



P P SAVANI
UNIVERSITY
SCHOOL OF SCIENCES

STUDENT HANDBOOK
2020-21



P P SAVANI
UNIVERSITY
SCHOOL OF SCIENCES

ABOUT THE UNIVERSITY

P P Savani Education Trust was launched in 1987, initially with a school, which over the year expanded itself with a group of schools in Surat district with student strength of more than 45,000.

In 2016, the Trust has expanded its horizon with the launch of P P Savani University, as an initiative in higher education aligned with global standards of excellence. Through this immersive educational endeavor, the Governing body aims to introduce South Gujarat to a new era in higher education and create a talent pool of professionally sensitized industry-ready professionals. A world class 100 acre campus has been developed which embodies an infrastructure facilitating undergraduate, postgraduate, research, certificate and skill-development programmes.

Ph.D. Biotechnology/Microbiology/Chemistry
M.Sc. Biotechnology/Microbiology/Chemistry, PGDMLT
B.Sc. (Honours) Biotechnology/Microbiology/Chemistry/IT/Fire and Safety/IT
NH10, Near Biltech Company, Village: Dhamdod, Kosamba, Ta: Mangrol, Dist: Surat – 394125
Mo.No: 09879608000 · Email: info@ppsu.ac.in · Website: www.ppsu.ac.in



P P SAVANI
UNIVERSITY
SCHOOL OF SCIENCES

MESSAGE FROM THE DIRECTOR

School of Sciences, P P Savani University, Surat impart education and addressing the biotechnological, microbiological and environmental challenges that our society faces. Among our new and continuing education and outreach initiatives are the flourishing Bachelor of Science Degree in Biotechnology, Microbiology and Environmental Science, for which we are now beginning to continuing their education at leading graduate school programs. School of Sciences provides an excellent platform to achieve precisely this objective by imparting multidisciplinary education.

School of Sciences, P P Savani University, Surat is envisaged as an autonomous teaching-cum-research centre physically located in the University campus. Thus, all teaching and research facilities at School of Sciences, P P Savani University, Surat should be available to all the students of our University. In the near future it is envisioned that School of Sciences, P P Savani University, Surat will become a role model for other Universities to follow and in the process help elevate the standard of higher education and research across the country.

Mr. Vallabhbhai Savani
Director



MESSAGE FROM PROVOST

Science is the key to innovation and inventions. Science behind many tools and technologies, at times may be invisible, is having an impeccable impact on sustainability, quality of life, and healthy ecosystems.

School of Sciences, P P Savani University, Surat, India is one of the best universities in life sciences in India. Our students feel at home here and, with the help of excellent faculty members, become outstanding leaders on campus and organizations. The preparation our students receive not only makes them leaders in their chosen fields, but also in society.

However, the hope of entering this school of Sciences is not limited to Gujarat state, but is extended to many who are interested in life sciences. Of course, students along with delegates of different states are also welcome. The education and research system of the School of Sciences has a major feature. While there are only five courses including Biotechnology, Microbiology, Chemistry, Environmental Science, Information Technology, and Fire Safety which covers various biological aspects including technology and somehow covers life environmental science, in order to comprehensively explore cutting-edge life science. Although there are many young dynamic and experienced teachers on our staff related to this field, this school chooses to open these courses for a good reason. I am honored by the overwhelming support we receive from management. They are passionate about University mission, success and continued growth for the future.

Dr. Parag Sanghani
Provost



MESSAGE FROM THE PRINCIPAL

A country's vision is shaped and executed by its Education system which produces individuals capable of ushering the country in a new future. As such, the higher education plays an important role in Nation building through the various contributions in all fields of research and development. They pave the way for competing in the global competition.

We welcome you to the School of Sciences, PP Savani University. The School of Sciences was established in 2016 with a vision to provide quality education in the highly demanding areas of Biology, Chemistry, and Environment Science. The mission of School of Sciences was to hone the young minds in both Basic and Applied Sciences. The idea was to provide a cross-platform learning to students so as to encourage multidisciplinary research as science cannot be viewed in a single spectrum and a holistic approach leads to an overall understanding of Sciences.

PP Savani University provides a distinctive platform of learning in various disciplines of Sciences. Predominantly, the research oriented academic culture equips the student with theoretical as well as practical knowledge which extends to genetic engineering, microbiology, computational biology, chemistry and environmental sciences. The labs are equipped with modern tools thereby availing the students with the latest technology in their field.

School of Sciences, along with its traditional offerings has branched to B.Sc., M.Sc., and PhD programs in the domains of Biotechnology, Microbiology, Chemistry, Environmental Science and Fire Safety

Our Vision:

1. To raise scientific awareness, sensitization, socio ethical acceptance and adoption to the potentials and application of biology.
2. To ensure the holistic development of students.
3. To provide institutional, legal financial, and policy support to students.
4. To develop students in sync with the competing environment.

Concluding this message from the Head of School, I would like to state a quote which reflects the culture at School of Sciences, PP Savani University.

**“Education is the most powerful weapon which you can use to change the world.” —
Nelson Mandela**

Dr. Anish Kumar Sharma (Ph.D)
I/C Principal



PROGRAMMES OFFERED AT UNIVERSITY

- **M.Sc. Biotechnology**
- **M.Sc. Microbiology**
- **M.Sc. Chemistry**
- **M.Sc. Computer Science**
- **M.Sc. Integrated (Biotechnology, Microbiology)**
- **PGDMLT**
- **B.Sc. (H.) Biotechnology**
- **B.Sc. (H.) Microbiology**
- **B.Sc. (H.) Environment Science**
- **B.Sc. (H.) Chemistry**
- **B.Sc. (H.) Fire and Safety**
- **B.Sc. (H.) IT**
- **Bachelor of Physiotherapy**
- **Bachelor of Interior Design**
- **Bachelor of Architecture**
- **Bachelor of Nursing**
- **Bachelor of Engineering (Mechanical, IT, Computer, Textile, Civil, Chemical)**
- **Bachelor of Commerce**
- **Bachelor of Business Administration**
- **Bachelor of Arts**

Ph.D. Biotechnology/Microbiology/Chemistry

M.Sc. Biotechnology/Microbiology/Chemistry, PGDMLT

B.Sc. (Honours) Biotechnology/Microbiology/Chemistry/IT/Fire and Safety/IT

NH10, Near Biltech Company, Village: Dhamdod, Kosamba, Ta: Mangrol, Dist: Surat – 394125

Mo.No: 09879608000 · Email: info@ppsua.ac.in · Website: www.ppsua.ac.in



FACULTY PROFILES

Anish Kumar Sharma (Ph.D.) is working as the I/C Principal, School of Sciences at P P Savani University. Dr. Sharma has pursued his Ph.D. in major subject of Molecular Biology and Biotechnology with minor subject Microbiology and have qualified GATE Biotechnology in 2011 with (AIR-151 and 99.01 percentile), ICAR-(ARS-NET) in 2013 (67%), CSIR-NET examination in 2013 with AIR-33 and ICAR (ARS-NET) again in



2018 (60%). He has published research papers in National as well as International journals. He submitted 10 nucleotide DNA sequence in NCBI. He has membership of various reputed International and National Science Societies. He has attended as well as participated in many National & International conferences, workshops, trainings and Faculty Development Programs. He won Best Poster award at International Symposium on Emerging Biological Trends in 21st Century held at P P Savani University (Surat, Gujarat) co-sponsored by GSBTM & he got 2nd Prize in Oral Presentation at 2nd International Conference-Food Security, Nutrition and Sustainable Agriculture-Emerging Technologies held on 14th -16th February, 2019, organized jointly by Baba Farid College (Bathinda, Punjab) & Indian Institute of Food Processing Technology (IIFPT) sponsored by Ministry of Food Processing Industries (MOFPI) (GOI) and Society of Pharmacognosy & Phytochemistry. He has been working as a resource person at GSBTM Sponsored PGBTCBC Crash Workshop for PG Students, Research Scholars and Academicians on CSIR-UGC-NET/JRF organized by Shree M. & N. Virani Science College, Rajkot since 2019.

His area of interest lies in Plant Biotechnology, Microbial Molecular Biology and Environmental Biotechnology. Besides academic and research activities, Dr. Sharma is an active sportsperson and he loves to play cricket, table tennis, chess, and volleyball.

Ph.D. Biotechnology/Microbiology/Chemistry

M.Sc. Biotechnology/Microbiology/Chemistry, PGDMLT

B.Sc. (Honours) Biotechnology/Microbiology/Chemistry/IT/Fire and Safety/IT

NH10, Near Biltech Company, Village: Dhamdod, Kosamba, Ta: Mangrol, Dist: Surat – 394125

Mo.No: 09879608000 · Email: info@ppsua.ac.in · Website: www.ppsua.ac.in



Dr. Vishal Singh Negi (Ph.D.) is an Assistant Professor in the Department of Biotechnology / Microbiology, School of Sciences at the P P Savani University. He is a Ford Fellow from the United States of America. He received his Ph.D. in Molecular Biosciences and Bioengineering from the University of Hawaii, USA. After his Ph.D., Dr. Negi worked as a postdoctoral researcher in one of the leading mesothelioma research laboratories in the world (UH Cancer Center, USA). Before joining PPSU, Dr. Negi was working on epigenomics and centromere biochemistry at UH Manoa, USA. He has published his research in several high-impact factor international journals and presented his work in several international conferences as well. Dr. Negi has mentored several undergraduate and postgraduate students and has been actively serving as a reviewer in several international journals. His research interest lies in epigenomics, microbiome, biochemistry, and bioinformatics. Besides academic and research activities, Dr. Negi enjoys playing badminton, table tennis, and volleyball.



