



P P SAVANI
UNIVERSITY
SCHOOL OF SCIENCES

STUDENT HANDBOOK
2020-21



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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
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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



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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**

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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.

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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



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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

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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

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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.)



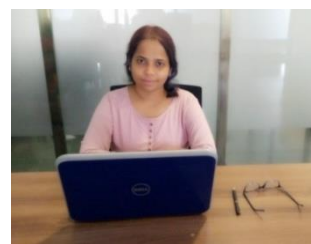
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and Dr. D. S. Kothari Post doctoral Fellowship (for postdoctoral research). She is engaged in the research field of surface, colloid and polymer science and published many research papers in reputed international journals in collaboration with several 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.

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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.

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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.



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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.



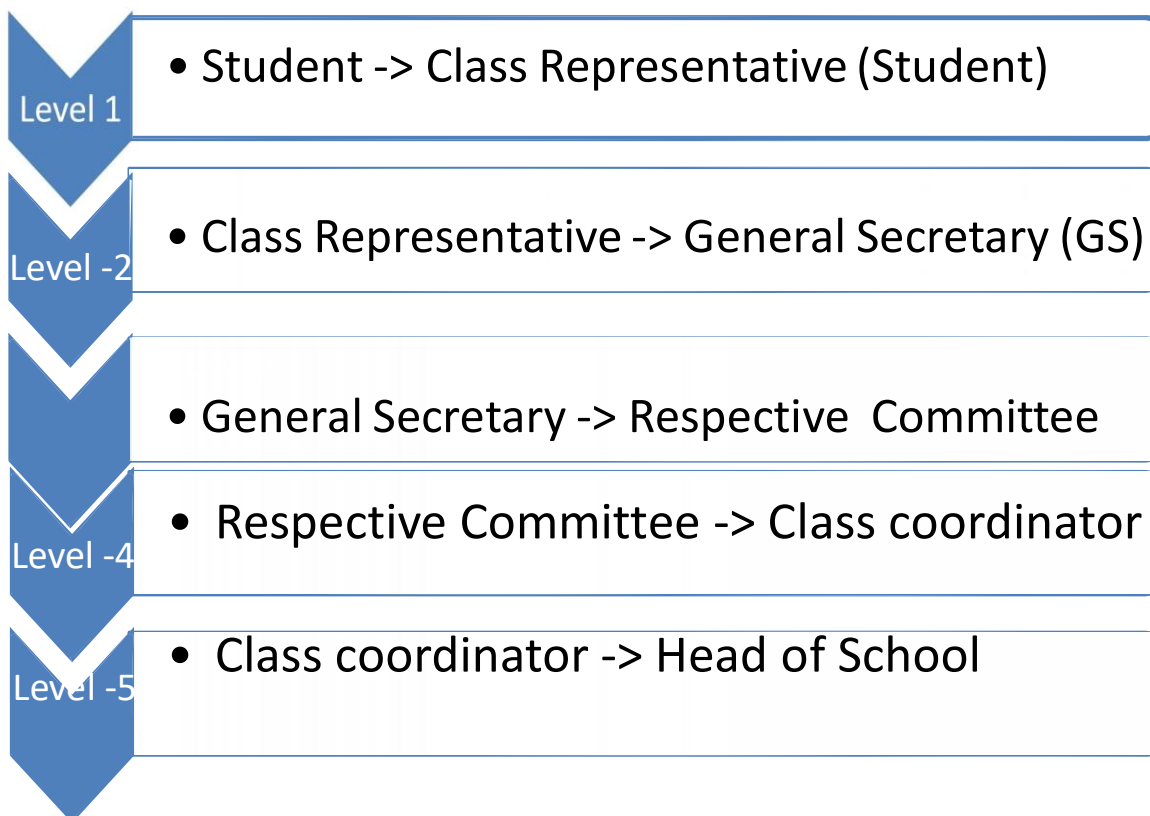
FACULTY DETAILS

Sr. No.	Faculty Name	Contact Details	Abbreviation
1.	Dr. Anish Sharma	Mo.No.: 07434061063 Email Id: anish.sharma@pps.ac.in	AKS
2.	Dr. Vishal Singh Negi	Mo.No.: 06355720256 Email Id: vishal.negi@pps.ac.in	VN
3.	Dr. Hiren Patel	Mo. No.: 09512035616 Email Id: hiren.patel@pps.ac.in	HP
4.	Dr. Archana Negi	Mo.No.: 06355460976 Email Id: archana.negi@pps.ac.in	AN
5.	Dr. Sangha Bijekar	Mo.No.: 08087118509 Email id: sangha.bijekar@pps.ac.in	SB
6.	Dr. Aditee Pandya	Mo.No.: 09687657444 Email Id: aditee.pandya@pps.ac.in	AP
7.	Dr. Aparna Singh	Mo.No.: 07984945541 Email Id: aparna.singh@pps.ac.in	AS
8.	Dr. Bharat Solanki	Mo.No.: 09725900396 Email Id: bharat.solanki@pps.ac.in	BS
9.	Dr. Sadafara Pillai	Mo.No.: 09913337995 Email Id: sa.pillai@pps.ac.in	SP
10.	Dr Sheetal Kamble	Mo.No.: 9702481206 Email Id: sheetal.kamble@pps.ac.in	SK
11.	Ms Prablin Kaur	Mo.No.: 09723677456 Email Id: prablin.kaur@pps.ac.in	PK
12.	Mrs Khyati Harkhani	Mo.No.: 09328895966 Email Id: khyati.harkhani@pps.ac.in	KH
13.	Mr. Sagar Joshi	Mo.No.: 08980023577 Email Id: sagar.joshi@pps.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 Name: SSCH7010
Course Code: Advances in Inorganic Chemistry-I
Prerequisite: Basics of Inorganic Chemistry

