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VOLUME 02

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Chief Editors

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Dr. Jaivik Shah

Section Editors

Dr. Jaivik Shah

Dr. Khyati, Ms. Bindiya, Dr. Juhi, Dr. Aarti, Ms. Juhi, Mr. Piyush, Ms. Vidhisha,

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Dr. Aarti, Ms. Juhi, Dr. Juhi, Mr. Piyush, Dr. Upendrasinh,

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MESSAGE FROM MANAGING TRUSTEES



Shayona Group has established a name for themselves in various fields like Construction businesses. Higher Education, Media & IT. The group also plans to expand the business further at a greater pace, with an aim to achieve as much growth in the coming years. Shayona also aims to create numerous opportunities for youth job and contribute for the development of Gujarat. In the sector of education, Shayona group has established various schools and colleges. President Science College, President Institute of Application, Computer President Nursing College and Shayona Institute of Business management are colleges associated with this group. The group will soon be establishing an Institute for Journalism in the year 2023.

Shayona Group has always considered education of prime importance as it has a crucial role in building India. The youth, with the right quality of education can ensure India's growth in all sectors and we, with the establishment of President Science College has ensured that our contribution to the country and its growth is given rightly and righteously.

The purpose of higher education should always be holistic, as graduation becomes a stage of learning not only through books but also through learning practical ways of life. Skill-based, hands-on living training as well as quality education plays a major role towards the development of students. President Science College has always made efforts to train their students in the same manner and I wish all students achieve new heights in their path ahead.

In a world full of competition, you have to make a way for yourself, you may have institutes for support but success always demands a bit of hard work and dedication.

For students – *"Stagnation is death so keep moving"*.

REFLECTION FROM

PRINCIPAL'S DESK

"With experience, dedicated faculties and excellent team work President Science College helps students to realize their goals in life".

Learning or being educated can be achieved through 4 channels: first one – through family, second – through friends, third – through circumstances and fourth – through formal education. One learns the lessons that is needed to sustain life through these 4 channels and President Science College assures that the fourth channel is imparted correctly and most importantly, applied in a manner that goes beyond the mere mugging of bookish information; we believe in the holistic development of the students as they are the ones to lead India in the future.

President Science College, a part of Shayona group strives for the betterment of students. The prime purpose of the Institute revolves around giving them training based on planned curriculum in their courses with amalgamation of worthy methods of learning which is required for individuals to compete in the modern world. We ensure and assure that a contemporary practical approach is used while delivering lectures so that students can easily achieve all the modern day demands of the world and tackle them in a more successful manner. As a result of this approach, our student's achievement radiates in Gujarat university rank holders list, collaborations of industries, signing up various MOU, along with scientific projects and much more.

We have highly skilled and experienced professors who motivates and guides from students always. Apart the academics, they also coach students in other skills that are required to thrive in the society; personality development, resume building, field study to name a few. In short, they are given a free hand to train students by implementing latest educational apparatus as it develops the reasoning as well as logical thinking in student through which they can give their maximum outputs, hence a student can be a critical thinker, a lifelong learner and versatile contributor to a global society.

For improving lives, a student is the best contributor. Excellence is never a child's play, but efforts made to gain that excellence can guide to a long way, Remember students, you are your own creator of a bright future, a bright mind and a bright world,

Keep growing...

Dr. Shivangi Mathur





Education is the key to investment of new concepts, new ideas to build a better world around us. - Mr. Bhavin Patel





Education leads to proper management for a superior success story

- Mr. Ankit Chaudhary



MR. HARSHAD PATEL MR. KETAN PRAJAPATI MS. NIMISHA SOLANKI



President Science College has always put students' success as mark of college's success and to achieve that, the team PSC is constantly working. As a result of it, students of the president science college have stood out in Gujarat University top 50 ranking.

STUDENTS' ACHIEVEMENTS

03 Students Achieved Subject Gold Medal in Gujarat University B.Sc. Semester 6 March 2022 Examination Gold Medal Awarded in Gujarat University in 71st Annual Convocation Function held on 5th January 2023.













ACADEMIC YEAR 2022-2023 B.Sc. Sem. 1 Gujarat University Result

It's been another outstanding achievement for President Science College students to secure ranks among top 50 ranks in the Gujarat university B.Sc. Semester-1 examination results. It is President Science College's pleasure to congratulate them all and wish them all the best for their future achievements as well.

Sr.no	Subject Group	Name of the student	Guj. Uni. Rank	Marks out of 490
1	CBZ	Viren Thakkar	2	439
2	CZM	Khushbu Khandelwal	3	435
3	CBZ	Smriti Singh	5	430
4	MIBTC	Mishra Kamna	7	424
5	MIBTC	Divya Chandak	18	412
6	MIBTC	Anjaliba Jhala	36	399
7	CZM	Chavda Kumkum	37	399
8	MIBTC	Mishra Nisha	40	397

B.Sc. Sem. 3 Gujarat University Result

President Science College proudly announces the grand achievement in Gujarat University B.Sc. Semester 3 examinations. In top 50 rankings of Gujarat University 9 students have secured different positions. Shayona study campus congratulates all the rankers & wishing them all the best for their future endeavours.

Sr. No.	Subject Group	Name of the Student	Guj Uni. Rank	Marks out of 490
1	BZ	Swain Saloni Rani	3	431
2	BTMI	Dhanusha Panchal	11	420
3	MIBT	Suthar Misha	22	408
4	MIBT	Bairwa Janvi	24	407
5	BTMI	Chuadhari Sweety	27	404
6	BTMI	Zeal Payghode	33	400
7	BTMI	Hiral Shah	34	400
8	BZ	Pooja Dubey	41	398
9	BTMI	Bhavyata Gavadiya	48	393



Swain Saloni Rani Dhanusha Panchal Meesha Suthar





Sweety Dixit





Zeal Payghode



Hiral shah

Pooja Dubey Bhavyata Gavadiya

B.Sc. Sem. 5 Gujarat University Result

One more feather of success has been added into glorious crown of President Science College as 3 students from TY BSc Biotechnology have secured their places among top 50 rankings of Gujarat University Semester 5 examination 2022-23. President Science College congratulates all the rankers & wishing them best of their performance in future endeavours.