Dr. Hiren K. Patel (Ph.D.) presently working as an assistant Professor, School of Sciences, P.P. Savani University and recipient of Gold Medal for "Best Innovative Research" holds a Ph.D. by Honorable Chancellor of Gujarat, Agricultural Minister of Gujarat & Deputy Director of ICAR, New Delhi and is a twice NET qualified scholar. He has selected as "Top 05 Young Scientist" by prestigious committee "The Gujarat Association for Agricultural Sciences". He is honored with "Best Ph.D. Research-2016" by All India of Human Rights, Liberties & social Justice.



Dr. Patel has also appointed as referee for European Molecular Biology Laboratory (EMBL) International Ph.D. Programme. Dr. Patel, an academician and researcher has guided several UG, PG and M. Phil Biotechnology students and have published several research papers in National and International reputed journals. His area of interest is in Plant/Agricultural Molecular Biology



P P SAVANI
UNIVERSITY
SCHOOL OF SCIENCES

biotechnology, Microbial Biotechnology, Environmental Biotechnology, Bioaugmentation and Enzyme Technology.

Dr. Archana Negi (Ph.D.) is an Assistant Professor in the Department of Biotechnology / Microbiology, School of Sciences at the P P Savani University. She obtained her Ph.D. in Molecular Biosciences and Bioengineering from the University of Hawaii, USA. Dr. Negi has worked in academics as well as in industry. She has worked in premier research institutions such as International Center for Genetic Engineering and Biotechnology, New Delhi, and



MBBE UH Manoa, USA. She has published several research articles in national and international journals and presented her research findings in several international conferences. Dr. Negi has served as a reviewer in several international journals and has also mentored several undergraduate and postgraduate students. She has also conducted several clinical research studies for leading pharmaceutical companies such as Pfizer, Novo Nordisk, Eli Lilly & Company, Sanofi, and Novartis. Besides research, she has also taught UG and PG students in national and international institutions. Her research interest lies in plant tissue culture and transformation, plant microbiome, molecular biology, and biochemistry.

Dr. Sangha Bijekar (PhD) is an Assistant Professor in the Biotechnology Department of the School of Sciences of P. P. Savani University. She has done her M.Sc. (Biotechnology) from Dr. D.Y.Patil University, Pune. She has received her Ph.D. in Molecular Biology from Bangalore University, Bangalore. Her doctoral research was on medicinal plants.



Dr Sangha, an academician and researcher has mentored several UG and PG's dissertation projects. She has published her research and reviews in many National and International Journals. She also used to be an active blogger. She has witnessed many National, International conferences and workshops. Her areas of interests in teaching and research are in Molecular Biology, Biochemistry and Genetic Engineering. She manages to find time to pursue her other

Ph.D. Biotechnology/Microbiology/Chemistry

M.Sc. Biotechnology/Microbiology/Chemistry, PGDMLT

B.Sc. (Honours) Biotechnology/Microbiology/Chemistry/IT/Fire and Safety/IT

NH10, Near Biltech Company, Village: Dhamdod, Kosamba, Ta: Mangrol, Dist: Surat - 394125

Mo.No: 09879608000 · Email: info@ppsua.ac.in · Website: www.ppsua.ac.in



P P SAVANI
UNIVERSITY
SCHOOL OF SCIENCES

interests as well. She is an accomplished Kathak and Bharatnatyam dancer and actively participates in cultural and social activities.

Dr. Aditee Pandya (Ph.D) is an Assistant Professor in the Microbiology, Department of the School of Sciences of P P Savani University. She has pursued her Doctoral in Microbiology from Maharaja KrishnaKumarsinhji Bhavnagar University. Dr. Aditee, Mycologist, Researcher, Reviewer and Editorial member of several National and International journal and also published many International and National Papers and Books, has organized many National conferences and workshops and have guided many UG and PG students in Dissertation, won first prize at National level Oral Presentation. Has served as Resource Person for preparation of JNU competitive exams sponsored by GSBTM and KCG SANDHAN. Her area of expertise lies in Environmental Microbiology, Food & Water Microbiology, Microbial Diversity, Industrial Microbiology, Medical Microbiology, Bioremediation and Xenobiotics.



Dr. Aparna Singh (PhD) is currently working as Assistant Professor at Department of Microbiology, School of Sciences, P.P. Savani University, Kosamba, Surat, India. She has pursued her graduation (Botany-Zoology-Chemistry group), post-graduation (Microbiology) and Ph.D (Microbiology) from The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat, India. She has worked as post doctoral fellow for two years at Central University of Hyderabad, Hyderabad, Telangana, India. During the tenure of post doctoral research she was awarded with many prestigious fellowships including DBT-CREEB, IISC-DBT-RA and UGC-D. S. Kothari post doctoral fellowships. Dr. Aparna Singh was working as DST Women Scientist-A till 2018 at Department of Microbiology, The Maharaja Sayajirao University of Baroda, Vadodara.



She has cleared CSIR NET (all India rank 11), GSET, ICAR NET, CCC and GATE. She holds good experience in research and academics as revealed by number of publications and awards

Ph.D. Biotechnology/Microbiology/Chemistry

M.Sc. Biotechnology/Microbiology/Chemistry, PGDMLT

B.Sc. (Honours) Biotechnology/Microbiology/Chemistry/IT/Fire and Safety/IT

NH10, Near Biltech Company, Village: Dhamdod, Kosamba, Ta: Mangrol, Dist: Surat - 394125

Mo.No: 09879608000 · Email: info@ppsua.ac.in · Website: www.ppsua.ac.in



P P SAVANI
UNIVERSITY
SCHOOL OF SCIENCES

as well as seminars/conferences and workshops attended. Currently she has 9 publications including book chapters, reviews and original research articles all in peer-reviewed international journals. Her current h-Index is 8 and i10-Index is 7 with total 218 citations. She has been working as resource person at GSBTM Sponsored PGBTCBC Crash Workshop for PG Students, Research Scholars and Academicians on CSIR-UGC-NET/JRF organized by Shree M. & N. Virani Science College, Rajkot since 2018.

Her research interest is in halophilic archaea and quorum quenching marine bacteria.

Dr. Bharat Solanki (PhD) is an Assistant Professor in the Biotechnology Department of the School of Sciences of P P Savani University. He has pursued Doctorate in Biochemistry from Saurashtra University, Rajkot in the field of Nano-Biotechnology and he has qualified ICAR-NET. He has published several research paper in peer-reviewed journals of National and International repute.



He is recipient of the Summer Research Fellowship Programme by Science Academies of India. He has attended several National and International Conferences, Workshops and Trainings. He has gained professional experiences in the field of Biochemistry by working at prestigious Institute like IISc, IIT- Delhi, University of Delhi, and University of Kashmir etc. He has also acted as resource person for the preparation of JNU and other M.Sc. level competitive entrance examination in the subject of Biotechnology sponsored by GSBTM. His area of Interest lies in Protein Engineering, Enzyme Technology, Nano-biotechnology and bioactive natural Products.

Dr. Sadafara Pillai (PhD) is an Assistant Professor at the Department of Chemistry, School of Sciences, at the P. P. Savani University. She has done her Ph.D. in the major subject of Chemistry (specialization in Physical Chemistry) from Veer Narmad South Gujarat University, Surat. She is a university topper in her post-graduation (PG) course and recipient of prestigious UGC fellowships; Maulana Azad National fellowship (for pursuing Ph.D.)



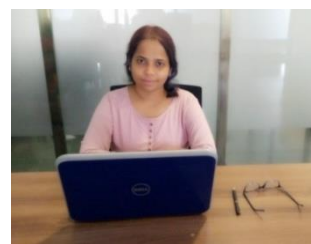
Ph.D. Biotechnology/Microbiology/Chemistry
M.Sc. Biotechnology/Microbiology/Chemistry, PGDMLT
B.Sc. (Honours) Biotechnology/Microbiology/Chemistry/IT/Fire and Safety/IT
NH10, Near Biltech Company, Village: Dhamdod, Kosamba, Ta: Mangrol, Dist: Surat – 394125
Mo.No: 09879608000 · Email: info@ppsua.ac.in · Website: www.ppsua.ac.in



P P SAVANI
UNIVERSITY
SCHOOL OF SCIENCES

and Dr. D. S. Kothari Post doctoral Fellowship (for postdoctoral research). She is engaged in the research field of surface, colloid and polymer science and published many research papers in reputed international journals in collaboration with several leading professors abroad and scientists in India. In addition, she has delivered expert talks and presented papers in various national/ international conferences and prestigious institutes like Institute of Chemical Technology, Bhabha Atomic Research Centre to name a few.