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 present study enhances student's knowledge about Inorganic chemistry to understand their role in the field of sciences

Course Contents:

Section-I			
Module	Content	Hours	Weightage (%)
1	Stereochemistry and Bonding in Main Group Compounds VSEPR, Walsh diagrams (tri- and penta – atomic molecules, d π -p π bonds, Bent rule and energetics of hybridization, some simple reactions of covalently bonded molecules.	12	20
2	Metal- Ligand Bonding Limitation of crystal field theory, molecular orbital theory, octahedral, tetrahedral and square planar complexes, π - bonding and molecular orbital theory	12	20
Section-II			
3	Reaction Mechanism of Transition metal complexes Energy profile of a reaction, reactivity of metal complexes, inert and labile complexes, kinetic application of valence bond and crystal field theories, kinetics of octahedral substitution, acid hydrolysis, factors affecting acid hydrolysis, base hydrolysis, conjugate base mechanism, direct and indirect evidences in favor of conjugate mechanism, anation reaction, reactions without metal ligand bond cleavage. Substitution reactions in square planar complexes, the trans effect, mechanism of the substitution reaction. Redox reactions, electron transfer reactions, mechanism of one electron transfer reaction, outer sphere type reactions, cross reactions and Marcus-Hush theory, inner sphere type reactions.	24	40

4	Metal Ligand Equilibria in Solution Stepwise and overall formation constants and their interaction, trends in stepwise constants, factors affecting the stability of metal complexes with reference to the nature of the metal ion and ligand, chelate effect and its thermodynamic origin, determination of binary formation constants by pH metry and spectrophotometry	8	20
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Reference Books:

Title	Authors	Publisher
Advanced Inorganic Chemistry	F.A. Cotton & Wilkinson	John Wiley
Inorganic Chemistry	J. E. Huhey	Harpes& Row.
Chemistry of the elements	N. N. Greenwood and A. Earnshaw	Pergamon
Inorganic Electronic Spectroscopy	A. B. P. Lever	Elsevier
Magneto Chemistry	R. L. Carlin	Springer Verlag
Comprehensive Coordination Chemistry	G. Wilkinson, R. D. Gillars and J. A. McCleverty,	Pergamon

Course Name: SSCH7030

Course Code: Advances in Organic Chemistry-I

Prerequisite: Basics of Organic Chemistry

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 present study enhances student's knowledge about Organic chemistry to understand their role in the field of sciences

Course Contents:

Section-I			
Module	Content	Hours	Weightage (%)
1	Nature of bonding in Organic Molecules Delocalized chemical bonding-conjugation, cross conjugation, resonance, hyperconjugation, bonding in fullerenes, tautomerism. Aromaticity in benzenoid compounds, alternant and non-alternant hydrocarbons, Huckel's rule, energy level of π - molecular orbitals, annulenes, anti aromaticity, ψ - aromaticity, homo-aromaticity, PMO approach. Bonds weaker than covalent addition compounds, crown	10	15

	ether complexes and cryptands, inclusion compounds, cyclodextrins, catenanes and rotaxanes.		
2	<p>Stereochemistry Conformational analysis of cycloalkanes, decalins, effect of conformation on reactivity, conformation of sugars, steric strain due to unavoidable crowding. Elements of symmetry, chirality, molecules with more than one chiral center, threo and erythro isomers, methods of resolution, optical purity, enantiotopic and diastereotopic atoms, groups and faces, stereospecific and stereoselective synthesis. Asymmetric synthesis. Optical activity in the absence of chiral carbon (biphenyls, allenes and spiranes), chirality due to helical shape. Stereochemistry of the compounds containing nitrogen, sulphur and phosphorus.</p>	15	25
Section-II			
3	<p>Reaction Mechanism: Structure and Reactivity Types of Mechanisms, types of reactions, thermodynamic and kinetic requirements, thermodynamic and kinetic control, Hammond's postulate, Curtin-Hammett principle. Potential energy diagrams, transition states and intermediates, methods of determining mechanisms, isotope effects. Hard and soft acids and bases. Generation, structure, stability and reactivity of carbocations, carbanions, free radicals, carbenes and nitrenes. Effect of structure on reactivity- resonance and field effects, steric effect, quantitative treatment. The Hammett equation and linear free energy relationship, substituent and reaction constants, Taft equation.</p>	12	20
4	<p>Aliphatic Nucleophilic Substitution The SN2, SN1, mixed SN1 and SN2 and SET mechanisms. The neighboring group mechanism, neighbor group participation by π and σ bonds, anchimeric assistance. Classical and nonclassical carbocations, phenonium ions, norbornyl system, common carbocation rearrangements. Applications of NMR spectroscopy in the detection of carbocations. The SNi mechanism Nucleophilic substitution at an allylic, aliphatic trigonal and vinylic carbon. Reactivity effects of substrate structure, attacking nucleophile, leaving group and reaction medium, phase transfer catalysis and ultrasound, ambident nucleophile, regioselectivity.</p>	15	25
5	<p>Aliphatic Electrophilic Substitution Bimolecular mechanisms- SE2 and SEi. The SE1 mechanism, electrophilic substitution, accompanied by double bond shifts. Effect of substrates, leaving group and the solvent polarity on the reactivity.</p>	8	15