Rushita D Desai GU Rank 38



GU Rank 39

Devanshí K Nayak GU Rank 40

B.Sc. Sem. 6 Gujarat University Result

President Science College once again has proved its excellence in academics, as three students from B.Sc. Semester 6 have secured positions in top 50 rankings of Gujarat University in B. Sc. Semester 6 - 2023 exams. Shayona study campus congratulates all the achievers & wishing them all the best for their future endeavours.



Devanshi Nayak GU Rank 43 Subject: Biotechnology



Akash Bhuse GU Rank 46 Subject: Mathematics



Esha Trivedi GU Rank 50 Subject: Biotechnology

Faculties of President Science College are equally active when it comes to research publications, participating and organizing conferences, serving as judge in scientific events or spreading knowledge through invited talks. The PSC faculties never fail the students who admire them as their role models.

Faculty Name	Dr. Shivangi Mathur
Department	Biotechnology
Research Publication	 Srishti Chhabria, Shivangi Mathur, Sebastian Vadakan, Dipak K. Sahoo, Pragnyashree Mishra and Biswaranjan Paital (2022). A review on Phytochemical and Pharmacological Facets of Tropical Ethnomedicinal Plants as Reformed DPP-IV Inhibitors to Regulate Incretin Activity. Front. Endocrinol. Sec. Cellular Endocrinology, DOI: 10.3389/fendo.2022.1027237 Thakur, Sonal & Mathur, Shivangi & Patel, Saumya & Paital, Biswaranjan. (2022). Microplastic Accumulation and Degradation in Environment via Biotechnological Approaches. Water. 14. 4053. 10.3390/w14244053. "Development of microbial consortium for biodegradation of Bio Polyethene and assessment of AlkB gene expression among potential

Faculty Name	Dr. Stuti Patel
Department	Biotechnology
Seminar/ Conference/ Workshop	• Contributed as certificate committee in Physical, chemical and biological sciences in all categories in Two days National e-conference entitled ""Recent Advances and Future Trends in Biological, Chemical and Physical Science - 2021"

Faculty Name	Dr. Aarti Thakkar
Department	Microbiology
Others	 Contributed as a TREASURER in Two days National e-conference entitled "Recent Advances and Future Trends in Biological, Chemical and Physical Science - 2021" Delivered Guest lecture in Government polytechnique on AZADI AMRIT MAHOTSAV Become member of BOS in Gujarat University in June 2021 Invited as GU pannel member in Microbiology interview at Swaminarayan Science College, Gandhinagar

Faculty Name	Dr. Richa Dubey
Department	Microbiology
Research Publication	 Richa Dubey, Dhari Sheth, Shivangi mathur, Ruby Patel (2021) New generation CRISPR-Cas technology and its applications. Research Journal of Agricultural Science (RJAS) UGC listed International Journal P-ISSN: 0976-1675, E- ISSN: 2249-4538/ Vol. 12 (05), 1572 -1575. Richa Dubey, Janvi Sharma, Jas Trivedi (2021) A review on the use of Giloy (Tinospora cordifolia) as a herbal medicine in targeting Novel Corona Virus (Sars-Cov -2) Research Journal of Agricultural Science (RJAS)- UGC listed International Journal P-ISSN: 0976-1675, E- ISSN: 2249-4538/ Vol. 12 (06), 2100 -2103. Ruby Patel, Ranna Chaudhary, Richa Dubey, Archana Mankad (2021) Estimation of Protease & free amino acid content during postharvest shelf life of Tithonia rotundifolia Blake. International Journal of Research & Analytical Review (IJRAR) ISSN -2349-5138, , E- ISSN 2348-1269/Vol 8/Issue 1/234-236 {UGC listed (old list), Peer reviewed & ISSN approved Journal}
Seminar/ Conference/ Workshop	• Conducted two days workshop on "Mushroom Cultivation" By Dr. Sachin Chauhan, Research Scientist, Navsari Agricuture University, Valsad
Others	• Received honour of Ph.D. Guideship of Gujarat University in December 2021
Project	• 1 SSIP Project entitled "Ashtachakra"

Faculty Name	Ms. Asma Shaikh
Department	Microbiology
Research Publication	 Asma Shaikh, Harpreet Kaur Janday, Darshna Patel (2021) PGPR diversity for plant growth promotion. Lambert academic publishing, Mauritius. ISBN: 978-620-3-46408-5 Darshna Patel, Asma Shaikh (2021) Biogas: A sustainable approach towards waste to energy. Lambert academic publishing, Mauritius. ISBN: 978-620-3-58110-2
Seminar/ Conferences/ Workshop	 Organized a webinar of pharma knowledge centre on medical coding programme orientation and career guidance for Semester-6 students on 7th June 2021 Contributed in Certificate committee & hosting poster session in Physical, chemical and biological sciences in all categories in Two days National e-conference entitled ""Recent Advances and Future Trends in Biological, Chemical and Physical Science - 2021"

	 4 Days Training Program on "Basic Disaster Management" organized by NSS committie, President Science College from 21st to 24th December, 2021. Organized the Virtual Inauguration ceremony of President Science college collegiate Women's Development cell (CWDC) on 19th February, 2022 Organized a legal talk on Women's rights for PSC Female students by CWDC on 19th February, 2022 Organized a Quiz competition on "Female shining stars of our nation" on 19th February, 2022 Organized a Programme to celebrate International Women's Day under CWDC on 8th March, 2022 Organized a Workshop on Career Guidance and Industry orientation in association with pharma knowledge centre on 22nd March 2022
Others	 Completed an online FDP on Recent Developments in computational Biology from 21st February - 2nd March, 2022 organized by Department of Biotechnology in association with Electronics & ICT Academy, NIT Warangal Contributed as a delegate at the 6th annual international conference "Genomics and Genetic counselling: value in health care" organized by the board of genetic counselling, India from 2nd July- 4th July.

Faculty Name	Dr. Khyati Patel		
Department	Chemistry		
Seminar/ Conferences/ Workshop	• Contributed as a TREASURER in Two days National e-conference entitled "Recent Advances and Future Trends in Biological, Chemical and Physical Science – 2021		

Faculty Name	Dr. Jaivik V. Shah
Department	Chemistry
Seminar/ Conference/ Workshop	 Presented Poster in National Conference on Medicinal Chemistry and Drug Design under Faculty category on 28/04/2023 Organized Two days National e-conference entitled "Recent Advances and Future Trends in Biological, Chemical and Physical Science - 2021
Others	• Obtained 'A' Grade certificate in 4 Days Training Program on "Basic Disaster Management" organized by NSS committie, President Science College from 21st to 24th December, 2021.