Dr. Sheetal Kamble (PhD) is an Assistant Professor in the Environmental Science department of the School of Sciences of P.P Savani University. She has pursued her Doctoral in Environmental Engineering and Management from National Institute of Industrial Engineering (NITIE), Mumbai. She has published more than 15



research papers in International journals of repute. She has presented more than 10 research papers in several National/ International conferences. She has assisted in completing 2 multi-institutional international research projects entitled “The Development of Guidelines and Decision Support System for Waste Water Treatment Plants, Supporting Consolidation, Replication and Up-Scaling of Sustainable Wastewater Treatment and Reuse Technologies for India”, SARASWATI” funded by EU-DST and the “Evaluation of climate change impacts and suitable adaptation strategies for crop production and its environmental and economic implications in vulnerable regions of Thailand and India”. Her areas of interests in teaching and research are Life cycle assessment, Sustainability, Wastewater treatment, Solid waste management, Environmental impact assessment, Biodiversity and Conservation, Circular economy and Multi-criteria decision making.

Ph.D. Biotechnology/Microbiology/Chemistry

M.Sc. Biotechnology/Microbiology/Chemistry, PGDMLT

B.Sc. (Honours) Biotechnology/Microbiology/Chemistry/IT/Fire and Safety/IT

NH10, Near Biltech Company, Village: Dhamdod, Kosamba, Ta: Mangrol, Dist: Surat – 394125

Mo.No: 09879608000 · Email: info@ppsua.ac.in · Website: www.ppsua.ac.in



P P SAVANI
UNIVERSITY
SCHOOL OF SCIENCES

Ms. Prablin Kaur Ghura is an Assistant Professor in Environmental Science Department in School of Sciences, P. P. Savani University. She has pursued her B.E (Environmental Engineering) from Dr. S & S. S. Ghandhy Government College of engineering, Surat and M.E. (Environmental Engineering) from The Maharaja Sayajirao University, Baroda. She has worked in the field of anaerobic biodegradation of Solvent dyes during her M.E Dissertation.



She was also a former Environmental Engineer in Industry, handling the anaerobic unit in the industrial plant. She was awarded 2nd while presenting her research in INTERLINKING OF ACADEMICIAN, INDUSTRIES & GOVERNMENT THROUGH INTEGRATION OF RESEARCH TO INDUSTRIAL APPLICATION PROJECT” of GCPC (Gujarat Cleaner Production Centre), supported by Forests & Environment Department, Government of Gujarat by Dr. Bharat. P Jain (Member Secretary, GCPC). She has attended various national conferences and workshops based on Emerging issues and challenges in Water Pollution and Wastewater treatment. She has also published her research in national and international journals. She has also achieved certification in training on Laboratory Management System and Internal Auditing as per ISO/IEC 17025:2017 at Surat, Gujarat. She has also organized a Industrial visit to Sewage Treatment plant of Surat Municipal Cooperation for Environmental Sciences Students and will continue to arrange much more.

She has also guided various students regarding events like Poster presentations for National conference. Her area of interest lies in anaerobic treatment of wastewater, Solid Waste Management, Analysis of various Wastewater parameters and Environment Audit.

Ph.D. Biotechnology/Microbiology/Chemistry
M.Sc. Biotechnology/Microbiology/Chemistry, PGDMLT
B.Sc. (Honours) Biotechnology/Microbiology/Chemistry/IT/Fire and Safety/IT
NH10, Near Biltech Company, Village: Dhamdod, Kosamba, Ta: Mangrol, Dist: Surat – 394125
Mo.No: 09879608000 · Email: info@ppsua.ac.in · Website: www.ppsua.ac.in



P P SAVANI
UNIVERSITY
SCHOOL OF SCIENCES

Mr. Sagarkumar Joshi is an Assistant Professor in the Microbiology, School of Sciences, P P Savani University. He did his Masters in Microbiology from Gujarat University. His area of interest lies in Microbial resources for sustainable energy, Microbial Diversity of extreme environment, and Microbial bioremediation. He guided UG and PG Students of Microbiology for various short term research projects. He was organizing comity member for various scientific workshops and conferences.



Mrs Khyati Harkhani is a Teaching Assistant in the Biotechnology Department of the school of science of P. P. Savani University, Surat. She has pursued her Masters in Biotechnology from Institute of Science, Nirma University, Ahmedabad. She is awarded with Gold Medal for her Master from Nirma University. She has qualified GSET 2018 in Life Science and GATE 2013 in Biotechnology. She has presented the review paper in National Seminar in field of Biotechnology. She has attended many national conferences and seminars and workshops in field of Biotechnology. Her area of interest is immunology, molecular biology, Genetics.





ACADEMIC RULES AND REGULATIONS

Violation of the rules relating to discipline in P P Savani University includes the following categories of conduct by students:

1. Damaging any University property or property of any teacher or administrative staff member including peon at our campus or outside.
2. Disruption of teaching/practical classes; class test/examination; administrative work, curricular/extra-curricular activities including residential life at the campus.
3. Disrespectful behaviour of students with any staff members including peons.
4. Ragging is not allowed; this is consider to be a grave violation of personal dignity of the victim.
5. Use of abusive language including slogans may act as an offence.
6. Participation in Strikes, Dharnas etc. may also act as an offence.
7. Furnishing false information to the University in any form.
8. Consumption of alcoholic drinks, or any other intoxicants in the University premises and also smoking in the University premises.
9. Any type of weapons (knives, lathis, iron chains, iron rods etc.) in the University premises may act as an offence.
10. Arousing communal, caste or regional feelings or creating disharmony among fellow students.
11. In university, pages tearing; destroying or stealing of books or any other documents related to any staff member
12. Unauthorized acquisition or use of any University furniture in hostel room or elsewhere.
13. Unauthorized occupation of hostel room.
14. Improper rendering of adjustments against advances drawn from the University.
15. Improper behaviour at the University premises or during study tours.
16. Prohibition of cell phones in the classrooms/examinations, and other academic activities.
17. Use of undue political and other influences on teachers and functionaries of the University for favours.

Aforementioned conducts are not allowed and violation of these rules will be considered as serious offence and treated accordingly.