Reference Books:

Title	Authors	Publisher
Advanced organic Chemistry- Reactions, Mechanisms & Structure	Jerry March	John Wiley

Advanced organic Chemistry	F. A. Carey & R. J. Sundberg	Plenum
A guide book to Mechanism in Organic Chemistry	Peter Sykes	Longman
Structure & Mechanism in Organic Chemistry	C. K. Ingold	Cornell University Press
Organic Chemistry	R. T. Morrison & R. N. Boyd	Prentice-Hall
Modern Organic Reactions	H. O. House	Benjamin
Principles of Organic Synthesis	R. O. C. Norman & J. M. Coxon	Blackie Academic & Professional
Pericyclic reactions	S. M. Mukherji	Macmillan, India.
Reaction Mechanism in Organic Chemistry	S. M. Mukherji & S. P. Singh	Macmillan, India.
Stereochemistry of Organic Compounds	D. Nasipuri	New Age International
Stereochemistry of Organic Compounds	P. S. Kalsi	New Age International

Course Name: SSCH7050

Course Code: Advances in Inorganic Chemistry-I

Prerequisite: Inorganic & Organic Chemistry Practical-I

Teaching and Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)		
Theory	Practical	Tutorial	Credit	CE	ESE	Total
0	8	0	4	40	60	100

CE: Continuous Evaluation, ESE: End Semester Examination

Objective(s) of the Course:

After the successful completion of this course students will learn to prepare several inorganic and organic compounds, learn Chem-Sketch Software to draw chemical structures and analysis of ores and alloys.

Course Contents:

Laboratory Course in Inorganic Chemistry			
Module	Content	Hours	Weightage (%)
1	Chem-Sketch Software (Computer Based experiment): Draw the structure of simple aliphatic, aromatic, heterocyclic organic compounds with substituents. Get the correct IUPAC name.	8	10
2	Analysis of Ore: Chromite ore – Estimation of Iron gravimetrically and Chromium volumetrically	8	10
3	Analysis of Alloy: Solder alloy – Estimation of Tin gravimetrically and Lead volumetrically	8	10
4	Preparation of sodium tetratnionate	8	10
5	Spectrophotometric determination of iron in medicine tablets	8	10

Laboratory Course in Organic Chemistry			
1	Preparation of Adipic acid from Adipic acid	8	10
2	Preparation of p-bromo acetanilide to Acetanilide	8	10
3	Preparation of benzophenone oxime from benzophenone	8	10
4	Preparation of dibenzalacetone from benzaldehyde.	8	10
5	Preparation of m-dinitrobenzene from nitrobenzene	8	10

Reference Books:

Title	Authors	Publisher
Advanced organic Chemistry- Reactions, Mechanisms & Structure	Jerry March	John Wiley
Synthesis & characterization of Inorganic Compounds	W L Jolly	Prentice Hall

Course Name: SSCH7070

Course Code: Advances in Physical Chemistry-I

Prerequisite: Physical Chemistry

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 present study enhances student's knowledge about physical chemistry to understand their role in the field of sciences

Course Contents:

Section-I			
Module	Content	Hours	Weightage (%)
1	THERMODYNAMICS Introduction to Laws of thermodynamics, state and path functions and their applications, thermodynamic description of various types of processes, Maxwell's relations, Partial molar quantities, Calculation of partial molar quantities, determination of partial molar volume and partial molar enthalpy, Ideal and non-ideal liquid mixtures, Thermodynamics functions of mixing of non-ideal solutions (i) free energy of mixing (ii) entropy of mixing (iii) volume of mixing and (iv) enthalpy of mixing, Excess functions (μ_E , GE , SE , HE and VE) for non ideal solutions and expression for excess thermodynamic functions,	15	25

	Numerical.		
2	Statistical Thermodynamics Basics of Statistical thermodynamics (Assembly, Canonical ensemble, occupation number, statistical weight factor, probability), Thermodynamic probability, Probability and entropy, Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac statistics. Lagrange's methods of multipliers, Partition function, Thermodynamic properties in term of partition functions (i) Internal energy (ii) Heat Capacity (iii) Third law of thermodynamics (iv) Helmholtz free energy (v) Enthalpy (vi) Gibbs free energy (vii) Chemical potential (viii) Equilibrium constant Molecular partition functions for an ideal gas, Derivation for Translational, Rotational and Vibrational partition functions Numerical.	15	25
Section-II			
3	Chemical kinetics Theories of Unimolecular gas reactions: Lindemann theory, Kinetics of some complex reactions (i) Reversible reactions (only first order opposed by second order) (ii) Consecutive reactions ($A \rightarrow B \rightarrow C$); Steady state treatment or approximation, Enzyme catalysed reactions, Kinetics of general Chain reaction, Kinetics of photochemical reactions (H_2-Cl_2 and H_2-Br_2), Kinetics, Mechanism, determination of activation energy and chain length of some organic decomposition (i) decomposition of ethane (ii) decomposition of acetaldehyde, Effect of Ionic strength on rates of ionic reactions (Primary and secondary salt effect), Numerical.	15	25
4	Synthesis of polymer General features of cyclopolymerisation, Ring-opening polymerization, Ziegler-Natta and metallocene catalysts, Metathesis polymerisation - mechanism of polymerization, Ring - Opening - Metathesis - Polymerisation (ROMP). Living polymerization by atom - transfer - radical - polymerization (ATRP), Reversible Addition Fragmentation Chain Transfer (RAFT), Speciality polymers like heterocyclic polymers - poly ether ketones, polyphenylene oxide, polyphenylenesulphide, polysulphones, polysiloxanes, liquid crystalline polymers	15	25

