as basic mechanisms; understand principle, construction and working of equipments used in mixing, mass transfer and flow of fluids.
		BPT304.4	Comprehend significance of various equipments used in manufacturing processes like filtration and centrifugation
		BPT304.5	Appreciate the various preventive methods used for corrosion control in pharmaceutical Industries. Also factors affecting material selection.
BPP308	Pharmaceutical Engineering (Practical)	BPP308.1	Build up skill and ability to analyze; particle size distribution, effect of filter aid on filtration rate.
		BPP308.2	Determination of radiation constant of brass, iron, unpainted and painted glass, heat transfer coefficient, moisture content and loss on drying, humidity of air.
		BPP308.3	Demonstration of various mills.
		BPP308.4	Construction of drying curves.
B.Pharm II Year			
Semester IV			
Course Code	Course Name	Course Outcome No.	Course Outcome Description (as per New Syllabus introduced from Session 2019-20)



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BPT401	Pharma. Organic Chemistry III (Theory)	BPT401.1	write the stereo chemical aspects of organic compounds and write stereon chemical reactions including optical and geometric isomerism
		BPT401.2	write the structures ,names and classifications of heterocyclic compounds
		BPT401.3	Will be able to explain reactivity ,orientation and theories regarding stability of the reactions shown by heterocyclic compounds
		BPT401.4	write the methods of preparation of of heterocyclic compounds
		BPT401.5	understand the and uses of heterocyclic compounds
		BPT401.6	will be able to understand reactions of synthetic importance
BPT402	Medicinal Chemistry I (Theory)	BPT402.1	Students should be able to explain the effects of physicochemical properties on drug actions
		BPT402.2	Students should be able to explain the process of metabolism, influence of metabolic profile of drug and their impact on biological system.
		BPT402.3	Students Should be able to explain synthetic procedure for selective compounds of different categories.
		BPT402.4	Students should be able to classify different categories of agents based on their chemical natures.
		BPT402.5	Students should be able to explain Physicochemical properties, SAR, Metabolism and Mechanism of Action of Adrenergic, Cholinergic, and CNS agents.
BPP406	Medicinal Chemistry I (Practical)	BPP406.1	Students should be able to understand and explain methods of synthesis for intermediates and drugs.
		BPP406.2	Students should be able to explain physicochemical characterisation and recrystallization methods for intermediates and drugs.
		BPP406.3	Students should be able to understand and perform the principle and procedure of quantitative determination of drugs in different dosage forms.
		BPP406.4	Students should be able to understand the principle and procedure of determination of partition co-efficient of drugs.
BPT403	Physical Pharmaceutics II (Theory)	BPT403.1	Upon completion of syllabus students will be able to deal with the concept of various physical, physicochemical properties and principal involved in dosage form formulation.
		BPT403.2	Upon completion of syllabus students will be able to get better insight in to various areas of formulation research and development.
		BPT403.3	Upon completion of syllabus students will be able to demonstrate use of formulation of various dosage form.
		BPT403.4	Upon completion of syllabus students will be able to describe the fundamental and derived properties of various dosage form.
		BPT403.5	Upon completion of syllabus students will be able to understand stability and shelflife, calculate expiry of various dosage form.
		BPP407.1	Upon completion of syllabus students will be able to demonstrate concept of particle, size, and its use in formulation of various dosage form.