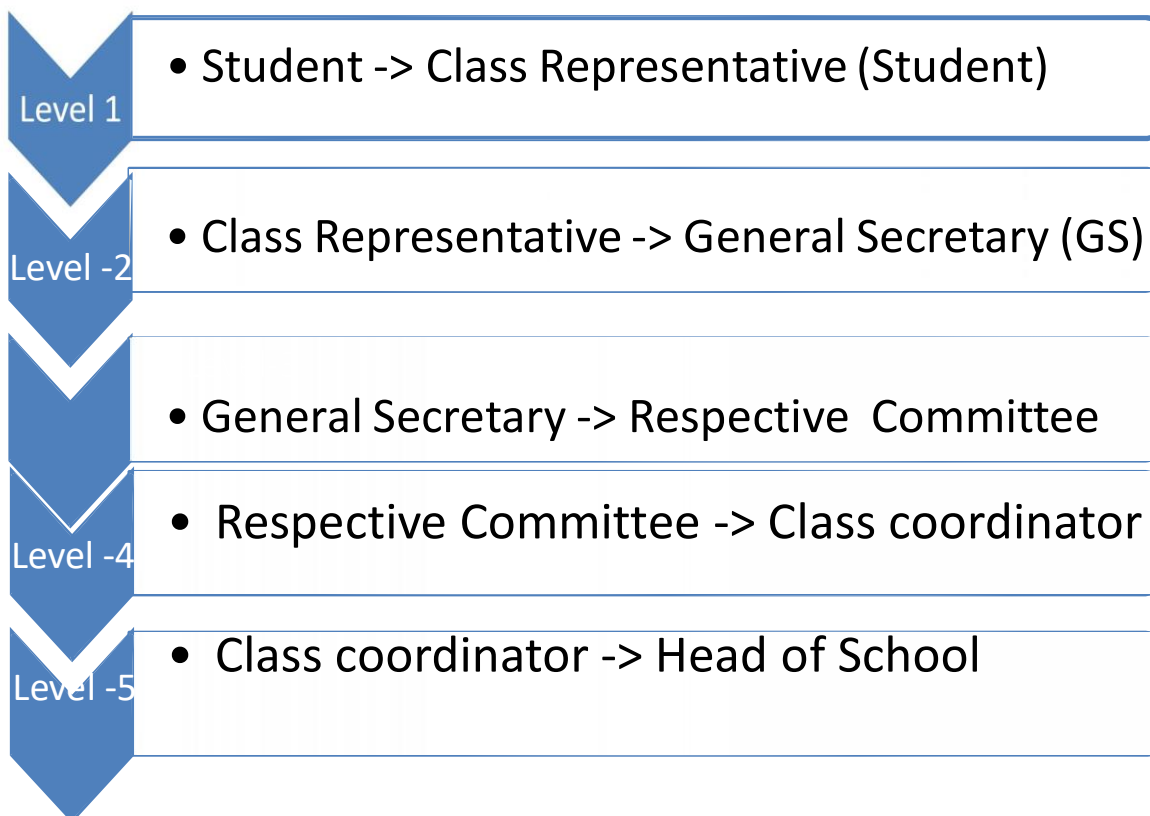
FACULTY DETAILS

Sr. No.	Faculty Name	Contact Details	Abbreviation
1.	Dr. Anish Sharma	Mo.No.: 07434061063 Email Id: anish.sharma@ppsuh.ac.in	AKS
2.	Dr. Vishal Singh Negi	Mo.No.: 06355720256 Email Id: vishal.negi@ppsuh.ac.in	VN
3.	Dr. Hiren Patel	Mo. No.: 09512035616 Email Id: hiren.patel@ppsuh.ac.in	HP
4.	Dr. Archana Negi	Mo.No.: 06355460976 Email Id: archana.negi@ppsuh.ac.in	AN
5.	Dr. Sangha Bijekar	Mo.No.: 08087118509 Email id: sangha.bijekar@ppsuh.ac.in	SB
6.	Dr. Aditee Pandya	Mo.No.: 09687657444 Email Id: aditee.pandya@ppsuh.ac.in	AP
7.	Dr. Aparna Singh	Mo.No.: 07984945541 Email Id: aparna.singh@ppsuh.ac.in	AS
8.	Dr. Bharat Solanki	Mo.No.: 09725900396 Email Id: bharat.solanki@ppsuh.ac.in	BS
9.	Dr. Sadafara Pillai	Mo.No.: 09913337995 Email Id: sa.pillai@ppsuh.ac.in	SP
10.	Dr Sheetal Kamble	Mo.No.: 9702481206 Email Id: sheetal.kamble@ppsuh.ac.in	SK
11.	Ms Prablin Kaur	Mo.No.: 09723677456 Email Id: prablin.kaur@ppsuh.ac.in	PK
12.	Mrs Khyati Harkhani	Mo.No.: 09328895966 Email Id: khyati.harkhani@ppsuh.ac.in	KH
13.	Mr. Sagar Joshi	Mo.No.: 08980023577 Email Id: sagar.joshi@ppsuh.ac.in	SJ



GRIEVANCE REPORTING SYSTEM

Student should strickly adhere the following system to report any Grievance.



Syllabus

PP Savani University

School of Sciences

Syllabus, Teaching and Examination Scheme

Course Code: SSMB7010
Course Name: Advances in Molecular biology
Prerequisite: Nil

Teaching and Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)		
Theory	Practical	Tutorial	Credit	CE	ESE	Total
4	0	0	4	40	60	100

CE: Continuous Evaluation, ESE: End Semester Examination

Objective(s) of the Course:

The students will acquire the fundamental knowledge about Molecular biology, use of microorganisms, their DNA organization, genome structure, enzymes helpful in technology, gene expression and its applications.

To inculcate habit of scientific reasoning, to do the task rationally

Course Contents:

Section-I			
Module	Content	Hours	Weightage (%)
1	<p>DNA structure DNA structure: Chemistry of DNA, DNA structure, Importance of hydrogen bonding, DNA usually right-handed double helix, Major & minor grooves, Different conformations of DNA (B, A and Z), Denaturation and Renaturation of DNA. DNA topology: linking number, twist, writhe, Supercoiling, Biology of Supercoiled DNA, DNA topoisomerases and their mechanism of action.</p>	10	15
2	<p>Organization of genome & replication Organization of DNA into chromosomes: Packaging of DNA and organization of chromosome in bacterial cells; Packaging of DNA in eukaryotic nucleosome and chromatin condensation, Nucleosome are building blocks, Histones, organization of histone octamer, atomic structure of nucleosome, histone wrapping around octamer, Histone binds to linker DNA, importance of Histone N-terminal tail for formation of 30nm fiber, chromatin remodelling, Histone modification, Acetylation-deacetylation-methylation-demethylation-phosphorylation of histone, enzymology of histone modification</p> <p>DNA replication: Chemistry of DNA synthesis, synthesised by 3' end of the primer, driving force of DNA synthesis, Replicon, extrachromosomal replicon, Function of DNA helicase, Single stranded binding protein, Topoisomerase, DNA polymerase enzymes: structure, holozymes has three subcomplex,</p>	25	45

	sliding clamp functions, replication fork, clamp control association of core enzymes with DNA, coordinating synthesis of leading and lagging strand, RNA priming required to start replication, okazaki fragments, DNA polymerase in bacteria and eukaryotes, Proof reading activity, Termination of DNA replication: Type II topoisomerase, telomerase		
Section-II			
3	<p>Expression of Genome Promoters, Transcription binding protein, Transcription factors, Enhancers, Transcription: Different forms of RNA polymerases and its features, Activation of transcription by series of steps, Protein-protein interaction, DNA binding domains: zinc finger motif & helix loop helix, transcription in prokaryotes and eukaryotes, chemistry of RNA splicing, spliceosome machinery, splicing pathways, Exon shuffling, RNA editing, mRNA transport.</p> <p>Genetic code: makeup of code, characteristics of triplet codon, wobble hypothesis, three codon lead to chain termination, cracked code, universal nature of code</p> <p>Translation: Characteristics of mRNA, structure and role of t-RNA in protein synthesis, attachment of amino acids to tRNA, ribosome structure, Larger and smaller subunit association and dissociation, translation -initiation, elongation and termination in in prokaryotes & eukaryotes.</p>	13	20
4	<p>Regulation of gene expression Regulation of gene expression in prokaryotes: Operon concept, positive and negative regulation. Examples of lac, ara, and trp operon regulation. Regulation of gene expression in eukaryotes: Transcriptional: Modification of histone and DNA, Antisense RNA, si RNA, mi RNA, RNAi, translational: Post translation modification, chaperones, hsp 70, protein folding.</p>	12	20

Reference Books:

Title	Authors	Publisher
Molecular biology of gene	Watson, baker, bell	5th edition, pearson
Genes IX	Lewin	Jones and bartlet
Principles of genetics	Gardner, Simmons, snustad	8th edition, wiley

Course Code: SSMB7030

Course Name: Advances in Molecular genetics or Advances in Microbial genetics

Prerequisite: Nil

Teaching and Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)		
Theory	Practical	Tutorial	Credit	CE	ESE	Total
4	0	0	4	40	60	100

CE: Continuous Evaluation, ESE: End Semester Examination

Objective(s) of the Course:

The students will acquire the fundamental knowledge about Advances in molecular and microbial genetics, mutations, types, its applications, transformation, conjugation, plasmid biology and various transgenic mechanisms and its applications.

To inculcate habit of scientific reasoning, to do the task rationally

Course Contents:

Section-I			
Module	Content	Hours	Weightage (%)
1	Mutation and DNA Repair: Mutation, Spontaneous mutations DNA damages (Deamination of bases, alkylation, damage due to reactive oxygen, UV induced damage) and its repair pathways (Methyl-directed mismatch repair, Nucleotide excision repair, Base excision repair, recombinational repair, SOS inducible repair, specific repair for oxidative DNA damage, pyrimidine dimers and alkylation induced damage and adaptive response). Recombination (Types, Models of homologous recombination, Molecular mechanism of homologous, Homologous recombination in eukaryotes, mating type switching, Site specific recombination and its biological significance)	15	25
2	Plasmid Biology (Types of plasmids, compatibility, regulation of plasmid copy number and plasmid segregation) Phage genetics (T-series, complementation and Fine structure analysis, biology of lambda phages) Fungal Genetics (Tetrad analysis and Mitotic recombination) Model Organisms (<i>Bacteriophage</i> , <i>E.coli</i> , <i>Saccharomyces cerevisiae</i> , <i>C.elegans</i> , <i>Drosophilla</i> , <i>Arabidopsis thaliana</i>)	15	25
Section-II			
3	Transformation (Natural transformation in <i>Bacillus subtilis</i> , <i>Streptococcus pneumoniae</i> and <i>Haemophilus influenzae</i>). Transformation by inducing artificial competence, Gene linkage and mapping by transformation. Transduction (Generalized transduction in P22, P1, T4 and Mu bacteriophages, homologous recombination with recipient's chromosome, measuring transduction (co-transduction of markers, marker effects, abortive transduction, transduction of plasmids).	15	25

	Applications of generalized transduction, Specialized transduction and its applications. Conjugation (F-factor mediated Conjugation in E. coli, Hfr conjugation and chromosomal transfer, F-prime conjugation and merodiploids, Conjugation of fertility inhibited F-like plasmids, Non conjugative mobilizable plasmids, chromosomal mobilization of non-F plasmids, Plasmid based conjugation in other bacteria (Salmonella, Pseudomonas, Streptomyces and streptococcus, Interrupted mating and conjugational mapping)		
4	Agrobacterium genetics: Ti plasmid, Interkingdom gene transfer (Key early experiments, virregulon, protein secretion apparatus, conjugation model of T-DNA transfer, Integration products) Transposable elements: Types of bacterial transposable elements; Structure, genetic organization and mechanism of transposition of Tn5, Tn3, phage Mu, Tn7, IS911, Integrons, Retrotransposons, conjugative and mobilizable transposons, Assays of transposition.	15	25

Reference Books:

Title	Authors	Publisher
Molecular Biology of the Gene	Watson et al	Vth edition.
Modern Microbial Genetics	UldisStreips and Ronald Yasbin	Wiley publication
Microbial genetics	StanleyMolay, John Cronan and David Freifelder	Narosa Publishing House (1990)
Molecular Genetics of Bacteria	Snyder and Champness	American Society for Microbiology; 2nd Revised edition edition (1 December 2002)
Molecular Genetics	Stent and Calendar	W.H.Freeman& Co Ltd; 2nd Revised edition edition (4 December 1978)
Principles of Genetics	Gardener, Snustad and Simmons	Wiley India Pvt. Limited, 2006
Genes IX	Lewin	Jones and Bartlett Publishers, Inc; 9th Revised edition edition (6 March 2007)

Course Code: SSMB7070
Course Name: Advances in biochemistry
Prerequisite: Nil

Teaching and Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)		
Theory	Practical	Tutorial	Credit	CE	ESE	Total
4	0	0	4	40	60	100

CE: Continuous Evaluation, ESE: End Semester Examination

Objective(s) of the Course:

The students will acquire the fundamental knowledge about Advances in biochemistry, biomolecular structure, Carbohydrate Metabolism, Nucleic acids, amino acids and vitamin metabolism and its applications.