Faculty Name	Dr. Upendrasinh Jadeja
Department	Chemistry
Others	• 4 Days Training Program on "Basic Disaster Management" organized by NSS committee, President Science College from 21st to 24th December, 2021

Faculty Name	Ms. Bindiya Babariya	
Department	Physics	
Seminar/ Conference/ Workshop	• Organized Two days National e-conference entitled "Recent Advances and Future Trends in Biological, Chemical and Physical Science - 2021"	
Others	 Qualified GSET 2021 in Physical Science Served as course coordinator in online "Workshop on Skill Enhancement" organized by president science college 	

Faculty Name	Mr. Piyush Menon	
Department	English	
Seminar/	• Contributed as technical head in Two days National e-conference	
Conference/ Workshop	entitled ""Recent Advances and Future Trends in Biological, Chemical and Physical Science - 2021"	





CLASSROOM

CREEK ANTHOLOGY FAABNIKO ANOOAOITO

Communit

President Science College was established in 2015 with the vision & mission of student's development not only on the basis of academics but also make them think out of the box and to learn beyond classroom. Afterall Overall the development happens not just by studying in the classroom, but learning beyond it, is very crucial. Today's students have more access to information and resources beyond the classroom than any prior generation. Foundation of our institute is built on: Learning to know, learning to do, learning to live together, and learning to be international with responsibility toward many cultures, environments & skilled intensity.

Every year PSC organizes various activity which allow students to improve their skills with enjoyment and celebration. Here is the glimpse of previous academic year's activities.

NSS Activities

NSS Orientation Program



Nationalism stands first at nation building, and youth becomes a prior medium to build nationalism within everyone. The idea of "Service to nation is Service to God" also "Not me but you" are prominent .To imbibe this feeling in young minds NSS committee of President Science College and President Institute of Computer Application has organised orientation session for students of Semester 1 . The program was hosted by



faculties, it was headed by speech given by Principal Dr. Shivangi Mathur. More than hundred NSS Volunteers have attended the program and the experience of previous NSS activities were shared. The purpose of orientation program was to introduce the First year students with NSS unit, its Programs and activities, along with the purpose and work of NSS. Students were also taught NSS clap and the session was ended by national anthem.





"Azadi ka Amrit mahotsav"

On 12th August, 2022 President Science College has organized rally to be a part of "Azadi ka Amrit Mahotsav" celebration which is an initiative of the Government of India to celebrate 75 vears of independence. Along with NSS volunteer more than 100 students took part in the rally which was headed by NSS committee and faculty members flowed by students enchanting slogans like "Bharat mata ki jay", "Vande mataram", "Jay javan – jay kisan" etc.



First Aid Faculty Training Program by Red Cross Society

First Aid training promotes prevention, it is technique which every individual should know, it tries to give relief to an individual until authentic medical treatment is available. Similarly NSS committee of President Science College has organized "First Aid Faculty Training Program" headed by Red Cross Society, Ahmedabad on 7th January 2023. The trainers have trained all faculties of President Science College by showing practical demonstration in which the



topics like Recovery positions which can help to save life of the patient during road accident or any other man made or natural calamity, the training of CPR and Immobilization of any body part at the time of bone injury to patient was also taught by the trainers. By sharing personal experience the session was highly interactive, the opinions and suggestions by trainers stood fruitful to all. Following are glimpses of this program:

Visit to Indian Red Cross Society

NSS committee of President Science College arranged a visit to Indian Red Cross Society on 9th February, 2023 in which more than 40 NSS Volunteers participated. In this visit, volunteers visited Vatsalya, senior citizen home.





"Sanskruti Kunj"

NSS Committee of President Science College visited an event called "*Sanskruti Kunj*" at Shree M. P. Pandya High school, Jetalpur on 25th February, 2023 in which more than 25 NSS volunteers participated. The main objective of this program was to promote the vanishing Indian culture and Sanskrit language. To fulfil this purpose, many cultural programs were organized such as elocution in Sanskrit language, dance and drama which showed unity in diversity. Apart from this, Science fair, an Ayurveda corner providing information about various live ayurvedic plants were also organized there.

Women Development Cell (WDC)

Participation in an awareness programme: NRI Marriages - Do's and Don't: A way Forward

President science college students participated in an awareness programme organized by NCW and Gujarat University on the 6th of March, 2023. Participation in an awareness program on NRI Marriages-Do's and Don'ts: A Way Forward would insights provide useful into the complexities of such marriages and the challenges faced by individuals and

families involved. The program aimed to increase awareness of the legal and social issues surrounding NRI marriages, which are marriages between an Indian citizen and a non-resident Indian. The program emphasized the importance of conducting thorough background checks and verifying authenticity the the of prospective spouse before getting married to avoid fraud and exploitation. The program also highlighted the importance of knowing the laws and regulations governing such marriages and the legal recourse available to individuals who may face any problems. It discussed the need effective for communication and collaboration between the Indian government, the Ministry of External Affairs, and other relevant stakeholders to prevent fraudulent marriages and provide support to those affected. Overall, participation in such awareness programs is crucial in addressing the issues faced by individuals and families involved in NRI marriages. increases It awareness, provides support, and helps prevent fraudulent marriages, ultimately ensuring the well-being of those affected.



<u>Cultural Activities</u>

Youth Festival "KALAKUMBH"-2022



"KALAKUMBH" Gujarat University Youth Festival - 2022 was organised on 13th and 14th September 2022 at Shankersinh Vaghela Bapu Institute of and Commerce, Science Vasan Gandhinagar. Various categories of art forms had been performed over there, out of which President Science College participated in below mentioned events and won Best performance prize in "Mehandi". The participants gave enthusiastic efforts to the performances. The arena of youth fest energised students with spirit of enjoyment.

Name of Participants	Event
Esha Trivedi	Classical Dance
Shakshi Shah	Elocution
Priyanka Gauswami	Poster Making & On the spot Painting
Masum Patel	Western Vocal Solo
Krishna Gameti	Poetry Recitation
Aarchi Kotecha	Mehandi
Vrushali Shah	Garba
Vrutika Patel	
Jenisha Patel	
Mitali Patel	
Khushi Patel	
Aarchi Kotecha	



Day's Celebration FUNFIESTA-2022

Every individual caries one unique feature within, which comes at forefront on one day or the other, to bring out this within our young students, President Science College has organized three days programme of Day's Celebration titled *"Fun Fiesta 2022"*.