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BPP407	Physical Pharmaceutics II (Practical)	BPP407.2	Upon completion of syllabus students will be able to demonstrate microscopic and micromeritic characteristic of dosage form.
		BPP407.3	Upon completion of syllabus students will be able to demonstrate stability testing of various dosage form.
		BPP407.4	Upon completion of syllabus students will be able to demonstrate HLB value, order of reaction and Handal various equipment like Brookfield viscometer, stability chamber etc.
BPT404	Pharmacology I (Theory)	BPT404.1	Upon completion students will be able to Describe the scope of pharmacology and signify routes of drug administration.
		BPT404.2	Upon completion students will be able to Explain the Principles of absorption, distribution, metabolism and excretion of a drug, enzyme induction, enzyme inhibition and kinetics of elimination and the relationship between drug and its receptors, mechanism of action, therapeutic effect, drug interaction and adverse drugreaction.
		BPT404.3	Upon completion students will be able to explain Drug discovery and clinical evaluation of new drugs, preclinical evaluation phase, phases of clinical trials and pharmacovigilance.
		BPT404.4	Upon completion students will be able to Understand organization and function of ANS Parasympathomimetics, parasympatholytics, Sympathomimetics, sympatholytics, Neuromuscular blocking agents and skeletal muscle relaxants, Local anesthetic agents and Drugs used in myasthenia gravis and glaucoma.
		BPT404.5	Upon completion students will be able to explain Neurohumoral transmission in the C.N.S. and various neurotransmitters like with GABA, Glutamate, Glycine, serotonin, dopamine, Pharmacology of anesthetics, Sedatives, hypnotics and centrallyacting muscle relaxants, Anti-epileptics, Alcohols and disulfiram
		BPT404.6	Upon completion students will be able to explain Psychopharmacological knowledge in prevention and treatment of various diseases like antipsychotic, antidepressant, anti-anxiety, anti-manics and hallucinogens, drugs used in Parkinsons and Alzheimer's disease, CNS stimulants and nootropics, Opioid analgesics and antagonists, drug addiction, drug abuse, tolerance and dependence.
BPP408	Pharmacology I (Practical)	BPP408.1	Introduction to experimental pharmacological instruments, laboratory animals as per CPCSEA guidelines. Demonstration of different routes of drug administration in rats and mice and techniques of blood withdrawal, serum and plasma separation, anesthetics and euthanasia used for animal studies
		BPP408.2	Demonstration of stereotype and anti-catatonic activity, anxiolytic activity of drugs using rats/mice, local anesthetics by different methods and effect of hepatic microsomal enzyme inducers on the phenobarbitone sleeping time in mice.
		BPP408.3	Demonstration of Effect of drugs on ciliary motility of frog oesophagus, rabbit eye, skeletal muscle relaxants using rota-rod apparatus, locomotor activity using actophotometer, Anticonvulsant effect by MES and PTZ method.

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BPT405	Pharmacognosy & Phytochemistry-I (Theory)	BPT405.1	My student should understand definition, history, development and scope of pharmacognosy along with the sources, classification and quality control of drugs obtained from natural sources.
		BPT405.2	My student should be able to explain cultivation, collection, processing and storage of crude drugs along with methods of improving crop variety and the conservation of medicinal plants.
		BPT405.3	My student should understand different aspects of plant tissue culture along with application of plant tissue culture in pharmacognosy.
		BPT405.4	My student should be able to describe role of pharmacognosy in allopathic as well as traditional systems of medicine and able to explain different aspects of secondary metabolites along with its classification and examples.
		BPT405.5	My student should know some of the specialized plant products like allergens, fibres, hallucinogens and teratogens, along with different aspects of primary metabolites, its classification and examples.
BPP409	Pharmacognosy & Phytochemistry-I (Practical)	BPP409.1	My student should be able to analyse and identify unorganised crude drugs of natural origin by means of chemical tests.
		BPP409.2	My student should be able to determine different types of leaf constants.
		BPP409.3	My student should be able to evaluate quantitative microscopical characteristics of crude drugs.
		BPP409.4	My student should be able to determine different physical constants of crude drugs.
		BPP409.5	My student should be able to evaluate crude drugs by official methods.
<b>B.Pharm III Year</b>			
<b>Semester V</b>			
Course Code	Course Name	Course Outcome No.	Course Outcome Description (as per New Syllabus introduced from Session 2019-20)
BPT501	Medicinal Chemistry II (Theory)	BPT501.1	Students should be able to understand and explain Development, Classification, Mechanism of Action, Uses and SAR of Anti-histaminic, Proton Pump Inhibitors, Anti-neoplastic agents and anti metabolites.
		BPT501.2	Students should be able to understand and explain Development, Classification, Mechanism of Action, Uses and SAR of Anti-Anginals, Diuretics and Anti-hypertensive.
		BPT501.3	Students should be able to understand and explain Development, Classification, Mechanism of Action, Uses and SAR of Anti-Arrhythmic, Anti-hyper lipidemics, Co-agulants and Anti-coagulants, Drugs used in CHF.
		BPT501.4	Students should be able to understand and explain Development, Classification, Mechanism of Action, Uses and SAR of Drugs Acting on Endocrine System.
		BPT501.5	Students should be able to understand and explain Development, Classification, Mechanism of Action, Uses and SAR of Anti-diabetics and local anaesthetics.