To inculcate habit of scientific reasoning, to do the task rationally

Course Contents:

Section-I			
Module	Content	Hours	Weightage (%)
1	Basic Biochemistry: Introduction to biomolecules, structure and biological significance of the different biomolecules. Nomenclature and classification of enzymes; enzyme Kinetics: Uni substrate enzyme kinetics, factors affecting the rate of enzyme catalyzed reactions; forms and derivation of Michaelis-Menten's equation, significance of Vmax and Km; Enzyme inhibition- reversible and irreversible (competitive, non-competitive and uncompetitive). General regulations of various metabolic pathways (Feedback, Allosteric, Covalent Modification).	15	25
2	Carbohydrate Metabolism: Overall pathways and regulation of different carbohydrate metabolism (Glycolysis, Gluconeogenesis, Pentose phosphate Pathway, TCA, Glycogenesis and glycogenolysis). Interaction of carbohydrate molecule with membrane receptor proteins.	15	25
Section-II			
3	Lipid Metabolism: Fatty acid synthesis and oxidation, Metabolism of phospholipids, triglycerides and cholesterol molecules. Interaction of different lipid molecule with membrane receptor proteins and their regulation.	15	25
4	Amino acids and Nucleic acid Metabolism: Amino acids: Overall pathways and regulation of amino acid metabolism (Transamination, Deamination, Specific reactions – Oxidation / decarboxylation and Urea cycle). Biogenic amines formation and their involvement in metabolism. Interaction of different amino acid with membrane receptor proteins. Nucleic acid: Catabolism and anabolism of purines and pyrimidines and their regulation. De novo synthesis of nitrogen bases.	15	25

Reference Books:

Title	Authors	Publisher
Lehninger Principles of Biochemistry	Nelson David L & Cox, Michael M. W. H. Freeman and Company	5th Edition. ISBN: 978-0-2302-2699-9
Harpers's Biochemistry	Harper	Mc Graw Hill Publishing Company. 27th Edition. ISBN 10: 0071461973
Fundamentals of Biochemistry	Voet, Donald & Pratt, Charlotte W.	John Wiley and Sons, Inc, New York, 2rd Edition. ISBN: 0-471-74268-6
Biochemistry	LubertStryer	W. H. Freeman and Company. 6th Edition. ISBN-0716720094
Textbook of Medical Biochemistry	Chatterjee M.N and Rana Shinde	Jaypee Brothers Medical Publisher PVT Ltd. ISBN – 8184481349.
An Introduction of Practical Biochemistry	Plummer, David T	Tata McGraw-Hill Publishing Co. Ltd, New Delhi., ISBN: 0-07-099487-0.
Textbook of medical Laboratory Technology	Praful B. Godkar	BhalaniPulishing house, Mumbai. 2nd Edition. ISBN – 81-85578-10-9

Course Code: SSMB7090
Course Name: Microbial Diversity
Prerequisite: Nil

Teaching and Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)		
Theory	Practical	Tutorial	Credit	CE	ESE	Total
4	0	0	4	40	60	100

CE: Continuous Evaluation, ESE: End Semester Examination

Objective(s) of the Course:

The students will acquire the fundamental knowledge about Microbial diversity, morphological, structural diversity, Nucleic acid diversity and their survival due to diversifications and its applications.

To inculcate habit of scientific reasoning, to do the task rationally

Course Contents:

Section-I			
Module	Content	Hours	Weightage (%)
1	Microbial diversity: What is microbial diversity, types of diversity: morphological, structural, metabolic, ecological, fundamental similarity of organisms, cultivable and noncultivable diversity, conservation of microbial diversity	15	25
2	Bacterial diversity: occurrence, diversity, characteristics, significance of various groups of bacteria Archaeal Diversity: occurrence, diversity, characteristics, survival, adaptation & significance and application of various groups of archaea Actinomycetes Diversity: occurrence, diversity, characteristics, survival, adaptation & significance and application of various groups of actinomycetes	15	25
Section-II			
3	Eukaryotic diversity: Physiological variation, identification, cultivation and classification of important groups of Fungal and algal diversity, Economical importance of fungi and algae	15	25
4	Methods of studying microbial diversity Conventional methods: staining, microscopy and culturing characteristics Molecular Methods: DNA polymorphism, SNP, r-RNA sequence, PCR based techniques, RFLP, RAPD, AFLP, Microsatellite, DNA barcoding	15	25

Reference Books:

Title	Authors	Publisher
Brock Biology of Microorganisms	Madigan, Martinko, Stahl	Benjamin-Cummings Pub Co; 13

		edition
Prescott's, Microbiology	Christopher J. Woolverton, Linda M. Sherwood, Johanne M. Willey	McGraw Hill Education; 8 edition
Principles of Microbiology	R.M Atlas	8th edition, wiley
Molecular and Cellular Biology	Cavicchioli, R. Archaea	ASM Press, Washington, 2007
The Prokaryotes.Vol. I – VII	Dworkin, M., Falkow, S., Rosenberg, E., Schleifer, K.H., Stackebrandt, E. (Eds.).	Springer, 2006.
Bergey's Manual of Systematic Bacteriology, 2nd edition, Vol. I	Garrity, G.M. and Boone, D.R. (Eds.)	Springer, 2001
Bergey's Manual of Systematic Bacteriology, 2nd edition, Vol. II,	Garrity, G.M., Brenner, D.J., Kreig, M.R. and Staley, J.T. (Eds.),	Springer, 2005
Physiology and Biodiversity of Extremophiles	Gerday, C. and Glansdorff, N.	ASM Press, Washington, 2007

Course Name: Molecular Biology, Physiology and Genetics

Course Code: SSMB7110

Prerequisite: Nil

Teaching and Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)		
Theory	Practical	Tutorial	Credit	CE	ESE	Total
0	8	0	8	40	60	100

CE: Continuous Evaluation, ESE: End Semester Examination

Objective(s) of the Course:

The students will acquire the fundamental basics and practical knowledge of Molecular biology, nucleic acid estimation, its techniques, enzymes, various organisms producing enzymes, activities and its applications.

To inculcate habit of scientific reasoning, to do the task rationally.

Course Contents:

Section-I		
Module	Content	Hours
1	Principle and utility of microscopy and micrometry to study cell structure and cell size.	8
2	Study of serratiamarescens pigmentation under UV light- Dark and photoreactivation.	8
3	Isolation of antibiotic resistant mutans by chemical mutagenesis	8

4	Quantitative estimation of DNA by DPA	8
5	Quantitative estimation of RNA by Orcinol	8
6	Agarose gel electrophoresis of DNA	8
7	Isolation of Plant DNA	8
8	Isolation of Fungal DNA	8
9	Isolation of Bacterial DNA	8
10	PCR	8
11	To isolate and Study Blue white screening for lactose org/ Diauxic growth curve.	8

Course Name: Genomics, Proteomics and Microbial Diversity

Course Code: SSMB7130

Prerequisite: Nil

Teaching and Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)		
Theory	Practical	Tutorial	Credit	CE	ESE	Total
0	8	0	8	40	60	100

CE: Continuous Evaluation, ESE: End Semester Examination

Objective(s) of the Course:

The students will acquire the fundamental basics and practical knowledge of genetics, pedigree analysis, mutations, genetic disorders, environment helpful organisms, methanogens, fungal, algal and protozoal diversity, activities and its applications.

To inculcate habit of scientific reasoning, to do the task rationally.