Day 1, was loaded with extraordinary enthusiasm of students showcasing various talents of them in "The Talent show" event clubbed with the theme of "Mismatch "Group day" & day" celebration, the reflections of Dance moves with wonderful notes of joy in singing and poetry recitation made the event overjoyed. The Mismatch outfit made them look unique, the similar attire for group day made them feel united.



Day 2, the theme was signature day along with food stall entitled "PSC Eatery" organised by students and faculties of President Science College to learn entrepreneurship and serve the best of taste to everyone. The foods prepared by them were ready to eat mouth-watering verities, there were four food stalls arranged, the experience made them learn teamwork, and productivity.



Day 3, Culture represents language, dressings, rituals, and lifestyle with diversified traditions, and to keep it alive celebration is one such medium. President Science College has organised *Traditional day celebration*. Students and Staff members were dressed up in colourful traditional attire, and danced on the energetic tunes of



Garba that made everyone energetic, Students and faculties did ramp walk to present their unique dressings, and the ambience was covered with joy of colours.



Youth Festival "RANGAM – 2023"

"Stage is a poem of which each movement is a word". President group of institutes have organized Rangam Annual function on 16th March 2023. The event was graced by our Honourable Trustees Shree Sureshbhai Patel Sir: Chairman of Shayona group, Nav Gujarat Samay Ahmedabad Mirror. Shree and Babubhai Chaudhary sir: Chairman of Shreeji Group. Dr. Digvijaysinh Gohil sir: Former syndicate member of Gujarat University. Shree Ajay Umat sir: Chief Editor in Navgujarat samay and Ahmedabad Mirror. Shreemati Urvashi Patel ma'am: Honourable Trustee of Shayona Group blessed us all by their tremendous guidance and support. The students of president Science College, President Nursing College President and Institutes of Computer Application have enthusiastically participated in the event.

Various art forms were performed



by the students, out of which the students president of Science College have performed **Drama** on College life, Combination of Western and Bollywood songs were sung, staying in tunes to the recent trend with Meme culture students have exhilarated the stage, Duet dance performance made the audience stunned by their coordination and chemistry. The entire new concept of Secret society was introduced to the audience where students all dressed up like ghost, thrilled the audience by introducing problems and challenges in ghost society clubbed with comic and dance elements made the audience completely flabbergasted. Along with performing arts, Rangam - 2023 became the stage of success for the students who have got medals for their Academic Ranks in Gujarat University exams for their Qualifying years, all of them were felicitated by our honourable Trustees and principals. The event ended successfully with overjoyed moment.





Sports Day Celebration 2023



On 25th and 26th February 2023, President Group of Institute organised Sports Day in the college campus. Students of Science, Computers, Nursing and GNM took part in event like Running, Badminton, Kho-Kho, Tug of War, Carrom, Shot-put, Chess and Table Tennis. The whole event was a grand success but what made the event an



even greater success was the team spirit and sportsmanship shown by students in between matches; each individual played together and it indeed did feel like games played within a family. The main event which was held on 26th February at 7:30am



ended at 11:30 with a prize distribution ceremony felicitating students for their wonderful performances on the grounds. The Director and Principals awarded the winners and runners up with Medals and Certificates for their outstanding skill in the field of sports.

SCIENCE AWARENESS PROGRAMME

Students of President Science College have done a successful presentation and participation in the different schools under the Science Awareness Programme organized by President Science College, affiliated with Gujarat University in February 2023. 16 student have appreciated with certificates on National Science Day, 28 February 2023.













SPOTLIGHT IN

Biological Sciences



Nobel The prize in medicine physiology & 2022 was awarded to Svante Paabo for his discoveries concerning the "genomes of extinct hominins and human evolution".

https://www.nobelprize.org/pri zes/medicine/2022/paabo/facts/



Capnocytophaga catalasegens New bacterial species isolated from the mouth of a cat in Japan

The world must prepare for a virus that is even deadlier than covid - WHO





4000 year old Plague DNA discovered - the oldest cases to date in Britain

In a recent warning, the Directorgeneral of the World Health Organozation (WHO), Dr Tedros Adhanom Ghebreyesus, has cautioned that the threat of another pandemic that could be deadlier than COVID-19 is emerging and could hit the world just as quickly. https://www.instagram.com>micro biologygram

Researchers at the Francis Crick Institute have identified three 4000 years old British cases of *Yersinis pestis* the bacteria causing the plague the oldest evidence of the plague in Britain to date. https://www.instagram.com > microbiologygram

The largest bacterium discovered is visible to the naked eye

Thiomargarita magnifica is 5,000 times bigger than most bacteria and is as long as a human eyelash.

https://in.linkedin.com/in/ritika-singh-79284323a





Scientists unveil promising new class of antibiotics to combat resistant bacteria!

New antibiotics are urgently required by health professionals to combat drug resistant bacteria. Antimicrobial molecules, which binds to novel targets in bacteria's metabolism, have been developed by researchers at the University of Zurich and Spexis by modifying chemical structure of peptides found naturally.<u>https://www.instagram.com>microbiologygram</u>

Mitochondrial diseases DNA are common nerological conditions caused by mutations in the nuclkkear mitochondrial genome or genes responsible for its maintenance. Now, scientists are using a new approach where mutant DNA sequences inside cellular mitochondria can be eliminated using a bespoke chemical compound. https://www.genengnews.com/news/mitochondrialdiseases-may-potentially-be-improved-by-newapproach/

23/08/2022

Mitochondrial Diseases May Potentially Be Improved by New Approach



Bv≋rsity

Biotechnologists harvested organs for medical transplants by creating artificial embryos.

"Embryo- The best organ-making machine and the best 3D bioprinter", says Hanna, the founder of Renewal Bio.



"synthetic Scientist grew mouse embryos" in ajar using sperm, eggs or a womb into a beating heart, blood circulation, the start of a brain, neural tube and an intestinal After the tract. success, replicating the results with human cells.

https://www.businessinsider.in/sci ence/news/in-world-first-artificialmouse-embryos-were-grownwithout-the-need-for-a-womb-





Breaking! Israeli scientists have successfully grown mouse embryos in artificial wombs and have said humans could be next.

https://theprint.in/world/breakthr ough-israel-scientists-growsynthetic-mouse-embryo-in-labthrough-stem-cells/1070359/



Funny trends in Microbiology 👽





expression signature to predict progression of type 1 diabetes

labiotech.eu A certain gene expression signature was found to be associated with the rapid progression of type 1 diabetes.

https://www.labiotech.eu/trendsnews/gene-expression-signaturepredict-progression-diabetes/

 Gomphostemma phetchaburiense, a leafy herb with dark pink flowers. Just 50 such plants remain, all growing at the mouth of a limestone cave in southwest Thailand, where they remain threatened by the droppings of nearby rock pigeons.