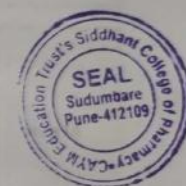


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<b>BPT502</b>	<b>Industrial Pharmacy I (Theory)</b>	<b>BPT502.1</b>	Explain and demonstrate various preformulation parameters including Physical and Chemical properties of drug substance required for formulation
		<b>BPT502.2</b>	Describe classification, formulation, processing problems, Equipment, required for tablets and tablet coating and their evaluation
		<b>BPT502.3</b>	Explain formulation, manufacturing considerations, Filling, packaging, and evaluation of syrups, elixiers, suspensions, emulsions
		<b>BPT502.4</b>	Explain and summarize, formulation, Filling, packaging, storage and Evaluation of hard and Soft capsules
		<b>BPT502.5</b>	Understand and describe types, formulation, filling, sealing, evaluation of various types of parenterals and Ophthalmic dosage forms
		<b>BPT502.6</b>	Understand formulation of various types of cosmetic preparations
		<b>BPT502.7</b>	Explain and understand formulation, containers, evaluation, stability study, and Quality control of aerosols
		<b>BPT502.8</b>	Understand materials for containers, study of factors, legal and official requirements, stability aspects and quality control of packaging material
<b>BPP506</b>	<b>Industrial Pharmacy I (Practical)</b>	<b>BPP506.1</b>	To carry out preformulation study various drugs
			To prepare and evaluate Paracetamol/ Aspirin tablet/ Tetracycline capsules/Calcium Gluconate injection/ Ascorbic acid injection
			To formulate and evaluate Eye drop/ Eye ointment
			To formulate cold cream/ vanishing cream
			To carry out evaluation of glass containers
	To evaluate marketed tablets / capsules		
<b>BPT503</b>	<b>Pharmacology II (Theory)</b>	<b>BPT503.1</b>	Classification of drugs along with their mechanism of action, receptor, adverse effect, drug interaction, contraindication and therapeutic uses for the treatment of cardiovascular diseases and haemopoietic system/disorders.
		<b>BPT503.2</b>	Classification of drugs along with their mechanism of action, receptor, adverse effect, drug interaction, contraindication and therapeutic uses of drugs acting on renalsystem.
		<b>BPT503.3</b>	Classification of drugs along with their mechanism of action, receptor, adverse effect, drug interaction, contraindication and therapeutic uses of hormones/drugs acting on endocrine system/disorders.
		<b>BPT503.4</b>	Classification of drugs along with their mechanism of action, receptor, adverse effect, drug interaction, contraindication and therapeutic uses of autacoids, its analogue and blockers.
		<b>BPT503.5</b>	Definition of bioassay, its principle, applications, types and standard bioassay methods for some pharmacological agents
<b>BPP507</b>		<b>BPP507.1</b>	Describe the composition of physiological salt solutions used in experimental pharmacology.



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		BPP507.3	Understand performance of isolated experiments using various isolated preparation and the effect of different drugs on the concentration response curves.
		BPP507.4	Study the preclinical screening of various drugs.
BPT504	Pharmacognosy & Phytochemistry II (Theory)	BPT504.1	My student should understand basics of metabolic pathways and formation of Secondary metabolites through those pathways.
		BPT504.2	My student should be able to describe different aspects of secondary metabolites along with pharmacognostic details of crude drugs from which they obtained.
		BPT504.3	My student should be able to explain isolation, identification and analysis of secondary metabolites obtained from crude drugs.
		BPT504.4	My student should understand industrial production, estimation and utilization of phytoconstituents.
		BPT504.5	My student should know modern methods for extraction of crude drugs along with latest techniques for its isolation, purification and identification.
BPP508	Pharmacognosy & Phytochemistry II (Practical)	BPP508.1	My student should be able to examine morphological, histological and powder characteristics of organized crude drugs.
		BPP508.2	My student should be able to carry out extraction, isolation and detection of active constituents from crude drugs.
		BPP508.3	My student should be able to apply thin layer and paper chromatographic technique in separation and evaluation of phytoconstituents.
		BPP508.4	My student should be able to carry out distillation of volatile oil from crude drugs and its evaluation by thin layer chromatographic technique.
		BPP508.5	My student should be able to evaluate and identify unorganized crude drugs by chemical tests.
BPT505	Pharmaceutical Jurisprudence (Theory)	BPT505.1	To know and understand pharmaceutical legislations and their implications in development and marketing along with code of ethics during pharmaceutical practice.
		BPT505.2	To know and understand the rules and regulations framed and amendments made under drugs and cosmetics act 1940
		BPT505.3	To know and understand the rules and regulations framed and amendments made under pharmacy act 1948.
		BPT505.4	To know and understand the rules and regulations framed and amendments made under medicinal and toilet preparations (excise duties) act 1955, rules 1976, narcotic drugs and psychotropic substances act, and rules there under, drugs and magic remedies (objectionable advertisements) act 1954, prevention of cruelty to animals act 1960, drug price control order, medical termination of pregnancy act 1970 and rules 1975 and right to information act along with intellectual property rights (IPR)