Course Contents:

Section-I		
Module	Content	Hours
1	Pedigree Analysis.	8
2	Study of Ethical Issues in Medical Genetics.	8
3	.DNA isolation from Human Blood and Electrophoresis	8
4	Human Genome Project and Practical Applications.	8
5	Isolation of thermophiles from hot water spring.	8

6	Isolation of halophiles from sea water.	8
7	Isolation of alkalophiles from sample.	8
8	Isolation of methanogens from waste dump.	8
9	Isolation of thiobacillusferrooxidans and thiobacillusthiooxidans from metal sulfides and acid mine water.	8
10	To isolate and Study Fungal Diversity from different niches.	8
11	To isolate and study Algal Diversity from various aquatic samples	8
12	To isolate and Study Protozoal Diversity from various niches	8

PP Savani University

School of Sciences

Syllabus, Teaching and Examination Scheme

Course Code: SSMB7020
Course Name: Immunotechnology
Prerequisite: Nil

Teaching and Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)		
Theory	Practical	Tutorial	Credit	CE	ESE	Total
4	0	0	4	40	60	100

CE: Continuous Evaluation, ESE: End Semester Examination

Objective(s) of the Course:

The students will acquire the fundamental knowledge about Immuno technology, various immune organs and cells of body, fundamentals, immune effectors, mechanisms, monoclonal antibodies, hybridoma technologies and its applications.

To inculcate habit of scientific reasoning, to do the task rationally

Course Contents:

Section-I			
Module	Content	Hours	Weightage (%)
1	Fundamentals of Immunology (Part 1): Historical Perspective of Immunology, Cells and Organs of Immunology, Antigen, Antibody structure and function, Innate Immunity, Acquired Immunity.	15	25
2	Fundamentals of Immunology (Part 2): Antigen Processing and Presentation; B-Cell Generation, Activation, and Differentiation; T-Cell Maturation, Activation, and Differentiation	15	25
Section-II			
3	Immune Effector Mechanisms: Cytokines, Complement System, Cell-Mediated Effector Responses, Hypersensitive Reactions, Inflammation	15	25
4	Applied Immunology: Monoclonal and Polyclonal antibodies, Hybridoma Technology, Monoclonal and Polyclonal antibodies, Immunodeficiency disorder, Autoimmune diseases, Transplantation Immunology, Tumor Immunology	15	25

Reference Books:

Title	Authors	Publisher
Kuby Immunology	Thomas J. Kindt, Richard A. Goldsby, Barbara A. Osborne	W.H. Freeman & Company
Basic Immunology: Functions and Disorders of the Immune System	Abul K. Abbas, Andrew H. Lichtman	W.B. Saunders Company
Roitt's Essential Immunology	Peter J. Delves, Seamus J. Martin, Dennis R. Burton	Wiley Blackwell

Course Code: SSMB7040

Course Name: Bioinstrumentation

Prerequisite: Nil

Teaching and Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)		
Theory	Practical	Tutorial	Credit	CE	ESE	Total
4	0	0	4	40	60	100

CE: Continuous Evaluation, ESE: End Semester Examination

Objective(s) of the Course:

The students will acquire the fundamental knowledge about Instruments, their mechanism, principles, use and its applications.

To inculcate habit of scientific reasoning, to do the task rationally

Course Contents:

Section-I			
Module	Content	Hours	Weightage (%)
1	Chromatography: Adsorption and partition chromatography, Size Exclusion, Ion Exchange, Affinity, HPLC, Gas Chromatography	15	25
2	Spectroscopy: Electromagnetic radiation, types: U.V visible absorption spectroscopy. IR Spectroscopy, NMR, Raman Spectroscopy	15	25
Section-II			
3	Cytological & Molecular Biology methods (part-1): Flow cytometry, Nuclear Acid Hybridization/Blotting and types, FISH, DNA microarray	15	25
4	Cytological & Molecular Biology methods (part-2): PCR and its modification, Site-directed mutagenesis, Gene and Genome	15	25

editing tools(RNAi, CRISPER-Cas, ZFN, TALENS)		
---	--	--

Reference Books:

Title	Authors	Publisher
Principles and Techniques of Biochemistry and Molecular Biology	Wilson and Walker	Cambridge Press
Biophysical Chemistry	Upadhyay, Upadhyay and Nath	Himalaya Publishing House

Course Code: SSMB7080

Course Name: Bioprocess Technology

Prerequisite: Nil

Teaching and Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)		
Theory	Practical	Tutorial	Credit	CE	ESE	Total
4	0	0	4	40	60	100

CE: Continuous Evaluation, ESE: End Semester Examination

Objective(s) of the Course:

Course Contents:

Section-I			
Module	Content	Hours	Weightage (%)
1	Introduction to Bioprocess Technology: Isolation, and Screening of Microorganisms, Strain Improvement, Maintenance of Industrial Cultures, Primary and Secondary Metabolites, Growth Phases of Microorganisms, Effect of Environmental Factors on growth, Growth Kinetics, Measurement of Growth, Preservation of Industrially important organisms	15	25
2	Up Stream Process: Fermentation substrates used in media formulation, Optimization of media, Inoculum development, Solids and liquid handling, Sterilization of media, air, reactors, Aeration, agitation and maintenance of optimum fermentation condition, Batch, fed batch and continuous cultivation	15	25
Section-II			
3	Down Stream Process: Characterization of products and by-products, Methods of Cell Separation, disruption, Product Recovery, Purification, Antibiotics, Biopolymers	15	25

4	Role of industrial important enzymes: Product enrichment techniques, Product purification techniques, Immobilized enzymes, Bioreactors, its types, Applications, Bioprocess economics	15	25
---	---	----	----

Reference Books:

Title	Authors	Publisher
Principles of Fermentation Technology A. Whitekar, P. F. Stanbury & S. J.	Principles of Fermentation Technology A. Whitekar, P. F. Stanbury & S. J.	Principles of Fermentation Technology A. Whitekar, P. F. Stanbury & S. J.
Hall	Hall	Hall
Butterworth-	Butterworth-	Butterworth-

Course Code: SSMB7100

Course Name: Enzyme Technology

Prerequisite: Nil

Teaching and Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)		
Theory	Practical	Tutorial	Credit	CE	ESE	Total
4	0	0	4	40	60	100

CE: Continuous Evaluation, ESE: End Semester Examination

Objective(s) of the Course:

The students will acquire the fundamental knowledge about Enzyme technology, various enzyme assays, enzyme kinetics, regulation, immobilization and its applications.

To inculcate habit of scientific reasoning, to do the task rationally.

Course Contents:

Section-I			
Module	Content	Hours	Weightage (%)
1	Basics of Enzymology: Definitions, Brief nomenclature and classification of enzymes, Enzyme assays, Isoenzymes, Monomeric and oligomeric enzymes, Enzyme localization, Multi-enzyme complex, Methods for purification of enzymes	15	25
2	Enzyme Kinetics: First order and second order reaction, Significance of activation energy, K_m , V_{max} , Turnover number, K_{cat} , Transformation of M-M equation (Lineweaver-Burk plot, Eadie-Hofstee plots, Hanes plots), Kinetics of multi substrate reactions (Ping-pong bi-bi mechanism),	15	25

	Mechanism of catalysis of Enzymes- Serine proteases, Chymotrypsin, Triose phosphate isomerase		
Section-II			
3	Enzyme regulation: General mechanism of enzyme regulation, Allosteric enzymes, Sigmoidal Kinetics and significance, Symmetric and sequential modes for action of allosteric enzymes and their significance, Reversible and irreversible covalent modifications of enzyme, Proteolytic Activation, Feed Back Inhibition	15	25
4	Immobilization and Applications enzymes: Methods of enzyme immobilization, Effect of immobilization on enzyme activity, partitioning/ diffusion limitations, Importance of Immobilization, Study of Industrial important enzymes, Enzyme as a biosensor, Case study	15	25

Reference Books:

Title	Authors	Publisher
Fundamentals of Enzymology	Nicholas Price & Lewis Stevens	Oxford Univ. Press
Enzymes	Trevor Palmer	East-West Press
Biochemistry	Donald Voet, Judith G. Voet	John Wiley & Sons
Lehninger, Principles of Biochemistry	Nelson, D. L., Lehninger, A. L., & Cox, M. M.	W. H. Freeman and Company
An introduction to practical biochemistry	Plummer, D	McGraw-HILL

Course Name: Bioinstrumentation and Immunological Methods

Course Code: SSMB7060

Prerequisite: Nil

Teaching and Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)		
Theory	Practical	Tutorial	Credit	CE	ESE	Total
0	8	0	8	40	60	100

CE: Continuous Evaluation, ESE: End Semester Examination

Objective(s) of the Course:

The students will acquire the fundamental basics and practical knowledge about Immunotechnology, various instruments, technologies, identification and its applications.

To inculcate habit of scientific reasoning, to do the task rationally

Course Contents:

Section-I		
Module	Content	Hours
1	To study the absorption spectrum of different plant pigments.	8
2	Optimization of PCR conditions for amplification of bacterial 16S rRNA	8
3	Identification of bacterial isolates using universal primers	8
4	Sodium dodecyl sulfate -polyacrylamide gel electrophoresis	8
5	Double immunodiffusion technique	8
6	Total white blood cell count	8
7	Purification of immunoglobulin (IgG)	8
8	Visit to advanced instrumentation lab	4

Course Name: Bioprocess and Enzyme Technology Methods

Course Code: SSMB7120

Prerequisite: Nil

Teaching and Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)		
Theory	Practical	Tutorial	Credit	CE	ESE	Total
0	8	0	8	40	60	100

CE: Continuous Evaluation, ESE: End Semester Examination

Objective(s) of the Course:

The students will acquire the fundamental basics and practical knowledge enzymes, various organisms producing enzymes, activities and its applications.