Gomphostemma phetchaburiense PREECHA KARAKET



preventing

SCIENTISTS DISCOVER NEW SPECIES

The Greater Mekong region of Southeast Asia comprising Cambodia, Laos, Myanmar, Thailand, and Viet Nam—is a biodiversity hotspot. In the last two years, researchers have brought some remarkable new species to the world's attention.



A NEUROLOGIST from Rajkot who is serving in a Mumbai hospital and spider а researcher from Ahmedabad have together discovered a new species of jumping spider of the Tanzania genus on the outskirts of Rajkot. The new species, which the researchers have named after Indian biochemist Yellapragada Subbarao, is the first species of the Tanzania genus to be recorded anywhere in Asia. https://indianexpress.com/article/ci ties/rajkot/rajkot-doctor-ahmedabadresearcher-discover-new-species-ofspider/



and

nuclear

ERK

Interference with ERK-dimerization at the nucleocytosolic

interface. EDI" interferes with ERK dimerization, thereby

accumulation and signaling without interfering with ERK1/2-

mediated pro-survival signals. EDI inhibits cancer cell proliferation and maladaptive cardiac hypertrophy and does not induce

ERKT188-phosphorylation

cardiomyocyte apoptosis and subsequent cardiotoxicity. https://www.nature.com/articles/s41467-020-15505-4

> Lab grown blood given to people Scientist in the UK have infused blood cells grown in a laboratory into people in the first such clinical trial in the world. If proven safe manufactured and effective, blood in cells could time revolutionise treatments for people with blood disorders such as sickle cell and rare blood types, the researchers said.

https://www.instagram.com/ljmi crobiology.official/

 Saxicolella deniseae, an herb that grew in waterfalls and rapids on the Konkouré River in Guinea. It is believed to be extinct after its habitat was flooded by hydroelectric dams.



Saxicolella deniseae. DENISE MOLMOU / NATIONAL HERBARIUM OF GUINEA

Saxicolella deniseae. DENISE MOLMOU / NATIONAL HERBARIUM OF GUINEA



A new species of spider has been discovered on the campus of the National Institute of Science Education and Research (NISER) Bhubaneswar. The spider has been named Siler Niser, representing the location of its discovery.13-Mar-2023

http://timesofindia.indiatimes.com/articleshow/98 580370.cms?from=mdr&utm_source=contentofinter est&utm_medium=text&utm_campaign=cppst

• *Cyanoboletus mediterraneensis*, a new species of Mediterranean bolete. The mushroom boasts a brown cap and lemon-yellow stalk that, much like humans, turns a deep blue when bruised.



Cyanoboletus mediterraneensis. ZOHAR SHAFRANOV

 Hydnum reginae, or Queen's hedgehog, a lumpy, white fungi found in the ancient beech woodland in Surrey, England. Scientists described it as having an "ill-defined but pleasant, slightly sweet" odor and "mild, soapy then slowly slightly bitter" flavor.



Hydnum reginae. GEOFFREY KIBBY

Plant and lichen discovery in the southern Philippines

From Plant Press, Vol. 26, No. 2, April 2023.

By Manuela Dal Forno and Jun Wen

On January 11, 2023, we started our journey to the Philippines, Manuela Dal Forno from Fort Worth Botanic Garden in Texas and Jun Wen from the National Museum of Natural History in Washington, DC. Little did we know then what adventures would wait for us in the Philippines. After traveling around 40 hours "door-to-door," we arrived at our host institution, Central Mindanao University (CMU) in Maramag, Bukidnon Province on Mindanao Island.



Group photo during the first field day at Mt. Balatukan (Gingoog City, Barangay Kalagonoy, Mount Balatukan Range Natural Park) on January 18, 2023. (self-timed photo)

This journey, "Expedition 4," was the fourth of a larger botanical project which started in 2018. For this most recent expedition, we worked in the Philippines for a total of 29 days and visited two main locations: Mt. Balatukan, part of the Mount Balatukan Range Natural Park in Misamis Oriental Province, in northern Mindanao; and Dinagat Islands, where we visited multiple municipalities, including Loreto, Basilisa, San Jose, Libjo and Tubajon. Toward the end of the trip, we collected in two additional localities, Mt. Musuan and Mt. Nebo, in the Valencia Valley of Bukidnon Province relatively close to our base at CMU. We were very fortunate to have the help of our Filipino colleagues who worked on the logistical details, such as meal planning, lodging, and securing permits ahead of time with the local communities and authorities. We

https://nmnh.typepad.com/the_plant_pre ss/2023/04/plant-and-lichen-discovery-inthe-southern-philippines.html

Physical Science



NOBELPRISET I FYSIK 2022 THE NOBEL PRIZE IN PHYSICS 2022





Alain Aspect Université Paris-Saclay & École Polytechnique, France



John F. Clauser J.F. Clauser & Assoc., USA



Anton Zeilinger University of Vienna, Austria

"för experiment med sammanflätade fotoner som påvisat brott mot Bell-olikheter och banat väg för kvantinformationsvetenskap"

"for experiments with entangled photons, establishing the violation of Bell inequalities and pioneering quantum information science"



#nobelprize

https://www.nobelprize.org/prizes/physics/2022/summary/

Chemical Science



NOBELPRISET I KEMI 2022 THE NOBEL PRIZE IN CHEMISTRY 2022





Carolyn R. Bertozzi Stanford University USA



Morten Meldal University of Copenhagen Denmark



K. Barry Sharpless Scripps Research USA

"för utveckling av klickkemi och bioortogonal kemi"

"for the development of click chemistry and bioorthogonal chemistry"

https://www.nobelprize.org/prizes/chemistry/2022/summary/

Mathematical Science

Fields Medals 2022 in Mathematics

Every four years, the International Mathematical Union awards a gold coin with the head of Archimedes engraved on it to up to four mathematicians younger than 40 "to recognize

outstanding mathematical achievement for existing work and for the promise of future achievement." This year the Fields Medal went to June Huh, James Maynard, Maryna Viazovska and Hugo Duminil-Copin.