Reference Books:

Title	Authors	Publisher
Thermodynamics for chemist	Samuel Glasstone	East-West Press Pvt. Ltd.
Principles of Physical Chemistry	Puri B. R., Sharma L. R. and Pathania, M. S.	Vishal Publishing Co. 41th ed.
Chemical Kinetics	Laidler K. J.	TATA McGRRAW-HILL PUBLISHING COMPANY LTD.
Kinetics of chemical reactions	S. K. Jain	Vishal Publications
An Introduction to Chemical Thermodynamics	R P Rastogi and R R Mishra	VIKASH PUBLISHING HOUSE PVT LTD. 6th edition
Industrial Polymers, Specialty Polymers, and their Applications,	Manas Chanda, Salil K. Roy	CRC Press, 2008

Specialty Polymers: Materials and Applications	Faiz Mohammad	I.K. International Pvt Ltd, 2008
Polymer Science and Technology	Fried Joel R.	Prentice-Hall; 2nd ed. 2005
Hand book of Engineering and Specialty Polymers	Johannes Karl Fink	John Wiley & Sons, Vol.2, 2011

Course Name: SSCH7090

Course Code: Analytical Chemistry & Instrumentation Techniques

Prerequisite: Analytical Chemistry & Instrumentation Techniques

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 present study enhances student's knowledge about various Instrumentation techniques to understand their role in the field of sciences

Course Contents:

Section-I			
Module	Content	Hours	Weightage (%)
1	ELECTRICAL METHODS OF ANALYSIS Liquid Junction Potential (LJP), Electric Double layer, Faradic and Non-faradic Current, Mass Transfer in Cells with the Passage of Current, Polarization effect, Different types of polarization, Electrogravimetry, Constant potential and current electrolysis, Factors affecting the quality of deposits, Applications. Coulometry : Principle of Coulometry, Controlled current coulometry, Instrumentation and application of Controlled potential coulometry, Coulometric titrations (primary and secondary), endpoint detection in coulometry titration, applications and Numericals based on Coulometry	15	25
2	VOLTAMETRY METHODS OF ANALYSIS Rapid Scan Voltammetry : Principle, Rapid voltage scan at the end of the drop life, Peak current equation, Relation of peak current with the scanning rates, Summit potential equation, Comparison with DC polarography, Limitations. Hydrodynamic Voltammetry : Principle and similarity with dc polarography, Types of electrodes used, Applications of the technique in determination of rate constant of the reaction.	15	25

	<p>Anodic Stripping Voltammetry: Concentration and stripping steps, Importance of Hanging mercury drop electrode and MTFE, Sensitivity of the technique, Adsorptive stripping, Applications, Cathodic stripping.</p> <p>Cyclic Voltammetry: Principle, Forward and reverse scan, cyclic voltamogram, Detection limits, Applications.</p>		
Section-II			
3	<p>Mass Spectrometry What Is Mass Spectrometry?, Mass Spectrometer, Mass Spectrum, Symbols and meaning, Sample introduction, ionisation principle and ion sources (electron ionisation, chemical ionisation, laser-induced desorption, chemical and photon ionisation at atmospheric pressure and electrospray), Mechanism of Ionizations (Protonation, Cationization, Deprotonation, Transfer of a Charged Molecule into the Gas Phase, Electron Ejection, Electron Capture), Calibration (Calibration for FAB, Calibration for MALDI, Calibration for Electrospray), Resolution, Mass Analysers (Quadrupole analyser, Mass Analyzer, Time-of-Flight Analyzer, Tandem Mass Spectrometry (MS/MS with a Triple-Quadrupole Mass Spectrometer, MS/MS with a Time-of-Flight Reflectron Mass Spectrometer, MS/MS with a Fourier Transform-Ion Cyclotron Resonance, MS/MS with an Ion Trap), Ion Detector (Faraday Cup, Electron Multiplier, Photomultiplier Conversion Dynode (Scintillation Counting or Daly Detector), Information received from a chromatogram, determination of molecular weights and molecular formulas, Isotope ratio data, fragmentation pattern of small molecules, Interpretation of spectra, Numericals, Applications</p>	15	25
4	<p>ESRELECTRON SPIN RESONANCE SPECTROSCOPY Introduction, Factors affecting the g-value, Limitations of ESR, Difference between ESR and NMR, Instrumentation, Electron nucleus coupling, Hyperfine interactions-isotropic and anisotropic coupling constants, The spin Hamiltonian, Quantitative analysis, Sensitivity, Choice of solvent, applications of ESR, Study of free radicals, Electronic and Hyperfine splitting, Triplet states- zero field splitting and Kramer's degeneracy, Analytical applications of ESR, Structural determination by ESR, Study of inorganic compounds by ESR, Transition elements, Biological systems</p>	15	25

Reference Books:

Title	Authors	Publisher
Principles of Instrumental Analysis	Douglas A. Skoog, F James Holler, Stanley R. Crouch	THOMSON 6th edition

Fundamentals of Analytical Chemistry	Douglas A. S., Donald M. W., Holler H. J., Crouch H. R.	Brooks Cole; 9th edition
Introduction to spectroscopy: A guide for students of organic spectroscopy	Donald L. Pavia, Gary M. Lampman Geroge S. Kriz	Thomson Learning Academic Resource Center
Spectrometric Identification of Organic Compounds	Robert M. Silverstein, Francis X. Webster, David J. Kiemle, David L. Bryce	John Wiley & Sons
Spectroscopy of Organic Compounds	P. S. Kalsi	New Age International Pvt Ltd

Course Name: SSCH7110

Course Code: Physical & Analytical Chemistry Practical-I

Prerequisite: Physical & Analytical Chemistry Practical-I

Teaching and Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)		
Theory	Practical	Tutorial	Credit	CE	ESE	Total
0	8	0	4	40	60	100

CE: Continuous Evaluation, ESE: End Semester Examination

Objective(s) of the Course:

After the successful completion of this course students will learn about different types of kinetics and their rate constant, synthesis of polymer and its characterization and various electro analytical method for trace metal analysis.