To inculcate habit of scientific reasoning, to do the task rationally.

Course Contents:

Section-I		
Module	Content	Hours
1	Screening of Amylase producing microorganisms from soil.	8
2	Screening of Protease producing microorganisms from soil.	8
3	Screening of antibiotic producing microorganisms from soil.	8
4	Screening of organic acid producing microorganisms from soil.	8
5	Effect of various factors on enzyme activity	8
6	Isolation and purification of enzymes from different sources	8

7	Estimation of glucose by enzymatic method	8
8	Determination of specific activity of enzyme	8
9	Database search and ligand interaction study of enzymes	8

Course Code: SSMB8010

Course Name: Bioprocess Technology II

Prerequisite: Nil

Teaching and Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)		
Theory	Practical	Tutorial	Credit	CE	ESE	Total
4	0	0	4	40	60	100

CE: Continuous Evaluation, ESE: End Semester Examination

Objective(s) of the Course:

The students will acquire the fundamental knowledge about bioprocess technology, use of microorganisms in industry, various fermentation processes, bioreactors and its applications.

To inculcate habit of scientific reasoning, to do the task rationally.

Course Contents:

Section-I			
Module	Content	Hours	Weightage (%)
1	Principles of fermentation process: Introduction to fermentation process; Range and chronological development of fermentation process; Kinetics of batch, fed batch and continuous cultures; types of fermentation: solid state and submerged fermentation.	15	25
2	Design of bioreactors: Basic design and significance of various components of bioreactor or bioprocess vessels; specialized materials used to construct bioreactors; types of bioreactors: 1) Continuous stirred tank, 2) Bubble column, 3) Airlift bioreactor, 4) Fluidized bed, 5) Packed bed, 6) Photo-bioreactor.	15	25
Section-II			
3	Typical fermentation process: Antibiotic fermentation: β -lactam, Tetracyclin, aromatic antibiotics; Vitamins: Vit B12, riboflavin, Vit A; Organic acids: citric acid, lactic acid, acetic acid (vinegar).	15	25
4	Other fermentation process and single cell protein Anerobic fermentation: Acetone-butanol-ethanol (ABE), Brewing, Industrial alcohol; Enzyme production: Amylase, protease, pectinase; SCP: Spirulina, Mushroom, advantages and disadvantages of SCPs.	15	25

PP Savani University
School of Sciences
Syllabus, Teaching and Examination Scheme

SEMESTER – IV MB-401: DISSERTATION

Project work and Dissertation must be based on Applications of Microbes in, Food and Dairy industry, Pharmaceuticals & Biotechnology Industry and in Diagnostic services.

Semester IV students will be on Industrial Training at Industry / Research Institution /Department during entire term for Project Work and Dissertation.

The Students have to devote 6 days, 8 hours per day at the work place that may be an Institute, Industry, Department and Hospital Laboratory. The Students will have to undergo continuous interaction and one evaluation of progress by a team of Departmental experts. A student who has undergone such evaluations only will be entitled to present his complete project work to the University for Exam.

The University End Term Practical Examination will be carrying 300 marks divided as underneath and shall be conducted by One external expert along with an Internal:

Thesis Content and Applicability: 100 marks

Thesis Write up &Presentation: 100 marks

Presentation on Thesis Work done: 50 marks

Viva Voce on Thesis Work done: 50 marks

The Project work and Dissertation can be made in following Applications:

Food Processing, Beverages, Dairy, Enzymes, Industrial Microbiology, Extremophiles, Pharmaceuticals, Effluent Treatment of Bioremediation, Bioenergy, Analytical Microbiology, Clinical / Medical Microbiology and Diagnostics, Biofertilizers& Biopesticides

P P Savani University

SCHOOL OF SCIENCES

ACADEMIC RULES AND REGULATIONS

1. Abbreviations:

SOS: School of Sciences

2. Course Coordinator

A faculty member, within university, who is responsible for all the activities related to a particular course such as syllabus completion, internal evaluation, exam coordination etc.

3. Course Evaluation

All Courses/Subjects offered at P P Savani University shall be evaluated under two heads:

- a. **Continuous Evaluation (CE)** component which is under sole discretion of the course coordinator. It is expected that the continuous evaluation should consist of Unit Test/ Weekly Test/ Fortnightly Test/ Class Test/ Presentations/ Project Work/Assignment/ Group Discussion/ Quiz/ Seminar/ Debate etc.
- b. The marks of CE component should be submitted by course coordinator to University Exam Section in the format prescribed by the University.
- c. The course coordinator shall submit the answer sheets along with the final marks after showing the same to the students within 07 days of the Examination.
- d. **The maximum mark of Continuous Evaluation (CE) component is 40 percent.**
- e. **End Semester Examination (ESE)** will be conducted by University through written paper or practical test or oral test or presentation by the student or a combination of any one, two or more of these.
- f. The End Semester Examination will be evaluated by appointing two subject experts, One from outside University and another from within University, for all courses offered under University.
- g. **The maximum mark of End Semester Examination is 60 percent.**
- h. The total of the Continuous Evaluation Component and End Semester Examination marks in each course will be converted to a letter grade on a ten-point scale as per the following scheme:

Percentage of Marks	Grade for SOE/SOM/SOS	Grade Point
90-100	O	10
80-89.99	A+	9
70-79.99	A	8
60-69.99	B+	7
50-59.99	B	6
40-49.99	C	5
< 40%	F	0

- i. In order to earn the credit in a course a student has to obtain grade other than F.
- j. A student, who remains "Absent" in University Exam will be awarded F grade.

P P Savani University

- k. A student, who obtains F grade, has to appear for Re-Test of university examination scheduled immediately after declaration of result. In case the candidate secures grade other than F, he/she will be awarded maximum grade of B+ after retest.
- l. A student, who obtains F grade, after Re-Test of university examination, has to repeat the university examination of the same course(s) till he/she obtains grade other than F.
- m. No student is allowed to upgrade the grade, if he/she scored grade other than F.
- n. The student's performance in any semester will be assessed by the Semester Grade Point Average (SGPA). Similarly, his/her performance at the end of two or more consecutive semesters will be denoted by the Cumulative Grade Point Average (CGPA). The SGPA and CGPA are calculated as per guidelines of UGC.
- o. In a semester, the SGPA is the ratio of sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and the sum of the number of credits of all the courses undergone by a student, i.e.
$$SGPA (S_i) = \frac{\sum(C_i \times G_i)}{\sum C_i}$$
Where, C_i is the number of credits of the i th course and G_i is the grade point scored by the student in the i th course.
- p. The CGPA is also calculated in the same manner taking into account all the courses undergone by a student over all the semesters of a programme, i.e.
$$CGPA = \frac{\sum(C_i \times S_i)}{\sum C_i}$$
Where, S_i is the SGPA of the i th semester and C_i is the total number of credits in that semester.
- q. The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the grade-card & transcript.

4. Promotion Rules

- a. All the students of odd semester are allowed to move to even semester irrespective of their results.
- b. At the end of a year, a student is not allowed to move to odd semester in case of his/her CGPA is less than 3.00.
- c. Over and above, the school has to follow the guidelines laid down by the statutory body time to time.
- d. The detained students will have to register for all the failed courses of previous two semesters with course fees worth Rs. 3000/- per course.

5. Examination Schedule

Each School shall decide and design the University Examination Schedule within one month of the beginning of the Semester. However, it shall be prepared in consultation with the Exam Section of the University.

6. Conduction of Examination

Each question paper shall comprise of 02 Sections, equally divided in terms of marks. Each question paper shall carry 60 % easy, 20 % moderate and 20 % difficult questions. The exam will be conducted primarily in the Answer sheet of 24 pages. If needed, the student may be provided with a supplementary of 04 pages. Each section will be written in different Answer sheet.

P P Savani University

Each course/ subject is divided into 60 % and 40 % as ESE and CE respectively. 40 % CE will be carried out by the respective school/ department. Moreover, the Course Coordinator will submit the CE marks to the Exam Section after the due verification by the respective Head/ Principal within 07 days of the completion of the Internal Examination.

- a. Examination Order: The Exam Section will send the exam order to both – Internal and External examiner via E mail at least two months prior to the schedule anticipating the confirmation of arrival with the course coordinator. The order shall carry the theory and practical examination date.
- b. Paper setter: The internal and the external examiner will set both the sections separately consisting of equal marks distribution of total weightage of question paper. It shall be submitted in hard as well as soft copies. The exam section will randomly select one section from both the submitted question papers. The remaining paper shall be utilized for the remedial examinations.
- c. The External Examiner will be sent the syllabus along with the format of question paper. He/she will also be informed about the online submission of the question paper with the assessment scheme and answer keys.
- d. The internal and external examiner shall assess the section 01 and 02 respectively. The examiners shall complete the assessment within 07 days of the date of exam.
- e. The final marks of University Theory Exam will be entered by the Exam Section with double layer verification. However, final marks of internal exam will be entered/ submitted by internal examiner followed by the verification by the course coordinator within 07 days.
- f. The minimum passing criteria for any (theory/ practical) Examination is 40 % of ESE as well as 40 % of overall marks.
- g. The internal examiner will enter the internal and external marks of practical examination on the same day of practical examination on the portal.
- h. For the backlog students, the re-exam will be scheduled only in the next University Semester End Examination.