<u>June Huh</u>

For bringing the ideas of Hodge theory to combinatorics, the proof of the Dowling–Wilson conjecture for geometric lattices, the proof of the Heron–Rota–Welsh conjecture for matroids, the development of the theory of Lorentzian polynomials, and the proof of the strong Mason conjecture.

Hugo Duminil-Copin

For solving longstanding problems in the probabilistic theory of phase transitions in statistical physics, especially in dimensions three and four.





James Maynard

For contributions to analytic number theory, which have led to major advances in the understanding of the structure of prime numbers and in Diophantine approximation.

Maryna Viazovska

For the proof that the E8 lattice provides the densest packing of identical spheres in 8 dimensions, and further contributions to related extremal problems and interpolation problems in Fourier analysis.



Breakthrough prizes in mathematics 2023

Danial Spielman from Yale University has been honored with the 2023 Breakthrough prize in Mathematics for multiple discoveries in theoretical computer science and mathematics. <u>https://www.mathunion.org/imu-awards/fields-medal/fields-medals-2022</u>

President Science College truly believes that the community and youth can work for betterment of each other. Every tiny effort by a small group of thoughtful and committed people can make a difference and youth can bring that difference. Whereas, on the other hand ccommunity participation helps youth become empathetic citizens who could potentially continue similar work when they become adults. Additionally, youth who give back to their communities develop leadership skills, learn the importance of helping, and gain work experience.

DEPARTMENTAL ACTIVITY

Department of Biotechnology

Talk delivered by our foreign returned alumna to Semester V Biotechnology students (21st July, 2022):

Ms. Juhi Nayak, who did Masters in Food Science technology from U.K. She delivers an extremely effective and motivation lecture on "Experience of foreign education in UK." to enlighten our B.Sc. biotechnology students about the actual scenario of how the education system works overseas, what all opportunities they can gain during this journey and not only this, she has also explained of job opportunities in the relevant fields.



Day out with Semester 5 Microbiology and Biotechnology students (30th July, 2022):

Picnics are a pleasant diversion. After all, it breaks the monotony of life. Time out in the sun or enjoying any physical activity while on a picnic is good for overall physical health. To consider this, microbiology and biotechnology teachers took their students to Tirupati Rushivan adventure park on 30th July 2022. Students enjoyed participating in all the rides and playing kho-kho, Hide and Seek, Garba, etc. The trip was organized and coordinated by Dr. Darshana Patel, Ms. Asma Shaikh, Dr. Richa Dubey from the microbiology department, and Dr. Stuti Patel from the biotechnology department of microbiology and biotechnology.



IIT Gandhinagar Faculty, Dr. Umashankar Singh delivered a talk regarding the challenges and Opportunity for the biology students (8th October, 2022):

An interactive session for students of biological sciences on 8th Oct.2022. The guest speaker was Dr.Umashankar Singh Associate professor, Department of biological engineering, IIT, Gandhinagar. The session was titled "The challenges and opportunities for modern student of biology" The session was headed with welcome speech delivered by principal ma'am followed by the technical session which engaged students effectively. The questionnaire session made students into interaction and opened their dimension of knowledge with their doubts and solutions.



Summer Research Training program at NIPER Hyderabad organized by GSBTM, Gandhinagar

Student of Semester 3 BTMI students, *Ms. Hiral Shah* was selected by GSBTM summer research training program and she was offered to do one month training program at NIPER Hyderabad. She learnt various techniques related to tablet preparation, drug delivery system and other High throughput technology used I pharamaceuticals.

Not only this, she also participated in seminar on "TLR7/8 agonist based anticancer Nano vaccines at NIPER Hyderabad by speaker Dr. Jayanth Panyam, Dean and Professor, School of Pharmacy, Temple University, USA"



Science Manthan 2023

In Science Manthan 2023 organized by Charusat University, Changa. President Science College rocked again. In scientific poetry Sem 6 Biotechnology student Esha Trivedi got 1st prize, in working model competition 2nd prize received by Sem 6 Biotechnology student and Sem 6 Microbiology students won 3rd prize in Poster presentation President Science College also received the **"Science Ambassador award"** (runner up) for Second highest participation of 41 students.














Department of Microbiology

Expert session was scheduled on 05/08/2022 Friday in President Science College for B.Sc. Sem 5 Microbiology and Biotechnology students under Student Innovation Fest Programme from વિજ્ઞાન ગુર્જરી, ગુજરાત પ્રાંત એકમ of વિજ્ઞાન ભારતી. 80 students had participated and learned the Innovation ideas.



Department Organized Science competition on 06/08/2022. Microtech Wonders-2022 an MBSI event. Student's efforts were extremely commendable. There was tremendous response and enthusiastic participation of students in different categories of events like Posters, working Models and Presentations. Total 96 students of B.Sc. Sem 5 and Sem 3 participated in this competition. President Science College is proud to announce a scientific event held on August 6, 2022 organised by the department of microbiology in coordination with Microbiologist's Society, India. Students of Microbiology and Biotechnology presented their creative scientific ideas through Poster presentations, Model presentations and Oral presentations. Various concepts belonging to rDNA technology, fermentation technology, clinical and medical microbiology, animal and plant biotechnology, etc. were presented with great enthusiasm. Some eye-catching concepts included bioluminescence, conversations between microbes with their hosts, insulin production, etc. were appreciated a lot. Student projects were motivated by Shri Sureshbhai Patel, Shayona group along with Dr. Shivangi Mathur and teaching fraternity of Shayona group of institutes.





Award Ceremony-2022: President Science College is delighted to share the information of recently organized "Award Ceremony-2022" held on 23rd September 2022. The event was graced by dignitary guest Dr. Minal Trivedi (Principal, HVHP institute of post graduate study and research, Kadi), Dr. Shivangi Mathur (Principal, President Science College) along with faculty members and students of microbiology and biotechnology department. The agenda was to felicitate the student winners and participants of several MBSI competitions held at the institute by giving them trophies and certificates. Further, towards student benefit, an informative lecture was delivered by our guest on "Scope and Future of Microbiology" describing the comprehensive information explaining subject itself and the career opportunities after completion of graduate or post graduate study in microbiology. More than 75 students were felicitated for their enthusiastic performances while Inaugural launch competitions and MicroTech Wonders 2022.