Course Contents:

Laboratory Course in Physical Chemistry			
Module	Content	Hours	Weightage (%)
1	Determination of the excess molar volume, density, and viscosity of binary fluid mixtures	8	10
2	To determine degree of hydrolysis of aniline hydrochloride, and hence hydrolysis constant of the salt	8	10
3	Study the kinetics of the reaction between potassium persulfate and potassium iodide. Determine the rate constant, order of reaction and influence on ionic strength on rate constant	8	10
4	To determine K_m and V_{max} of acid phosphate using Michaelis-Menten curve	8	10

**Laboratory
Course in
Physical
Chemistry**

5	Synthesis of polystyrene and determine its molecular weight using viscosity method.	8	10
Laboratory Course in Analytical Chemistry			
1	Constant current Coulometric titration of As ₂ O ₃	8	10
2	Spectrophotometric Determination of Iron in Vitamin Tablets	8	10
3	Determination of the amount of Cd ²⁺ /Zn ²⁺ present in the unknown solution using cyclic voltametry	8	10
4	Electrogravimetric determination of Cu ²⁺ in brass.	8	10
5	Tutorial : Identification of organic molecule using IR, NMR, MS and ESR data	8	10

Reference Books:

Title	Authors	Publisher
Polymer Synthesis and Characterization	STANLEY R. SANDLER, WOLF KARO, JO-ANNE BONESTEEL, ELI M. PEARCE	ACADEMIC PRESS
Advance Practical Physical Chemistry	Dr. J. B. Yadav	GOEL Publishing House
Life sciences protocol manual	Dr. P. Hemalatha Reddy, Dr. SumanGovil	Department of Biotechnology
Principles of Instrumental Analysis	Douglas A. Skoog, F James Holler, Stanley R. Crouch	THOMSON 6th edition
Vogel's Textbook of Quantitative Chemical Analysis	G.H.Jeffery, J. Bassett, J. Mendham, R.C. Denney	John Wiley & Sons Inc

PP Savani University

School of Sciences

Syllabus, Teaching and Examination Scheme

Course Name: SSCH7020
Course Code: Advances in Inorganic Chemistry-II
Prerequisite: Advances in Inorganic Chemistry-I

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 present study enhances student's knowledge about Inorganic chemistry to understand their role in the field of sciences

Course Contents:

Section-I			
Module	Content	Hours	Weightage (%)
1	SYMMETRY AND GROUP THEORY IN CHEMISTRY: Symmetry elements and symmetry operation, definitions of group, subgroup, relation between orders of a finite group and its subgroup. Contumacy relation and classes. Point symmetry group. Schoenflies symbols, representations of groups by matrices (representation for the C_n , C_{nv} , C_{nh} , D_{nh} etc. groups to be worked out explicitly). Character of a representation. The great orthogonality theorem (without proof) and its importance. Character tables of C_{2v} , C_{2h} , C_{3v} and their use in spectroscopy	24	54
Section-II			
2	Metal Clusters Higher boranes, carboranes, metalloboranes and mettalocarboranes. Metal carbonyl and halide clusters, compounds with metal-metal multiple bonds. Chains: Catenation, heterocatenation, intercatenation. Rings: Borazines, phosphazines.	18	23
4	Synthesis of polymer General features of cyclopolymerisation, Ring-opening polymerization, Ziegler-Natta and metallocene catalysts,	15	25

Metathesis polymerisation - mechanism of polymerization, Ring - Opening -Metathesis -Polymerisation (ROMP). Living polymerization by atom -transfer-radical-polymerization (ATRP), Reversible Addition Fragmentation Chain Transfer (RAFT), Speciality polymers like heteromatic polymers- poly ether ketones, polyphenylene oxide, polyphenylenesulphide, polysulphones, polysiloxanes, liquid crystalline polymers		
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Reference Books:

Title	Authors	Publisher
Advanced Inorganic Chemistry	F.A. Cotton & Wilkinson	John Wiley
Inorganic Chemistry	Purcell, K.F &Kotz, J.C.	W.B. Saunders Co, 1977.