**B.Pharm III Year**  
**Semester VI**

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Course Code	Course Name	Course Outcome No.	Course Outcome Description (as per New Syllabus introduced from Session 2019-20)
BPT601	Medicinal Chemistry-III (Theory)	BPT601.1	Students should be able to understand chemical aspects (Nomenclature, Stereochemistry, SAR, Classification etc.) and Biological Activities of $\beta$ -Lactams and Tetracyclins.
		BPT601.2	Students should be able to understand chemical aspects and Biological Activities of Different Macrolide, Miscellaneous Antibiotics and of different categories of drugs like Antimalarial, Quinolones, Biguanides along with the aspect of Pro-Drug Designing.
		BPT601.3	Students should be able to understand chemical aspects and Biological Activities of Anti T. B. and Anti-Viral Agents.
		BPT601.4	Students should be able to understand chemical aspects and Biological Activities of Anti Fungal, Anti-Protozoal, Anthelmintic and Sulphonamides.
		BPT601.5	Students should be able to understand different techniques of drug designing like QSAR, Docking and Combinatorial chemistry.
BPP607	Medicinal Chemistry-III (Practical)	BPP607.1	Students should be able to understand and perform synthesis of intermediates like Sulphonamides, Chlorobutanol, Tolbutamide etc.
		BPP607.2	Students should be able to understand and perform assay of drugs like, Isonicotinic acid hydrazide, Chloroquine, Metronidazole, Depsone, Chlorpheniramine Maleate, Benzyl Penicilline etc.
		BPP607.3	Students should be able to understand aspects of Microwave Irradiation Techniques.
		BPP607.4	Students should be able to understand how to draw structures and reactions using Chem Draw and to find out physicochemical Properties using Drug Designing Softwares.
BPT602	Pharmacology III (Theory)	BPT602.1	Classification, mechanism of action, therapeutic uses, adverse effects and contraindications of various agents used in the treatment of respiratory and gastrointestinal tract diseases.
		BPT602.2	Classification, mechanism of action, antimicrobial spectrum, resistance, therapeutic uses, adverse effects and contraindications of various antimicrobial agents used in the treatment of infectious diseases.
		BPT602.3	Knowledge of immunopharmacology, including Immunostimulants, immunosuppressants, their uses/applications
		BPT602.4	Definition, principle of toxicology, types of toxicity, clinical symptoms, general principles of treatment and management of poisoning by different chemicals.
		BPT602.5	Definition of rhythm and cycles, knowledge of biological and their significance treatment of various diseases
BPP608	Pharmacology III (Practical)	BPP608.1	Calculation of dose for pharmacological experiment
		BPP608.2	Study the preclinical screening of various drugs.
		BPP608.3	Determination of LD50; Toxicity testing by using different methods



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




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		BPP608.4	Calculation of pharmacokinetic parameters
		BPP608.5	Knowledge of Biostatistics methods used in experimental pharmacology
<b>BPT603</b>	Herbal Drug Technology (Theory)	BPT603.1	My student should understand basics of Indian systems of medicine, biodynamic agriculture of medicinal plants and different aspects of herbs as raw material for herbal medicine.
		BPT603.2	My student should be able to explain different aspects of nutraceuticals and health food and its utilization; along with herb-drug and herb-food interactions.
		BPT603.3	My student should be able to describe herbal cosmetics and its related aspects, herbal excipients and herbal formulations.
		BPT603.4	My student should understand guidelines for evaluation of herbal drugs as per international authorities like WHO and ICH along with intellectual property rights and regulatory issues with respect to herbal drugs.
		BPT603.5	My student should know general aspects related to herbal industry and institutions involved in work on medicinal plants along with GMP requirements under schedule-T for herbal industry involved in production of formulations belonging to Indian systems of medicine.
<b>BPP609</b>	Herbal Drug Technology (Practical)	BPP609.1	My student should be able to perform preliminary phytochemical screening of crude drugs.
		BPP609.2	My student should be able to determine alcohol content of asava and arista.
		BPP609.3	My student should be able to carry out evaluation of excipients of natural origin along with incorporation of prepared and standardized extracts in cosmetic formulations and their evaluation.
		BPP609.4	My student should be able to carry out monograph analysis of herbal drugs along with incorporation of prepared and standardized extracts in pharmaceutical formulations and their evaluation as per pharmacopoeial requirements.
		BPP609.5	My student should be able to determine physical constants like aldehyde content, phenol content, total alkaloids content etc. of crude drugs.
<b>BPT604</b>	Biopharmaceutics and P'cokinetics (Theory)	BPT604.1	Explain various mechanism, factors influencing drug absorption and Distribution, and protein binding of drugs
		BPT604.2	Discuss and understand basics of drug metabolizing pathways, factors affecting renal and non-renal excretion of drugs
		BPT604.3	Understand concept of bioavailability and bioequivalence of drug product and their significance
		BPT604.4	Explain use of plasma drug concentration-time data to calculate the p'cokinetic parameters to describe the kinetics of drug absorption, distribution, metabolism, Excretion, Elimination, significance, and study various models.