Guest Lecture on "Microbial Genetics"

Department has organized a guest lecture on Basic concepts of "**Microbial Genetics**" by *Dr. Rakesh J. Patel*, Ex- Associate Professor, Department of Microbiology, R.G. Shah Science College, Ahmedabad on 30/01/23. It was a very informative & fruitful lecture. He has given an insight on Methods of Horizontal Gene transfer. Dr. Rakesh Patel has blessed the students with his knowledge, expertise & experience.



* Mushroom Cultivation: Workshop

State-level Workshop on "Mushroom Cultivation" sponsored by GUJCOST, DST organized by Samarpan Science College, Gandhinagar on 2nd February 2023, attended by President Science College, semester 6 microbiology students Ms. Aarju Patel, Ms. Foram Thakkar, and Ms. Anjali Patel. In this workshop, Students learned about mushrooms and their distinct types, how various types of mushrooms can be cultivated, and their growing period. Moreover, they were taught to grow oyster mushrooms in hands-on training sessions.



✤ Fermented Food Festival



Food fermentation have been practiced for millennia resulting the existence of a tremendous variety of fermented foods ranging from those derived from cereals, milk, dairy products etc. MBSI student unit of President Science College organized a fermented food festival on 7th February, 2023. Semester 4 MIBT, BTMI and MIC class students energetically participated in the food festival. Students prepared fermented foods like cheese, yougurt, buttermilk, bread and khamandhokla. Event divided in to two section making and marketing in making section students gave brief introduction about the making processes of the fermented food and in marketing section students prepared various food varieties from the fermented food products. It was a great learning experience for the students where students learned about the making and marketing process of the fermented food items.



✤ <u>Guest Lecture on "Fermentation Technology"</u>

Department has organized a guest lecture on Basic concepts of **"Fermentation Technology"** by *Dr. Vivek N. Upasani,* Ex- Associate Professor & Head, Department of Microbiology, M. G. Science Institute, Ahmedabad on 08/02/23. Dr. Upasani had shared his views & research experience with the students. It was a very informative & interesting lecture session. He had given an insight on Industrial fermentation techniques. The lecture had received lots of admiration by the students. The lecture was followed by the Certificate Distribution Ceremony of the students participated in "Fermented food Festival" an MBSI event held on 07/02/2023. Dr. Vivek Upasani blessed the students with his knowledge, expertise & experience.



✤ <u>GIBioN 2023</u>

President science College semester 4 and 6 students of Microbiology and Biotechnology division participated in GIBioN 33rd state level Inter- collegiate competition on 19th February, 2023, hosted by sankalchand Patel University, Visnagar. Students participated in various competitions such as Bio-Quiz, Scientoon, Extempore speech, Article writing, seminar and poster presentations. Ms. Asma shaikh from the Microbiology Department and Dr. Stuti Patel from the Biotechnology department mentoring students for this competition. In the Bio-Quiz event of this competition our students team Ms. Aarju Patel and Ms. Zeal Payghode got selected in the best 6 teams out of 30 teams of different colleges.



Department of Chemistry

Department Organized "Best Out of West" competition on 16/07/2022. Student's efforts were extremely commendable. There was tremendous response and enthusiastic participation of students in this Competition. Total 65 students of B.Sc. Sem 3 participated in this competition.



Chemistry Department Organized "POSTER" competition on 19/07/2022. Student's efforts were extremely commendable. There was tremendous response and enthusiastic participation of students in this Competition. Total 45 students of B.Sc. Sem. 5 participated in this competition.





One Day Tour at Dev's Camp, Ecotourism Centre & Adventure Park, Vadodara on 20/01/2023

Department has organized a One Day Picnic at Dev's Camp, Ecotourism Centre and Adventure Park, Gariyal, Vadodara on 20/01/2023. The journey started at 06:00 am from College and reached there at 10:00 am. Students of Second Year and Third Year Chemistry enjoyed a lot and they had participated in various adventure activities like, Tyre Tumbles, Zig Zag, Plank walk, Simple Sidewalk, Cross Plank walk, Swinging bridge, Speeder Net, One side plank walk, Burma bridge, Squire squabble, Eco Go Cart, Bush Trekking, Swimming Pool, Rain Forest Rain bath with DJ, Zip Line, Aviary walk, Wall climbing and Swing Jump. Students were very excited and energetic to take part in all activities and no one missed any of the activities. In addition, Faculties are also so enthusiastic to be a part of all the adventure activities. Overall, it was an adventurous experience under the lap of nature and students were very satisfied and happy with all the arrangements done by faculties.



Department of Physics

NATIONAL SCIENCE DAY - 2023

As we all know that 28th February is celebrated as National Science Day in India to mark the discovery of the Raman Effect in the field of science by Indian physicist Sir C. V. Raman. Department of Physics, President Science College, affiliated to Gujarat University, being a science institute has celebrated this National Science Day on 28th February, 2023 on the theme of "Global Science for Global Wellbeing".

In this celebration 5 different categories were there, namely, **Scientific Rangoli**, **Scientific Essay Writing, Poster Presentation, Oral Presentation and Working Model.** Total 108 students had participated in various activity either individually or in Group. Dedicated staff of PSC has help the students and not to repeat any single topic in any of the category.

In Scientific Rangoli, 7 different Theme based Rangoli were prepared by group of students in the given time frame, namely, *Chemistry used in our daily life, Global Warming, Importance of Science in Our life, Interconnection of Disciplines, Space Science and Save Earth and Save Water.* Student shows there wisdom to select appropriate colours, sharpness and accuracy.

In Poster Presentation, total 16 students has prepared poster on different scientific area of science like, *Click Chemistry, Nanotechnology & its application, Cell Senescence, Coral Reefs, Green Hydrogen, DNA Fingerprinting, Use of Giloy as Herbal Medicine and GM crops.* All the posters were handmade including images. All the topics were associated with recent development and the innovations in science.

In Oral Presentation, 08 students has presented their presentation on *Artificial Intelligence, Ethanol Blending, Parents as Genetic Engineers, Herpetology, Number Theory, Evergreen Source of Hydrogen: Sea Water and Medical Application of Biotechnology for Humans.* Students shows their excellent presentation skill and thinking to make their presentation more significant towards the current problems which we or world is facing.

In Scientific Essay Writing, 03 different topics were given to them: *Science – Bane or Boon, Business and Money in Science and Future Scopes in Science.* 06 students wrote anyone of the above topic in which they justify their title by explaining it in simple and scientific way.