Course Name: SSCH7040

Course Code: Advances in Organic Chemistry-II

Prerequisite: Advances in Organic Chemistry-I

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 present study enhances student's knowledge about Organic chemistry to understand their role in the field of sciences

Course Contents:

Section-I			
Module	Content	Hours	Weightage (%)
1	Pericyclic reactions Molecular orbital symmetry, frontier orbitals of ethylene, 1,3-butadiene, 1,3,5-hexatriene and allyl system. Classification of pericyclic reactions. Woodward-Hoffmann correlation diagrams. FMO and PMO approach. Electrocyclic reactions- conrotatory and disrotatory motions, $4n$, $4n+2$ and allyl systems. Cycloadditions- antarafacial and suprafacial additions, $4n$ and $4n+2$ systems, $2+2$ addition of ketenes, 1, 3 dipolar cycloadditions and cheletropic reactions. Sigmatropic rearrangements- superficial and antarafacial shifts of H, sigmatropic shifts involving carbon moieties, 3,3- and 5, 5- sigmatropic rearrangements. Claisen, Cope and aza-Cope rearrangements. Fuxionaltautomerism. Ene reaction.	15	33
2	Aromatic electrophilic substitution	6	14

	The arenium ion mechanism, orientation and reactivity, energy profile diagrams. The ortho/para ratio, ipso attack, orientation in other ring systems. Qualitative treatment of reactivity in substrates and electrophiles. Diazoium coupling, Vilsmeier reaction, Gattermann-Koch reaction.		
3	Aromatic Nucleophilic Substitution The S _N Ar, S _N 1, benzyne and S _{RN} 1 mechanisms. Reactivity- effect of substrate structure, leaving group and attacking nucleophile. The Von Richter, Sommelet-Hauser, and Smiles rearrangements.	5	13
Section-II			
4	Addition to Carbon-Carbon Multiple Bonds Mechanistic and Stereochemical aspects of addition reactions involving electrophiles, nucleophiles and free radicals, region- and chemoselectivity, orientation and reactivity. Addition to cyclopropane ring. Hydrogenation of double and triple bonds, hydrogenation of aromatic rings. Hydroboration. Michael reaction. Sharpless asymmetric epoxidation.	7	15
5	Addition to Carbon-Hetero Multiple Bonds Mechanism of metal hydride reduction of saturated and unsaturated carbonyl compounds, acids, esters and nitriles. Addition of Grignard reagents, organozinc and organolithium reagents to carbonyl and unsaturated carbonyl compounds. Wittig reaction. Mechanism of condensation reactions involving enolates- Aldol, Knoevenagel, Claisen, Mannich, Benzoin, Perkin and Stobbe reactions. Hydrolysis of esters and amides, ammonolysis of esters.	7	15
6	Elimination reactions The E2, E1 and E1cB mechanisms and their spectrum. Orientation of the double bond. Reactivity- effects of substrate structures, attacking base, the leaving group and the medium. Mechanism and orientation in pyrolytic elimination.	5	10

Reference Books:

Title	Authors	Publisher
Advanced organic Chemistry- Reactions, Mechanisms & Structure	Jerry March	John Wiley
Advanced organic Chemistry	F. A. Carey & R. J. Sundberg	Plenum
A guide book to Mechanism in Organic Chemistry	Peter Sykes	Longman
Structure & Mechanism in Organic Chemistry	C. K. Ingold	Cornell University Press
Organic Chemistry	R. T. Morrison & R. N. Boyd	Prentice-Hall
Modern Organic Reactions	H. O. House	Benjamin
Principles of Organic Synthesis	R. O. C. Norman & J. M. Coxon	Blackie Academic & Professional
Pericyclic reactions	S. M. Mukherji	Macmillan, India.

Reaction Mechanism in Organic Chemistry	S. M. Mukherji & S. P. Singh	Macmillan, India.
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Course Name: SSCH7060

Course Code: Inorganic & Organic Chemistry Practical-II

Prerequisite: Inorganic & Organic Chemistry Practical-I

Teaching and Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)		
Theory	Practical	Tutorial	Credit	CE	ESE	Total
0	8	0	4	40	60	100

CE: Continuous Evaluation, ESE: End Semester Examination

Objective(s) of the Course:

After the successful completion of this course students will learn the estimation of several inorganic compounds and separation of inorganic and organic mixtures. Also hands on training to different types of distillation and separation techniques will be learnt.

Course Contents:

Laboratory Course in Inorganic Chemistry			
Module	Content	Hours	Weightage (%)
1	ESTIMATION OF: Phosphoric acid in commercial orthophosphoric acid.	8	10
2	ESTIMATION OF: Boric acid in borax.	8	10
3	ESTIMATION OF: Ammonia in ammonium salt.	8	10
4	QUALITATIVE ANALYSIS OF MIXTURE CONTAINING EIGHT RADICALS INCLUDING TWO LESS COMMON METAL FROM AMONG THE FOLLOWING (2 practicals) Basic Radicals: Ag, Pb, Hg, Bi, Cu, Cd, As, Sb, Sn, Fe, Al, Cr, Zn, Mn, Co, Ni, Ba, Sr, Ca, Mg, Na, K, Ce, Th, Zr, W, Te, Ti, Mo, U, V, Be, Li, Au, Pt. Acid Radicals: Carbonate, Sulphite, Sulphide, Nitrite, Nitrate, Acetate, Fluoride. Chloride, Bromide, Iodide, Sulphate, Borate, Oxalate, Phosphate, Silicate, Thiosulphate, Ferrocyanide, Ferricyanide, Sulphocyanide, Chromate, Arsenate and Permanganate.	16	20
Laboratory Course in Organic Chemistry			
1	GENERAL METHODS OF SEPARATION AND PURIFICATION OF ORGANIC COMPOUNDS WITH SPECIAL REFERENCE TO: Solvent Extraction Fractional Crystallisation	8	10
2	DISTILLATION TECHNIQUES:	8	10

	Simple distillation, steam distillation, Fractional distillation and distillation under reduced pressure.		
3	ANALYSIS OF ORGANIC BINARY MIXTURE: Separation and Identification of organic binary mixtures containing at least one component with two substituents. (A student is expected to analyse at least 03 different binary mixtures.)	24	30