7. UFM (Unfair Means):

No candidate/ examinee shall use unfair means or indulge in disorderly conduct at or in connection with examinations.

Unfair Means shall include the following:

1. During examination time having in possession or access to
 - a) Any paper, book, note or any other material (relevant or irrelevant).
 - b) Mobile Phones or any electronic gadget other than scientific calculator, even in switch off mode, which can potentially be used for communication or copying.
 - c) Anything written on any other instrument or any kind of furniture or any other substance which may have relevance to the syllabus of the examination paper concerned.
 - d) Anything written or signs made on the body of the candidate or his/her clothes/garments, handkerchief etc which may have relevance to the syllabus of the examination paper concerned.

P P Savani University

- e) Anything written on the question paper which may have relevance to the syllabus of the examination paper concerned.
2. Giving or receiving assistance in answering the question papers to or from any other candidate/person in the examination hall or outside during the examination hours.
 3. Talking to another candidate or any unauthorized person inside or outside the examination room during the examination hours without the permission of the invigilating staff.
 4. Swallowing or attempting to swallow or destroying or attempting to destroy a note or paper or any other material.
 5. Impersonating any candidate or getting impersonated by any person for taking the examination.
 6. If the candidate is found reading or possess some incriminating material relevant to the syllabus of the paper in verandah, urinal etc during his/her examination duration.
 7. If the behavior of the candidate on being caught is unsatisfactory or the candidate uses resistance/violence against the invigilator or any person on examination duty or consistently refuses to obey the instructions.

UFM Process & Review:

If a candidate is found practicing any of above mentioned Unfair Means:

- a. UFM report to be filed by Jr & Sr Supervisor of the centre.
- b. He/she should be allowed to complete the same exam without giving any extra time.

In case of UFM in the University Examination, the Provost will form a committee after the completion of the Examination for the same school. After the exam, the committee shall conduct an interaction with the concerned Jr & Sr Supervisor, the candidate & parents. The committee shall submit the report of the same next day of the interaction.

Norms of Punishment:

The following norms for punishment are laid down, if found guilty by the committee formed by the Provost.

Type of UFM practiced	Punishment to be imposed
<ol style="list-style-type: none">1. During examination time having in possession or access to<ol style="list-style-type: none">a) Any paper, book, note or any other material (relevant or irrelevant).b) Mobile Phones or any electronic gadget other than scientific calculator, even in switch off mode, which can potentially be used for communication or copying.c) Anything written on any other instrument or any kind of furniture or any other substance which may have relevance to the syllabus of the examination paper concerned.d) Anything written or signs made on the body of the candidate or his/her clothes/garments, handkerchief etc which	The candidate will be awarded F Grade in 02 courses: one in which he is found guilty and second in which he has scored minimum marks other than F & to be declared as Pass.

P P Savani University

<p>may have relevance to the syllabus of the examination paper concerned.</p> <p>e) Anything written on the question paper which may have relevance to the syllabus of the examination paper concerned.</p>	
<p>2. Giving or receiving assistance in answering the question papers to or from any other candidate/person in the examination hall or outside during the examination hours.</p>	<p>His/her examination result in that course will be cancelled and F grade will be awarded in that course.</p>
<p>3. Talking to another candidate or any unauthorized person inside or outside the examination room during the examination hours without the permission of the invigilating staff.</p>	<p>His/her examination result in that course will be cancelled and F grade will be awarded in that course.</p>
<p>4. Swallowing or attempting to swallow or destroying or attempting to destroy a note or paper or any other material.</p>	<p>The candidate will be awarded F Grade in 02 courses: one in which he is found guilty and second in which he has scored minimum marks other than F & to be declared as Pass.</p>
<p>5. Impersonating any candidate or getting impersonated by any person for taking the examination.</p>	<p>The candidate will be awarded F Grade in 02 courses: one in which he is found guilty and second in which he has scored minimum marks other than F & to be declared as Pass.</p>
<p>6. If the candidate is found reading or possess some incriminating material relevant to the syllabus of the paper in verandah, urinal etc during his/her examination duration.</p>	<p>The candidate will be awarded F Grade in 02 courses: one in which he is found guilty and second in which he has scored minimum marks other than F & to be declared as Pass.</p>
<p>7. If the behavior of the candidate on being caught is unsatisfactory or the candidate uses resistance/violence against the invigilator or any person on examination duty or consistently refuses to obey the instructions.</p>	<p>The candidate will be awarded F Grade in all course of the semester in which he/she has appeared for examination.</p>

8. Result Declaration:

- a. The Exam Section will declare the result within 07 days of the completion of the examination.
- b. After the declaration of the results, the student can apply for rechecking or reevaluation within 03 days of the declaration of the result with payment as under:
 - Rechecking: Rs. 200/- per course
 - Reassessment: Rs. 500 per course
- c. Results for rechecking or reassessment will be declared on 8th day of the declaration of the original result. It will be declared prior to the commencement of University Retest.

The School of Sciences at PP Savani University reserves the right to make final decisions to change in the credit systems, academic programs and timetables.

ACADEMIC CALENDER 2020-21

P. P. SAVANI SCHOOL OF SCIENCES

Sr	Event	Date	Days
JUNE, 2020			
1	Ramzan - Eid (Eid-ul-fitra)	06-Jun	Saturday
2	International Yoga Day celebration	21-Jun	Thursday
JULY 2020			
1	Start of the Semester & Commencement of classes	1-July	Wednesday
AUGUST 2020			
1	Bakri Eid (Eid-al-adha)	1-July	Saturday
2	Raksha Bandan	3-Aug	Monday
3	Janmashtami	12-Aug	Wednesday
4	Independence Day celebration	15-Aug	Saturday
5	Samvatsari (Chaitiithi paksa)	22-Aug	Saturday
6	Muharram	20-Aug	Thursday
SEPTEMBER 2020			
1	Ganesh Visarjan	1 Sept	Tuesday
2	Start of the Semester 1	29-Sept	Tuesday
OCTOBER 2020			
1	Mahatma Gandhi Jayanti	02-Oct	Friday
2	FDP	05-11 Oct	1 Week
3	CE Examination sem 3 & 5	12 to 28-Oct	2 weeks
4	Dussehra	25-Oct	Sunday
5	Khelaiya		
NOVEMBER 2020			
1	Diwali Break	12-Nov to 25 Nov	2 weeks
2	Diwali	14 Nov	Saturday
3	Vikram Samvant New year	16 Nov	Monday
4	Bhai Bhij	16 Nov	Monday
5	CE Examination Sem 1 (T+P)	23 Nov to 30 Nov	1 Week
DECEMBER 2020			
1	CE (B.Sc Sem 1 & M.Sc sem 1)	1 Dec to 14 Dec	2 weeks
	ESE (B.Sc Sem 3 and 5 & M.Sc sem 3)	1-Dec to 22 Dec	3 Weeks
2	Christmas	25-Dec	Wednesday
2021			
JANUARY 2021			
1	Start of the Semester & Commencement of classes	04-Jan	Monday
3	Makarsakranti	14-Jan	Thursday
3	Republic day	26-Jan	Tuesday
4	ESE (B.Sc Sem 1 & M.Sc sem 1)	25 Jan to 11 Feb	2 weeks
FEBRUARY 2021			
	ESE (B.Sc Sem 1 & M.Sc sem 1)	25 Jan to 11 Feb	2 weeks
1	Sports day	08-09 Feb	Monday – Tuesday
2	Kalagoonj	12-13 Feb	Friday-Saturday
3	Mahashivratri	21 Feb	Sunday
4	Internal Exam (CE) for (B.Sc Sem 4 and 6 & M.Sc sem 4)	24 Feb to 11 Mar	
MARCH 2021			
1	Mahashivratri	11 March	Thursday
2	Dhuleti celebration	27 March	Saturday

3	Dhuleti	29-Mar	Monday
APRIL 2021			
1	CE (B.Sc Sem 2 & M.Sc sem 2)	3 rd April to 21 May	2 weeks
2	ESE (B.Sc Sem 4 and 6 & M.Sc sem 4)	3 rd Apr to 21 May	2 weeks
3	Ramnavmi	21-Apr	Wednesday
4	Cheti Chand	14 April	Wednesday
MAY 2021			
1	Ramzan	11 May	Tuesday
JUNE 2021			
1	ESE (B.Sc Sem 2 & M.Sc sem 2)	1 June 30 June	2 weeks
2	Start of the Semester & Commencement of classes for Sem 5	28 June	Monday
July 2021			
1	Start of the Semester & Commencement of classes for Sem 3 and M.Sc sem 3	1 July 2021	Thursday

Abstract: Calculated working Days

July 2020 – Dec 2020

Month	Working days	Holidays	Total
July	25	6	31
August	18	13	31
September	23	7	30
October	23	8	31
November	14	16	30
Total	103	50	153

Jan 2021 – May 2021

Month	Working days	Holidays	Total
January	22	9	31
February	21	7	28
March	22	9	31
April	23	7	30
May	4	0	4
Total	92	32	124