In Working Model Making, 55 students in group has prepared working model. All have try to utilise waste material as they can and created model totally handmade or half handmade which might be quite cheaper compare to available model with new modifications. 13 models were prepared of *Dialysis, Working of Satellite, Sanitary Napkin Dispenser, Graph Theory, Electrolysis Of Water, Tesla Coil, Wireless Charger, Hydroponics Farming, BioChem City, Air Purification, Organ Functioning, Smart Cane and 3D Hologram.* Student shows their creativity, capability in designing a simple model to deal the current problem, applicability to society on nominal rate and their awareness towards the issues faced by India currently. In all categories, judges has given ranks and gave their valuable feedback. It was very joyful, rich with science, knowing so many unknown area of science and knowledge gaining day for faculties, participants, judges and visitors.

We are happy to share that in Working Model category one of our student group namely, **Mr. Kaushal Patil, Rahul Vegad, Heer Mehta and Rohit Rajput** got an order to prepare totally handmade *Sanitary Napkin Dispenser* for school girls. This shows how we can support Local for Vocal campaign given by our respective PM and to motivate such entrepreneurs. Proud moment for us!!!

























Department of Botany

* Thol Bird Sanctuary

Botanical and ecological field excursion to Thol Bird Sanctuary organized by Department on 23rd January, 2023 for Sem. 4 and Sem. 2 Botany students. The main objective was to familiarize the students with wild and cultivated flora and ecology region. A group of students were accompanied by Dr. Juhi Gajjar and Ms. Megha lodha. Dr. Rupesh maurya was came as an expert in taxonomic field.





* Visit to Rise Hydroponics

One day visit to Rise Hydroponics to familiarize the students with the actual application of different botanical branch, and to make them aware with different agricultural and horticultural practices organized by Department on 21st February, 2023 for Sem. 4 and Sem. 2 Botany students. A group of students were accompanied by Dr. Juhi Gajjar and Ms. Megha Lodha. Ms. Amee Patoliya, agronomist of the Rise Hydroponics introduced students with different agricultural practices.





* Visit to Jaiselmeria Nursery

Visit to Jaiselmeria Nursery on 21st February, 2023, which is situated near Vaishno Devi Circle, S.G. highway, Ahmedabad. There are all type of seasonal, perennial flowers, fruit plants, tropical palms,



bonsai & avenue tress available.

Department of Mathematics

* Science Exhibition

A science exhibition is an event where people can learn about science through interactive displays and activities. The President Science College microbiology, biotechnology, mathematics, and chemistry departments visited the science exhibition at Kadi Sarva Vishwa Vidyalaya, Gandhinagar on 6th January 2023. The exhibition was attended by 54 students, including two faculty members, Ms. Asma Shaikh from the microbiology department and Ms. Juhi Yadav from the mathematics department. Students had the opportunity to explore recent science technologies through various working models displayed in the Science exhibition. The students talked with the model's representative about different science models, including virus games based on graph theory, working models of AI and machine learning, pipe inspection mechanisms, smart dustbins, and IoT-based planters, etc. A wide range of science topics was covered in the exhibition, including biology, physics, chemistry, astronomy, and earth science



Department of Zoology

* Identification of venomous and non-venomous snakes of Gujarat

Department has arranged a seminar on "Identification of venomous and non-venomous snakes of Gujarat" on 30/07/2022, Saturday. All the Students were given the knowledge of identifying venomous and non-venomous snakes. They also had explained the biting mechanism of snakes and first aid for snake bites. We were overwhelmed on presentation by RESCUE FOUNDATION, the knowledge imparted to students by them, we had an amazing time.



* <u>3 Days Camp at Gujarat Ecological Education and Research (GEER)</u>

Students of President Science College from Second Year have completed 3 days camp at Aranya Udhyan, organized by Gujarat Ecological Education and Research (GEER) Foundation under Nature Education Camp in Gandhinagar. It was fully funded and free of cost for all students. The camp was organized with an intention to impart the knowledge to the younger generation towards nature and its importance through field trails.

First day the information about ecology with visit to Butterfly park was done. Second day students were taken to POLO Forest from Gandhinagar for studying about rivers and forest ecology and its importance. Third day students were explained about environment and the camp.

Students were given Certificate for successfully completing Nature Education Camp. Complimentary gifts were given to students which include water bottle, cap and a carry bag to each and every student.



Department of English

Department of English at President Science College has always catered to the needs of students in terms of both academic and personal growth. As a part of their enriching them, we along with our nodal partner IDP INDIA (IELTS) had organized various events to ensure right information is passed on to students. We had taken our students to events organized by IDP India that not only guides, but also helps our students to reach their 'destination' of life.



ARTIFICIAL INTELLEGENCE

From SIRI to self-driving cars, artificial intelligence (AI) is progressing rapidly. While science fiction often portrays AI as robots with human-like characteristics, AI can encompass anything from Google's search algorithms to IBM's Watson to autonomous weapons.

Artificial intelligence today is properly known as narrow AI (or weak AI), in that it is designed to perform a narrow task (e.g. only facial recognition or only internet searches or only driving a car). However, the long-term goal of many researchers is to create general AI (AGI or strong AI). While narrow AI may outperform humans at whatever its specific task is, like playing chess or solving equations, AGI would outperform humans at nearly every cognitive task.

Thinking Humanly	Thinking Rationally
"The exciting new effort to make comput- ers think <i>machines with minds</i> , in the full and literal sense." (Haugeland, 1985)	"The study of mental faculties through the use of computational models." (Charniak and McDermott, 1985)
"[The automation of] activities that we associate with human thinking, activities such as decision-making, problem solv- ing, learning" (Bellman, 1978)	"The study of the computations that make it possible to perceive, reason, and act." (Winston, 1992)
Acting Humanly	Acting Rationally
"The art of creating machines that per- form functions that require intelligence when performed by people." (Kurzweil, 1990)	"Computational Intelligence is the study of the design of intelligent agents." (Poole <i>et al.</i> , 1998)
"The study of how to make computers do things at which, at the moment, people are better." (Rich and Knight, 1991)	"AI is concerned with intelligent be- havior in artifacts." (Nilsson, 1998)

Some definitions of artificial intelligence, organized into four categories.

https://futureoflife.org/ai/benefits-risks-of-artificial-intelligence/

Stuart Russell and Peter Norving, Artificial Intelligence: A Modern Approach (3rd Edition), ISBN-13: 978-0-13-604259-4