Reference Books:

Title	Authors	Publisher
Advanced organic Chemistry- Reactions, Mechanisms & Structure	Jerry March	John Wiley
Synthesis & characterization of Inorganic Compounds	W L Jolly	Prentice Hall

Course Name: SSCH7080

Course Code: Advances in Physical Chemistry-II

Prerequisite: Basics of Physical Chemistry

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 present study enhances student's knowledge about Inorganic chemistry to understand their role in the field of sciences

Course Contents:

Section-I			
Module	Content	Hours	Weightage (%)
1	MACROMOLECULES : Polymer – Definition, types of polymers, electrically conducting, fire resistant, liquid crystal polymers, kinetics of polymerization, mechanism of polymerization. Molecular mass, average molecular mass, molecular mass determination (Osmometry, Viscometry, diffusion and light scattering methods), Sedimentation, chain configuration of macromolecules, calculation of average dimensions of various chain structures	15	34
2	MICELLES AND ADSORPTION : Micelles : Classification of surface active agents, micellization, hydrophobic interaction, critical micellar concentration (CMC), factors affecting the CMC of Surfactants. Thermodynamics of micellization - phase separation and mass action models. Reverse micells, micro-emulsion. Micellar Catalysis, Surface tension capillary action, pressure difference across curved surface (Laplace equation), vapour pressure of droplets(Kelvin equation), Gibbs adsorption isotherm.	10	22
Section-II			
3	SOLID STATE CHEMISTRY - I : Crystal defects and Non-stoichiometry - Perfect and imperfect crystals, intrinsic and extrinsic defects - point defect, line and plane defects, vacancies - Schotty defects and Frankel defects. Thermodynamics of Schotty and Frenkel defect, formation of color centres, nonstoichiometry and defects. Electronic properties and Band theory of semiconductors.	10	22
4	ACIDS, BASES, ELECTROPHILES, NUCLEOPHILES AND CATALYSIS : Acid-base dissociation, Electronic and structural effects, acidity and basicity. Acidity function and their applications. Hard and soft acids and bases. Nucleophilicity scales. Nucleofugacity. The alpha effect. Ambivalent Nucleophilies. Acid base catalysis-specific and general catalysis. Bronsted catalysis, Enzyme Catalysis.	10	22

Reference Books:

Title	Authors	Publisher
Physical Chemistry	G.W.Castellan	Addison-Lesley Publishing Co.
Physical Chemistry	E.A. Moelwyn Hughes	Pergamon Press.
Solid state Chemistry and its Applications	A.R. West	Plenum.

Course Name: SSCH7100

Course Code: Dyes and Intermediates

Prerequisite: Basics of Dyes and intermediates

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 present study enhances student's knowledge about Dyes and intermediates and their applications

Course Contents:

Section-I			
Module	Content	Hours	Weightage (%)
1	Introduction to Dyes: Important landmark in the history of dyes, Natural colouring matter and their limitations:e.g.; Heena, Turmeric, kesar, Chlorolphyll, Indigo, Alizarine from roots of madder plants, Logwood. Tyrian Purple. Synthetic Dyes: Important molestones, i.e. Mauve, Diazotization, aniline Yellow, Congo Red, Synthesis and structure of Indigo, disperse Dye, fluorescent Brighteners, procion reactive Dyes, Remazole Dyes. (Emphasis on Name of the Scientist and dyes and the year of the discovery is required and structure is not expected Defination of dyes, Properties i.e. colour, Chromophore and Auxochrome, Solubility, Linearity, Coplanarity, fastness properties, substantivity, Economic viability Explanation of nomenclature of commercial dyes with atleast one example .suffixes-G, O, R, B, 6B, GK, 3GK, 6GK, L, S Explanation: naming of dyes by colour index(two examples)	10	22
2	Classification of dyes :	15	34

	<p>Based on constitution (Examples are mention below with structures)</p> <p>(i) Nitro Dyes-Napyhol yellow S (ii) Nitroso Dye-Gambine Y (iii) Azo Dyes- (a) Monoazo Dyes- Metanil yellow (b) DiazoDyes- Napthol Blue Black (c) Triazodyes -Chloroamine Green B (iv) Diphenymethane Dyes-Auramine G (v) Triphenyl methane Dyes- (a) Malachite Green Series- Naphthalene green V (b) Magenta Series- Acid Magenta (c) RosolicacidSeries-Chrome Violet (vi) Heterocyclic Dyes (a) Xanthene-Rhodamine 6G (b) Acridines-Acriflavine (c) Azines- SafraninB (d) Oxazines-Capri blue (e) Thiazines-Methylene Green (f) Quiolines- Quinoline Yellow (g) Thiazoles-Primuline (vii) Benzoquinones and naphthaquinonesNaphthazarin (viii) Anthraquinone Dyes- Indanthrene, Turquoise Blue 3GK (ix) Indigoids-Indigo Caramine (x) Pthacyanines-Sirius Light green FFGL</p> <p>Classification Based on Application: Definition, fastness properties & applicability on substrates examples with structures (a) Acid Dyes- Orange II, (b) Basic Dyes-methyl violet, Victoria Blue B (c) Direct cotton Dyes- Benzofast Yellow 5GL (d) Azoic Dyes-Diazo components; Fast yellow G, Fast orange R. Coupling components. Naphtol AS, Naphthol ASG (e) Mordant Dyes-Erichrome Black A, Alizarin. (f) Vat Dyes- Indanthrene brown RRD, Indanthrene Red 5GK. (g) Sulphur Dyes- Sulphur Black T (no structure) (h) Disperse Dyes-Celliton Fast brown 3R, perlon fast blue FFR (i) Reactive Dyes- cibacronBrilliant Red B, procionbrilant Blue HB.</p>		
Section-II			
3	<p>Synthesis of Specific Dyes and their Uses</p> <p>(i) Orange IV from sulphanic acid (ii) Eriochrome Black T from β-naphthol (iii) Eriochrome Red B by using ethyl aceto acetate and 1-amino-2- naphthol-4-sulphonic Acid. (iv) Direct Deep Black EW by using benzidine, H acid, aniline, and m-phenylendiamine. (v) Congo Red from nitrobenzene vi) Diamond Black F by using 5- amino salicylic acid, N.W. acid and α-naphthylamine. (vii) Malachite Green by using benzaldehyde and N,Ndimethylaniline. (viii) Auramine O from dimethylaniline (ix) Methylene Blue by using 4- amino-N,N-dimethylaniline and N,N-dimethylaniline (x) Safranin T by using otoluidine and aniline (xi) Pararosaniline by using ptoluidine and aniline (xii) Alizarine Cyanine Green G by using phthalic anhydride and pchlorophenol (xiii) Indanthrene from anthraquinone (xiv) Disperse Yellow 6G from benzanthrone (xv) Indigo from aniline (xvi) Eosine by using phthalic anhydride and resorcinol (xvii) Bismark Brown from</p>	10	22