  
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**Academic Year 2018-19**

**B Pharmacy**

**Program Outcome**

**PO1: Pharmaceutical Knowledge:-** Students achieve a deep knowledge regarding human body, its related diseases, analytical skills, drug molecules (Active Pharmaceutical Ingredients) along with excipients, natural drug resources, chemistry involved in API including synthesis of commonly used drugs, effect of drug on human body, toxicity and impurity profile, ADME studies of drugs (behavior of drug in human body), dosage form studies including novel approaches, designing and development of formulation stability studies, analysis etc

**PO2: Research Analysis:** Develops knowledge in research field to make new relevant discoveries and to identify new entities.

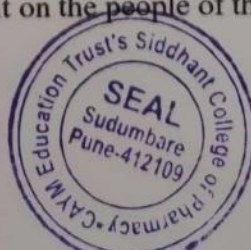
**PO3: Design & Development of dosage forms:** Describes preparation of various dosage forms that could be prepared by the pharmacy students in the pharmaceutical companies for the ease of patients and to optimize formulations.


**PO4: Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.

**PO5: Modern methods usage:** Create, select, and apply appropriate techniques, resources and modern methods with an understanding of the limitations and its usage. The student also learns to handle many instruments related to their studies which would help them work in a Pharmaceutical Industry, pharmacovigilance, regulatory requirements, legal processes etc.

**PO6: Pharmacy and society:** Pharmacist provide complete health care data and practices to the people of the society and guide them to be healthy. The student also learns drug distribution system, patient counseling, industrial laws etc. Students achieve expertise in storage and distribution of drugs with all precautions and in-depth knowledge of dose, adverse effect and other health related issues to deal with ambulatory and IPD patients in hospitals and also in public and achieve responsibility of computing profession and society.

**PO7: Environment and sustainability:** Locate the impact of the professional pharmacist in society and environment and make an impact of it on the people of the society.



  
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**PO8: Ethics:** Justify & apply ethical principle and commit to professional ethics and responsibilities and norms of the pharmacy practice. Student is also trained in ethical behavior with physician, nurses and other paramedical staff for protecting patient's health.

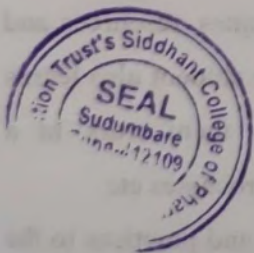
**PO9: Individual and team work:** Function effectively as an individual and as a member or leader in diverse teams acts as a multidisciplinary person in every context. Students will be able to demonstrate rigorous and independent thinking and encourage participatory decision making in teams.

**PO10: Communication:** Develops Communication effectively on pharmaceutical activities with the community and with society.

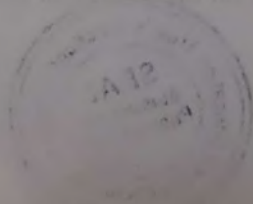
**PO11: Life-long learning:** Recognize the need and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change and implement those technology by gaining experience.

**PO12: Social Interaction:** Being a public welfare job, a pharmacist would be able to interact with the people in a better way to cure them and make them feel healthy also investigate and evaluate the general state of public health conditions and concerns and develop and apply appropriate programs of action within program content area

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### Program Specific Outcome

Some of the program specific outcomes are mentioned below:

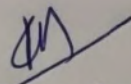
**PSO 1:** Prepared to implement the knowledge gained during the course of the program from pharmacology, pharmaceuticals, medicinal chemistry, pharmacognosy, APHE, communication skills, pharmaceutical analysis, biotechnology, biochemistry, cosmetology and environmental studies.

**PSO 2:** Develops knowledge of ethical and management principle required to work in a team as well as to lead a team.

**PSO 3:** Achieve multidisciplinary jobs in the pharmaceutical industries in various branches and would be able to write relevant and effective project reports in multidisciplinary environment in the context of changing technologies.

**PSO4** Prepares to communicate easily and effectively. Would be able to perform multitasks in multifields including pharmaceuticals & cosmetic in timebound manner. Research area would be the key element.



  
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