	mphenylenediamine. Types of Fibres and Classes of Dyes Applicable to them -Introduction to the following types of fibres with structures and classes of dyes applicable to it. Cotton, Wool, Silk, Polyester. Ecology and Toxicity of Dyes -With reference to the textile dyes, food colours, benzidine etc.		
4	<p>Intermediates A brief idea of Unit processes, Introduction of primary intermediates</p> <p>Unit processes (a) Nitration (b) Sulphonation (c) Halogenation (d) Diazotization : 3 different methods, importance (e) Ammonolysis (f) Oxidation N.B.: Definition, Reagents Examples with reaction conditions (mechanism is not expected)</p> <p>Preparation of the following Intermediates. *Benzene derivatives: Benzenesulphonic acid; 1,3- Benzenedisulphonic acid; phenol; resorcinol; sulphanilic acid; o-,m-,p-chloronitrobenzenes; o-,m-,p-nitroanilines; o-,m-p- phenylenediamines; Naphthol ASG.</p> <p>* Naphthalene derivatives: α,β Naphthols; α,β-Naphthylamines; Schaeffer acid, Tobias acid; Naphthionic acid; N.W. acid; Clev-6-acid; H acid; Naphthol As.</p> <p>*Anthracene derivatives: 1-Nitroanthraquinone; 1-Aminoanthraquinone; 2-Aminoanthraquinone; 2-Methylantraquinone; anthraquinone-1-sulphonic acid; Anthraquinone-2-sulphonic acid; 1-Chloroanthraquinone; Chloroanthraquinone; Benzanthrone.</p>	10	22

Reference Books:

Title	Authors	Publisher
FUNDAMENTAL PROCESSES OF DYE CHEMISTRY	HANS EDUARD FIERZ-DAVID and Louis BLANGEY	INTERSCIENCE PUBLISHERS, INC., NEW YORK INTERSCIENCE PUBLISHERS LTD., LONDON
The Chemistry and application of Dyes	David R. Waring and Geoffrey Hallas	Plenum Press- New York & London
Industrial Dyes-Chemistry, Properties and Applications	Klauss Hunger	Wiley-VCH

Course Name: SSCH7120
Course Code: Physical & Dyes & Intermediates Practical
Prerequisite: Inorganic & Organic Chemistry Practical-I

Teaching and Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)		
Theory	Practical	Tutorial	Credit	CE	ESE	Total
0	8	0	4	40	60	100

CE: Continuous Evaluation, ESE: End Semester Examination

Objective(s) of the Course:

After the successful completion of this course students will learn to prepare several inorganic and organic compounds, learn Chem-Sketch Software to draw chemical structures and analysis of ores and alloys.

Course Contents:

Laboratory Course in Physical Chemistry			
Module	Content	Hours	Weightage (%)
1	Determination of the primary salt effect on the kinetics of ionic reactions (Persulphate-iodide reaction).	8	10
2	Preparation of simple colloids and determination flocculation value for different salts.	8	10
3	[Ka] of weak organic acid [benzoic acid] conductometrically	8	10
4	To carryout fractionation of a polydispersed polymer by viscosity method	8	10
5	To calculate the surface area of adsorbed molecule in a monolayer, CMC, efficiency, effectiveness from surface tension measurements of aqueous solutions of surfactant.	8	10
Laboratory Course in Dyes & Intermediates			
1	Preparation of Dyes a. Phenylazo-β-naphthol b. Mageson II c. Chrysoidine	24	30
2	Estimation of Dyes by reduction method using Titanu chloride a. Indigo Carmine b. Crystal Violet	16	20

Reference Books:

Title	Authors	Publisher
Handbook of Organic Analysis: Qualitative & Quantitative	H Clark	Adward Arnold
Vogel's Textbook of Practical Organic	W L Jolly	Prentice Hall

Chemistry		
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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.

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- 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.

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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.

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- 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
<p>1. During examination time having in possession or access to</p> <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	<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>

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<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